

The history of

# **CHATHAM DOCKYARD**

By  
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Vol. I

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## Notes and Acknowledgments

After my husband's death in 1987, I took over the task of organising the second draft of this History into its present shape. In the 1980's the print quality of word processors meant that without huge expenditure I could not think of publishing it, so I was very relieved when George Fordham the former head librarian at Chatham, contacted Kent County Council who agreed to take it on. Alas, after seven years, the Council admitted that it did not have the staff to do the job, and the text which had been retyped by Jackie Lindley - mostly in her own time - was sent back to me.

By this time seven years had elapsed and I was losing my ginger, but the print quality of computers had improved. My daughter, Isabel, had acquired an Apple Mac the previous year and in her long college holiday this summer, the text was marshalled into order. I did the initial proof reading as I had Jim's original notes and papers, then one proof copy was sent to my other daughter, Hilda, in America to check for discrepancies in layout and typeface, and the other copy was sent to Harold Bennett of the Chatham Dockyard Historical Society, who checked everything, and was a constant source of advice and encouragement.

When I saw the size of the bibliography, I knew I had to say a special thank you to the staff of Chatham Library, who over a period of 25 years, reserved countless books on the inter library transfer system and organised the delivery to us of *all* the back copies of the Chatham News and South Eastern Gazette, many of which are referred to in the text:

For special help while working on this book I am grateful to the many men in the Dockyard who told my husband about their jobs and how the Dockyard worked, the officers who lent letter books etc, from which many quotes were taken, and Chatham Council who allowed me to go through 17th and 18th century Rate Books in order to extract details of Yard men.

Grace Crawshaw

Autumn 1998

## INTRODUCTION

In the 1970's when my parents talked about 'The History' I thought it was just an excuse for them to go on jaunts to see country churches with memorials to Dockyardmen and then on to the pub next door.

I do recall that they spent numerous summer holidays in the library and the dark basements of the Rates and other offices in Chatham searching for information. My mother said they read every back copy of 'Chatham News' and extracted every reference to the Dockyard, but all I remember was my father's shock at the number of suicides among working class women (at the end of the 19th century), and the method of their deaths.

The Dockyard was a consuming interest. When my father went to Glasgow on holiday, he thought the Clyde was very fine, but more exciting by far was the thrill of finding, in Govan, a statue erected to the memory of a former Yard apprentice, William Pearce.

My father was fascinated by the enclosed world of the Yard. I remember his listening to local radio, enthralled by one Dockyardman's narration of how he had spent his whole working life driving a steam engine along the few hundred yards of track within the Yard walls and yet was never bored. To them it seemed normal, to me it was alien. The world had changed but the Yard had not. The Yard was there as protector and patriarch. At my school, the girls who had a lot of illness were always told to apply for clerical posts in the Dockyard, because they kept you on even if you were often sick.

When I sent the chapter on Dockyardmen to my mother to proof read, I said that we had to have more than four paragraphs on 'Women in the Yard,' but it was a man's world, breached only in times of war. Women were cleaners, lowly clerks or widows (taken on, presumably to ease the Admiralty's conscience at the lack of widows' pensions), save, of course, Miss Griffiths, the School Secretary, who inspired awe in all she served.

The Dockyard itself was unknown to my sister and me, apart from attendance at the occasional launch of a submarine with an unpronounceable native Canadian name and the annual Navy Days, when the females of the Medway Towns, clad in 1950's glamour of stiletto heels and full skirts, climbed the ladders to upper decks expectant of naval approval.

In those days the Navy routinely supplied sailors with 200 cigarettes a month at prices below 'duty free' and the brown rum ration was an ongoing tradition. Bell bottom trousers with seven horizontal creases (or five if the sailor was short) were worn and there was a pub every third building along the High Street.

Later when my father retired, he had a plan to have a drink in every pub in Chatham Town Centre. In the second year of his retirement plan I went with him- he had started at Military Road on the north side of the High Street and had not even reached Batchelor Street. I don't think that plan was ever completed.

To me it is disturbing to read that the Towns only prospered in time of war, so its largely working class population voted Tory. Yet in the past the greatest threat Admiralty could make was to send the Yard workers to sea; indeed when sea service was made compulsory for apprentices, the intake plummeted.

One has to admire the scale of operations; the smiths bending massive pieces of angle iron in one 'burn', the warships being towed by rowboats along the river; the dredging operations in the Medway mud of fairy tale impossibility.

There were tragedies but humour as well - the lady launcher who missed the ship resulting in Admiralty having to pay damages to the man the champagne bottle hit; the Yard bosses' response to prayers being ordered for launches; Admiralty's dismay at the

poor results from the Dockyard School when the students were being examined in such subjects as algebra and hydrostatics and yet the stationery order was 25 slates and 5 large sponges. I was also amused by the use of the adjective 'convivial' to describe the dinners the apprentices held to celebrate the completion of their courses or their later reunions. Charles Dickens' father worked at the Yard, which made me wonder if this was how Dickens, the author, acquired his fascination with descriptive names for characters. There is 'Boate' the shipwright; and 'Thread' and 'Guy' in the Ropery, not to mention 'Sly' and 'Strength' in the police department and 'Mr Champagne' innkeeper at Hill House.

There was amazing snobbery in the Yard, especially demonstrated in the Apprentices section- how the upper classes were shocked to discover that promotion by ability might sometimes mean they were excluded from posts which they had thought were theirs by right. But Clem Attlee did his bit in the Socialist Sunday School at Chatham where the children were given pictures of bloated rich people to compare with pictures of downtrodden working men.

And the working classes were obviously not well nourished; the physical requirements for entry as an apprentice (aged 13 - 15) in 1860 were height 4ft 8 inches with a 26 in chest measurement. No wonder that they found the work hard and that a major part of the surgeon's duties was the issue of trusses.

The Chatham Chest paid for by working men and sailors was plundered by officers and 'gentlemen' who believed it their right. Yet the Governors were so worried by the thought of fraud on the part of the applicants that they insisted the blind, lame and infirm should turn up each year to prove they were alive, which in turn led to the necessity of powers of attorney and 'agents' to put money into the pockets of home town lawyers and Medway Towns publicans.

And the defences of Chatham were beyond belief. Upnor Castle was built on rented land, and the post of 'Keeper' given for life to John Trevor who lived (elsewhere) into his eighties. The Chain across the River aided, rather than hindered the Dutch in their attack, an attack which had been preceded by the flattering presence of a skilful Dutch landscape painter. I wonder if the term 'Dutch Courage' originated from this fiasco, when many of our sailors fought for the Dutch, since their English wages were up to two years in arrears.

And so twenty years on I am belatedly learning about the reason for the existence of the Medway Towns. I only wish my father were here to proof read this final copy, which is a joint effort on the part of my mother, my sister, Hilda, and myself. And dear readers, please forgive any mistakes, but this is a lifetime's research presented 11 years after the author's death.

I would like to say thank you to Harold Bennett, President of the Chatham Dockyard Historical Society, who has (against impossible deadlines) read the proof copy meticulously and, as importantly, supplied much needed encouragement.

Among others to whom I owe thanks, are Dave King who did the binding and Phil Bawden and Geoff Weston for their help in organising the layout and other technical matters.

Isabel Garford

Newcastle upon Tyne

Autumn 1998

## A Note about the Author

J D Crawshaw MBE Msc  
(1909-1987)

James Crawshaw was born in Bounds Green, North London, on 23 November 1909 and the family moved to Edmonton during the First World War, where he went to Silver Street School and at age eleven to the Latymer School in Edmonton. The Latymer School was founded in 1624 for boys only. When it moved to a new building in 1910, girls were admitted for the first time. I was also a pupil and that is how I first met James.

In 1924 he was awarded a Latymer Foundation Scholarship, which meant that there were no fees to pay. Later, having been awarded a grant by the Middlesex County Council, he went to London University to study Physics, with Pure Mathematics as a subsidiary subject. He earned a First Class Honours in the BSc degree course and after three years of study he attended the London Day Training College to obtain a post-graduate teaching diploma.

In 1932, when he qualified, a recession had hit the country and teaching posts were very scarce, so he did some temporary work as a supply teacher and also had a contract for three months at the Science Museum employed in setting-up exhibits. He was teaching in a private school in Harrow when he applied for the Dockyard School post. This was in 1936 and after his probationary year we married in July 1937.

While he was at the Harrow School he worked for his MSc degree at Birkbeck College under Professor Blackett. At Holborn Tube Station there was a kind of wooden hut on the disused platform from the line which used to run to Aldwych. Here with two other students they would take turns to check the apparatus which was recording cosmic rays with geiger counters.

His Master's thesis was on 'Cosmic Rays' which I typed for him. At that time I was working at the Land Registry in Lincoln's Inn Fields and travelled to Holborn. On the nights when it was Jim's turn to check the recordings I would go to the little wooden hut and wait with him until he had completed the data collation.

In February 1942, during the Second World War, we were bombed out of our first home on the Davis Estate. Jim had joined the Local Defence Volunteers on the first day they were formed- and later was transferred to the Home Guard, for which he was awarded a Certificate of Merit in 1945. At that time he was also teaching mornings at Rochester Technical School as many boys had returned from evacuation during the 'phoney war.' The Dockyard School staff had mornings free and taught apprentices during afternoons and evenings. (This arrangement was not altered until sometime after the war had ended.) As he was also working on an allotment on the Delce and doing Home Guard duty one night in five he had a very full working week.

The Yard received several direct hits from bombing raids during the war, and on 3rd December 1940 at about 8 pm the Factory was bombed. Evening classes in the Dockyard School normally finished at 7.30 pm, but with an 'Alert' the Yard gates would be closed and everyone had to go to shelters to await the 'All Clear,' which resulted in several late arrivals at home.

On the 15th December, 1954, the College was at the annual Carol Service, when the caisson of No 3 Dock floated out of its groove. Men were working on the submarine HMS Talent and there were 4 killed and 33 injured. A messenger came to the Dockyard Church to speak to the Admiral who was attending the service; he left immediately. We had all heard the alarm being given whilst in the church and after the service went to see the now flooded dock.

Jim, with several others on the staff, went on a visit to Portsmouth Dockyard in the 1960's when the IRA were in action against military and naval targets. Yard security had been tightened and they had all got their special passes. In spite of this, the police would not admit them, saying they had received no warning of their coming to a meeting. After a time, Jim produced his Chatham Dockyard Police pass for the canteen, where for some years before he had been an honorary member. They were all now allowed in! This was a favourite tale of Jim's which he would recount to friends.

In the early 1960's he was seconded to a Pay Research Unit within the Civil Service and travelled around the UK to various firms who had schools for apprentices. In 1962 he was awarded the MBE and I, with our two daughters, went to Buckingham Palace for the ceremony.

From the time Jim first entered the Yard, he was very keen to find out how the work was done; every aspect of the Yard interested him. When he was working on his history of the Yard - over 25 years - we had many outings tracing memorial tablets and gravestones, checking on people who had worked in the Yard over past centuries. Our friends would laugh as wherever we went, not only in the Medway Towns, we would make notes for the History.

Jim had sailed on the Broads with old school friends before our marriage. We had several sailing holidays after the War with our two daughters on the Broads. Sailing interested him, not motorboats. In 1956 he bought his first boat, an 'Enterprise' dinghy and for many years after sailed on the Medway with Bernard Lisgarten, a colleague. When Jim retired in 1970 the kit had been bought to build a 'Mirror' dinghy, which he said he could sail alone. This, he proposed building in our big kitchen in Maidstone Road. However, the staff came to the house, collected the kit and it was built at the College. Students collected and paid for the cost of the kit and he was presented with the completed boat. He carried on sailing until in the 1980's arthritis forced him to give up.

All his testimonials from school and college said more or less the same: "He would make a good teacher, being so thorough in his preparation and of a very friendly and gentlemanly disposition." It is interesting that this phrase was used when he was a young man, as after his death, so many of his ex-students wrote to me and all emphasised this character trait. He was even tempered, and with anyone who showed desire to learn, would go to great lengths to assist them. He liked to have what he called a 'bell horse' in his class as he felt the rest then made greater efforts to keep up.

His daughters have insisted that although he was a dedicated teacher he was also a family man, and the only time the girls did not have his full attention was when he was dealing with the school timetable for the coming term during summer vacation, after examination results were finalised.

After he retired many people came to the house for help with their degree theses - they were often dealing with some aspect of the Yard's history. Chatham Library would often ring him for information when they had queries about the Yard and he was always willing to help. He died 6 October 1987.

Grace Crawshaw

Autumn 1998

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Early History of the Royal Yards and the original Dockyard at Chatham

HM Dockyard Chatham was its usual designation in official letters, but occasionally it was referred to as the Royal Dockyard, Chatham.

Portsmouth is regarded by many authorities as the oldest Royal Dockyard. The first dry dock in England was built there in 1496, but this port, like Southampton, Rye and Winchelsea, was associated with shipbuilding in the Middle Ages. In Kent, Henry V built warships at Smallhythe on the Rother before 1420.

Shipbuilding is a trade associated with London, but the Thames Yards do not figure in early naval history since the Channel was then the scene of naval operations and the south coast ports were more conveniently sited.

Henry VII and Henry VIII laid the foundations of the Royal Navy; the former stimulated the sea service by encouraging trade; the latter, relying less on converted merchant ships, created the first fleet of true warships for the defence of the country.

From the administrative point of view there were advantages in building warships near London; workmen were numerous and naval stores were available. Henry VIII took a personal interest in his ships and he could visit the Thames Yards by taking a short trip down the river.

The importance of Portsmouth declined during the reign of Henry VIII. Woolwich was developed for the building of **Henry Grace de Dieu**, which commenced in 1513. Deptford and Erith Yards were established about the same time, but the latter had a short existence and before the end of Henry's reign, this Yard ceased to be mentioned in connection with naval affairs.

The first mention in Declared Accounts of naval shore establishments in the Medway Towns appears in 1547 when a sum of 13s 4d was paid for the hire of storehouses in Gillingham. Gillingham was a small but flourishing port; a survey made in 1563 showed that there were four quays and 27 ships and that 43 people were exclusively engaged in the shipping trade.

In the period 1548/1551, the main charge was the wages of shipkeepers, although there was some expenditure on such items as ironwork, pitch and reed, and the wages of artificers, indicating that some maintenance of ships was carried on. The ships were moored in Chatham and Gillingham Reaches.

The first order for the use of *Jillingham Water* was dated 8 June 1550 when the Privy Council directed that all ships laid up were to be, after the discharge of their officers and crews, *herbarowed in Jillynham Water*. A letter from the Privy Council to the Lord Admiral, dated 14 August 1550, ordered him:

*.. to remove the King's Majesties ships from Portsmouth to Gillyngeham Water where he shall take order that they may be calked and grounded, with commandments to take soldiers as be of the Kinges presently in Sussex and on the sea coasts to furnish them for the more safe conduct of them through the Narrow Seas.*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

The cost of the transport of 6 of HM ships from Portsmouth to Gillingham was £394 5s 2d.<sup>1</sup>

There were many reasons for the removal of the ships to the Medway. The anchorage space at Woolwich and Deptford was very limited and use of the Thames by merchant ships was increasing with the growth of trade. In those early times the majority of the warships were commissioned only in the summer and during the winter months were laid up and dismasted with shipkeepers on board. The mast, sails and rigging were placed aside in storehouses to protect them from the weather, etc. Portsmouth was too far from the seat of government and from merchants supplying the stores, nearly all of which had to be sent from London. The work of grounding and cleaning and repairing the bottoms<sup>2</sup> of ships could be carried on in the Medway with its banks of mud and the large tidal rise and fall.

Having selected the anchorage it was necessary to defend it and in 1551 it was ordered that a bulwark was to be built at Sheerness. The construction of Upnor Castle was started in 1560.<sup>3</sup>

In the Accounts for 1560 appear the following items:

Gillingham:	Wages, artificers	£240 1s 5d
	Victualling and lodging of artificers	£273 14s 0 <sup>1</sup> / <sub>2</sub> d
	Wages, Shipkeepers	£2,123 2s 6d
	Rent of storehouses	£4 11s 8d

The total expenditure for Gillingham, £3,034 3s 3d was about 10% of the total Navy expenditure. A return dated 8th March 1560, lists 427 shipkeepers on HM ships lying in Gillingham Water, and it was proposed to reduce the number by 113.

Conditions of war brought Portsmouth and the Thames to importance again,<sup>4</sup> but after the Peace of 1563 the Fleet returned to the Medway. In 1564, 23 of the largest ships of the Navy were moored below Rochester Bridge; there were 6 small vessels at Portsmouth and none in the Thames. The largest ship in the Navy at the time of accession of Queen Elizabeth I was about 600 tons.

### Plans for the Original Dockyard at Chatham

A survey and assessment of the Manor of Chatham was ordered in 1561, an indication that plans for a Dockyard were in preparation.

In 1566 rent was paid for storehouses and timber yards and for a house ... *wherein the Officers of the Marine Causes doe mete and confere* in all £7 18s 4d. This house is probably Hill House.<sup>5</sup>

The Declared Accounts show that in the 1570's, £2 a year rent was paid to Adam Keeler for the house and grounds mentioned in the previous paragraph; 13s 4d a year was paid to Thomas Wynall for a house for storing pitch, tar, oakum, etc; 13s 4d a year was paid to William Mills for a house for storing dry reeds for breaming ships at their grounding;

3s 4d a year was paid to Thomas Morton for marsh ground wherein lay mast docks for

1 For the victualling of ships see chapter 24 on Victualling

2 The bottom of the ship was cleaned by grounding or careening (the turning of a ship on its side), burning off growth on the bottom with reeds and paying the ship with compounds such as tallow

3 See chapter 20 on Defences of Chatham

4 The fleet left the Medway in 1560 to prevent French intervention in Scotland where civil war had broken out owing to religious and political differences

5 See chapter 21 on Hill House



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storing Lett masts (Thos Derkyn<sup>1</sup> had received 8 years' rent at 2s 6d per annum for this ground in 1574); 13s 4d a year was paid to Thomas Short<sup>2</sup> for ground for drying sails. All the houses were near the Gun Wharf, the site of the original Dockyard sold in 1959 to Messrs William Palfrey.

Reinold (Reginald) Barker became Lord of the Manor of Chatham in 1578 and after that date was paid 13s 4d and later £1 annually, the rent of the ground with the mast docks and storehouses. Storehouses and a wharf were constructed and John Callys (Callis) was paid £2 10s, and later £3 10s for ground . . . *wherein is builded a storehouse.*

In 1592 Barker was compensated for his ground ... wasted and digged down for enlarging the wharves of the Dockyard. In 1609 Barker took over the rent of Wynall's house,<sup>3</sup> 13s 4d per year and also received £1 rent for the land mentioned earlier.

On the death of Barker in 1609, his widow, Anne, drew the rent of the house and ground for a quarter of a year; after that the recipient of the rents was Sir Michael Sands whom she married. There is a memorial to Reinold Barker and to Anne, who died in 1616, in St Mary's Church, Chatham.

In 1617 the rent for the house, 13s 4d per annum, was paid to Robert Yardley who married Susan, niece of Anne Sands and Robert Barker, followed by Bestney Barker. £1 rent was paid for the ground on which storehouses were being built.

A rent of 15s was paid to Peter Buck for ... *certain marsh grounds adjoining to the Newe Dock Yard where Docks are made to laid Masts.*

The ground used for drying sails was passed in 1617 from Thomas Short to Kendrick Edisbury, a clerk earning 9d a day in the Dockyard, who ultimately rose to be the Surveyor of the Navy.

Thus in the 1570's the Dockyard came into being, albeit on rented ground, the men recruited for service therein being called to work by a flag carrying a St George's cross. Work was started and stopped by a Bell; anyone ringing it except by order of the Master Shipwright was fined a day's pay and put into the stocks.

The rapid increase in the rate of expenditure in Chatham is shown in the following table:

Year	Chatham <sup>4</sup> & Gillingham	Deptford	Woolwich	Portsmouth
1547	£4,167	£18,224	£3,440	£1,212
1554/5	£1,625	£ 6,624	£1,447	-
1556	£ 295	£ 2,956	£ 89	£1,916
1561	£2,164	£19,528	£ 866	£ 244
1563	£3,701	£19,707	£ 944	£2,529
1564	£2,038	£ 2,912	£ 14	£ 268
1565	£4,350	£ 445	£ 32	£ 294
1566	£3,612	£ 247	£ 10	£ 77
1567	£6,257	£ 484	£ 12	£ 66
1568	£5,843	£ 1,584	£ 21	£ 100
1569	£2,653	£ 343	£ 12	£ 50
1570	£3,133	£ 905	£ 12	£ 266
1595	£12,328	£ 5,631		

1 In 1570 there was a charge of £35 7s 6d for 'cutting and making a dock with three partitions in the marsh at Chatham for preserving of 77 great Lett spars together with putting them in rafts for towing them.

2 The Short family also received rent of 10s a year for a room near Danes Sconce 'therein to lay powder and shott to be in readiness for the defence of that place ...' (1598)

3 This house was possibly an outbuilding of Chatham Rectory

4 Chatham does not appear in the Accounts under that name until 1567 when £1,075 was allocated to Chatham. Some of this represented rent for land and buildings and for Hill House, provided for the use of the Lord Admiral and Navy Office

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After 1571, the expenditure is divided into the Ordinary and Extraordinary.

As far as Chatham was concerned the former consisted of the expenses of shipkeepers and standing officers of the ships lying up, the cost of moorings and their administration and maintenance, Upnor Castle and Sconces, clerical work, rents, watchmen, clerks, storekeepers and the wages of superior Officers of the Yard, but not their fees, which were paid out of the Exchequer.

The latter included the wages of shipwrights, caulkers, carpenters, sailmakers and bricklayers, etc.

In 1588 the Ordinary at Chatham amounted to £1,887 out of a total charge for the Navy of £2,283; and the Extraordinary at Chatham to £3,508 out of a total charge of £88,530.

In 1578 there was an entry:

*Thatches as well for covering of the longhouse wherein lieth ship toppes and gallery ores as also the pigeon house there, 15s 4d.*

It is presumed that the function of the pigeon house was to provide fresh meat for the occupants of Hill House throughout the year.

In 1579 Thomas Easton of London was paid £26 13s 4d for making a new wharf and crane at Chatham, while William Earle received £4 15s for thatching the new storehouse.

The account of the following year gives further details:

*John Hawkins, Treasurer of the Navy, for cables for mooring of ships afloat in harbour and for stream cables for help of said moorings and for all sorts of helps to haul ships aground and for their mooring and all sorts of ropes, by agreement £1,200*

*Peter Pett and Matthew Baker for carpentry work on ships £1,000*

*For great new wharf and crane set up at Chatham for receiving ordnance out of HM ships: timber, £24 6s 5d; ironwork, £42 5s 10d; brass sheaves, vidt 5 shivers and 3 brasses for the great crane ... sheet lead, £86 Js 10d*

*Peter Pett and Thomas Easton for workmanship of the great wharf and the pales belonging to the same £50 Js 9d (the pale fencing was 401 feet long)*

*To Thomas Easton for workmanship done on the great wharf by agreement, £12, and for reforming the old wharf, £6.*

*To Thomas Tibolde, Wm Derby, Jno Friday and Hugh Vaughan for filling and levelling of the wharf with earth and gravel being in length 250 feet and breadth 60 feet, by agreement, £28 18s 2d*

*Hy Daukes, painter for painting the gates, rails and iron of the said wharves, 15s.*

Daukes also received 10s for painting the **Mary Rose** and the **Achates**, the latter acting as guardship of the port.

John Hawkins, Treasurer of the Navy from 1 January 1577/8, superintended the work of the Yards. In October 1579 'bargains' were made between the Queen and Hawkins and with the Master Shipwrights, Peter Pett and Matthew Baker. 25 vessels of all classes were named in the agreement and Hawkins undertook to provide their moorings, to keep spare cables and hawsers on board, and to furnish other cordage necessary for ordinary harbour and sea use, for £1,200 a year. The agreement with Pett and Baker was that they should ground and grave (clean the bottom) the ships at least every first, second, or third year, according to their size; that they should repair or replace all faulty masts and yards that became defective in harbour, except the lower masts and yards of the 16 largest vessels; that they were to pay wages, victualling and lodging of the men they employed

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and to provide all materials and tools; they were to supply carpenters' stores to vessels in commission and pay all carriage and hire of storehouses for £1,000 a year.

A Commission of Enquiry was appointed in 1583 to examine the organisation of the Dockyards at Chatham and Portsmouth. The previous contracts were abrogated and in 1585 a new one was entered into with Hawkins alone. For £4,000 a year, he repaired the ships in harbour, attended to their moorings, paid the shipkeepers and the garrison of Upnor Castle, repaired wharves and storehouses, finding in all cases, materials, victuals and lodgings for the workmen. Pett and Baker reported adversely on this contract from which they were excluded, but after two years Hawkins gave notice to terminate it in consequence of the great increase in naval operations.

In the 16th century and in the early part of the 17th century the repairing of ships by contract was undertaken by the Master Shipwrights. In the contract there would be a clause allowing payment for 'overwork,' i.e., for additional work revealed as necessary after the ship had been opened up for repair. This method was usually cheaper than doing the work by day work, possibly owing to the lack of adequate supervision of the labour force.

### The Account of 1581 stated:

*Peter Pett and Matthew Baker for timber, iron work, rushes, etc also carpentry working, laying of said rushes and other charges employed and spent upon for lengthening of the long house upon the wharf at Chatham there set up for the storage of reed, etc*  
£14 3s 7d

*More to them for wages, victuals, lodging etc of carpenters and labourers occupied in laying of timber for HM Dock at Chatham wherein the galley **Elenor** now lieth for her better preservation, and for wages of sundry scavelmen for cleaning, scouring and new casting of said dock, and in shutting up the same by agreement* £11 3s 4d

*To Jon Bayley and 83 others for the digging and carriage of chalk, rubbish and other earth for filling the great new wharf at Chatham containing 377 feet in length and 16 feet in depth and 40 feet over, £28, and more to Peter Pett and Matthew Baker for workmanship on said wharf, they finding at their own charge the wages, victuals and lodging of carpenters and labourers* £94 5s 0d

*John Homelie, Master of the galley **Elenor**, for wages of self and 39 other mariners for 16 days being 10 July and ending 25 July 1581, for transporting the said ship from Portsmouth to Chatham, 6s 8d every man per month* £7 13s 4d

*Peter Pett and Matthew Baker for repairing and new building the **Bonaventure** finding all timber, wages, victualling, and for docking, ripping and searching and for painting of her, reforming and masting her and for a new boat and pinnace made fit for the said ship and for transporting her from Chatham to Deptford and from Deptford to Chatham, by agreement* £1,500.

*New building and repairing **Foresight**, charges on lines of **Bonaventure*** £1,800.

*Reforming and putting in order the hull of the **Ayde** when she was received from Martin Frobisher and the Company for discovering new trade being decayed and out of order* £20

*Reforming of the beakhead of 3 ships, **Revenge**, **Dreadnought** and **Foresight**, being spoilt at sea by foul weather, double bolting, sundry beams and knees loosed by labour at sea* £17

*New building the **Antelope** from the ports upwards* £20

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The dock mentioned in the second item of the Accounts was the first dock constructed at Chatham. New Stairs has been suggested as a possible position. The dock was dug 140 feet long, 44 feet wide and 6 feet deep for:

*... the laying in of HM great boats, ships' masts and pumps, and for the docking of 2 or 3 barks or pinnaces if need shall arise for their better service.*

The concentration of facilities and the community which grew around it led to the gradual change of the designation of the Yard from Gillingham to Chatham.<sup>1</sup>

The galley **Elenor** or **Ellinor**<sup>2</sup> was loaned by the Prince of Conde to Elizabeth under the Treaty of Hampton Court 1562. It was never returned and continued in the Navy Rolls until 1599. The complement of the galley was 300 men.

The Dock was originally closed by an earthen dam but in the Accounts of the following year (1582) the Master Shipwrights received £97 17s 3<sup>1</sup>/<sub>2</sub>d for making a pair of flood gates for the .. speedier heaving in and out ..of the galley **Elenor**. This included the charge for timber and iron work, and the wages and lodging of the shipwrights and the scavelmen.

There were additional charges for bringing her in and out and for laying ways and blocks in the dock. It was intended to cover the dock and the galley but apparently this covering was converted into a long storehouse set on the wharf.

Prince Alasco of Poland visited Chatham and stayed on board the galley Elenor, the bill for his entertainment was £58 4s 4d. The galley was painted by Thomas Rocke at the cost of £17 6s 6d.

In 1584 a charge of £38 2s was incurred for *... laying of sundry new ways of timber for a new grounding place of HM ships upon any occasion and providing the materials*. This may have been a type of grid or it may have been a slip up which the vessels could be hauled. There were no facilities for docking the larger vessels and from the Accounts of 1581 the **Bonaventure** of 600 tons had to be taken from Chatham to Deptford, refitted there, and returned to its moorings at Chatham.

Holinshed (Chron 1587) records that in 1582 Elizabeth accompanied the Duke of Anjou to Rochester and showed him all her great ships in the river Medway. These were inspected by the Duke and his friends who confessed that of good right the Queen of England was reported to be *ladye of the seas* and after all the great ordnance had been shot off they returned for that day again to Rochester.

In 1585 an extra protection was given to the ships moored in the river by the great chain which crossed the river against Upnor Castle.<sup>3</sup>

In the following year the first ship was built at Chatham, the **Sunne**, a pinnace of 5 guns, of length 48 feet and breadth 13 feet, for which Matthew Baker was paid £100; Thomas Rocke was paid £9 13s 2d for painting this vessel.

Additional work was done on the mast dock where a new wharf was constructed in 1584 and a new capstan was set up at the Mast dock head for towing in and out the great masts. Another mast dock was made by Thomas Nashe in 1611 as well as rehangng the gate of the Old Dock.

The Yard was guarded by Watchmen and in 1586 the new frame of a Watchhouse was set up.

Additional security was given by the use of mastiffs provided in 1592 by Henry Newcome who was paid 23s 8d. It would appear from various charges that a pale fence

1 Thom Glasgow, Junior. 'Mariners Mirror' Vol 56 No 1 1970

2 Thom Glasgow, Junior. 'Mariners Mirror' Vol 52 No 4 1966

3 See chapter 20 on Defences of Chatham

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was put round the Yard. An apple orchard was planted in the grounds of Hill House and a quickset hedge and a ditch was provided as a protection against thieving.<sup>1</sup>

In 1586 the new storehouse had a bell mounted on it. Four years later a three-storied storehouse was built but was burnt down in 1593, an estimated loss of £2,341. A frame for storing anchors was made in 1592 near the Great Ordnance Wharf. These new buildings meant the acquisition of more land at Chatham but much of it was hired at yearly rent. No ships of any size were built there but repairs and refitting were carried out.

A new storehouse was built and was thatched in 1604 at a cost of £5. Thomas Nashe, a carpenter, set up a new frame for a wharf 276 feet long beginning at the middle crane to the pale at the north end of the Yard. There were three cranes on the wharf, mainly for hoisting the guns on and off the ships and for unloading materials. The northern extremity of the Yard was probably New Stairs.

James I visited the fleet in the River Medway in 1604 and again in 1606 when he was accompanied by his Queen and her brother, Christian IV, the King of Denmark. The latter lodged at the house of Sir Peter Buck, Eastgate House, and the next day, Sunday, after attending a service at the Cathedral, the Royal party went down the river, inspected the ships, dined aboard one of them, and finally were saluted by the ships which discharged their ordnance, 2,300 shots being fired. In 1613 James I came to Rochester to meet the King of Bohemia who had married the Princess Elizabeth; the royal party viewed the ships and then left for Canterbury. Prince Charles (afterwards Charles I) was one of the party.

### The New Dockyard

The great cost and inconvenience of removing the ships from Chatham to Deptford for docking and returning them to their moorings at Chatham could only be avoided by building a graving dock at Chatham. There was no room for expansion in the old Yard between St Mary's Church and the river, and to the south was Chatham Water Mill. The only possible expansion was northwards. In 1611 there was a proposal to build a dry-dock at Chatham and enclose the Yard by a brick wall and as a supplementary proceeding to sell Deptford Yard valued then at about £5,000.

When the Board of Commissioners was appointed in 1618 there was development of the land to the north of the original Yard. In 1619 there is recorded the purchase for £200 from Kendrick Edisbury of a lease of 100 years of Lordship Fields (Lords Land) in the parish of Chatham, the site of the southern end of the present Dockyard. Edisbury and Peter Buck<sup>2</sup> the Clerk of the Checque, both of whom had leased lands to the north of Old Dock, were clever land speculators, and both profited from the expansion of the Dockyard northwards.

There was some confusion about the land deals and in the State Papers of 1634 appears:

*Observation concerning the Plott of the sites of HM Navy at Chatham: The Old Dock also the New Dock with the Storehouses thereupon built and the land thereunto belonging containing about 75 acres as appeareth by the plott whereof His Majesty hath a lease of 100 years from the Annunciation 1618 granted by one Robert Barker then Lord of the Manor of Chatham to Mr Kendrick Edisbury, Surveyor of the Navy, and by him assigned to His Majesty which lease and assignment was delivered to Mr Attorney, but it is not now found.*

<sup>1</sup> See chapter 15 on Internal Security

<sup>2</sup> See Chapter 10

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The Manor of Chatham passed from the Barker family to Sir Robert Jackson to whom was paid the rent of Lords Land, 54 acres of upland and 17 acres of salt marsh. The Account 1622 stated:

*Sir Robert Jackson KT for the rent of certaine grounds called Lords Lands containing by estymation 71 acres ... part whereof is used for the new Dockyard and ropewalk, part for a brycke and lyme kylne and part for waies<sup>1</sup> to the Docks and kylnes at £14 per annum, half a year ended Christmas 1622 ... £7.*

In addition the rent for the ground on which storehouses were built was paid to Sir Robert Jackson in place of Bestney Barker; the total rent paid by the Navy to the former was thus £15 per annum.

The Commissioners were given an estimate in 1618 by the Master Shipwrights that the cost of building a dock, lined with wood, 330 feet long and 56 feet wide, would be £1,929 17s 6d. Two old ships were to be employed for the construction of the wharves and shipkeepers were to assist the scavemen in digging out the dock. The two ships were the **Guardland**, a galleon built in 1590, and the **Mary Rose**, a galleon built in 1589. There was a charge of £56 7s 6d for:

*... breaking down the two old ships, Guardland and Mary Rose to the lower edge of the ports, and one of £6 17s for Geo Westall and 12 other scavemen for digging within a creek a way deeper and broader to haul in four galleys where they are now moored ... for digging and levelling of the ground where the Guardland and the Mary Rose were brought to ground near the new dock.*

Another old ship, a Spanish Armada vessel, **Nuestra Senora del Rosario**, was employed for a similar purpose.

*Thos Wood and sundry others for digging out the old Spanish ship at Chatham near the Galley dock ... making her swim and removing her near unto the mast dock where she was laid and sunk for the defence and preservation of the wharf there ... for wages 827 days amongst them at 16d a day ...*

This ship was the flagship of Don Pedro of Valdes, in command of the Andalusian Squadron. After her surrender between Eddystone and Start Point she was towed from Dartmouth to Chatham but she was badly damaged and was not worth repairing. This is probably the same ship referred to in the Accounts:

*Thos Wood, shipwright, for breaking and carrying away the hull of Don Pedro and two sunken longboats that laid as impediments of the wharves near the new Dockyard, £8 7s (1622).*

In the Accounts of 1619 appeared the payment of £1,853 19s 5d for constructing the new dock at Chatham. William Burrell, Commissioner of the Navy, and Phineas Pett, the Master Shipwright, superintended its construction. In his autobiography, Pett writes:

*The whole years of 1618, 1619 and part of 1620 I attended altogether at Chatham, being employed upon the making of a new dock.*

Pett was paid for

*..... his extra pains at new dock overseeing workmen by the space of 365 days at 2s a day, £36 10s, and for like pains as occasion served at the tides being 67 at 8d a tide, 44s 9d.*

1 New Dock was in the field and roadway had to be built to it. In 1620 Math Gargood and Wm Cull received £5 14s 2d for ditching out and hedging of 137 rods of ground in length for making a way through the fields from the Church to the New Dock at 10d per rod.

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Ellis Blackett, House Carpenter, was paid 72s 6d for *... several journeys from Woolwich to Chatham about the business of the new dock.* He also received £172 for framing the docks and wharves.

By 1621 the new dock was finished. John Friday, shipwright, whose wife was the housekeeper at Hill House, acted as Plug Keeper<sup>1</sup> opening and shutting the plug every tide. Pumps for the new dock were made:

*George and Richard Munds for making with HM materials sundry sorts of pumps, etc £128 15s 0112 d. Francis Wold for paving 35 square yards about the pumps set up in the new dock at Chatham, 9s.*

Work was carried out on the mast docks in the marshes to the north of New Dock and the galley dock was used to store timber.

An extensive building programme was planned and a lime kiln was built by John Chapman. Richard New was paid for making 342,000 bricks at 4s 6d per 1,000.

In 1618 the first new house was built in the new Dockyard. In the Accounts of the following year, John Chapman, Bricklayer of Gillingham, received £4 0s 6d for:

*making a new chimney and two fire rooms in a new house set up in HM Dockyard with tiling the said house with HM materials.*

A porter's lodge was built at this time.

In 1621 the building of a new ropewalk was started, Elias Blackett, the House Carpenter framed the building and John Chapman, the Bricklayer, roofed it with 'playne' tiles. The Ropery came into production and in the Accounts of 1625 appeared:

*Brushing, warping, tarring and laying hemp into all sorts of cordage .. £397 8s 4d. Working and converting HM ground towes into divers sorts of lynes .. £76 4s 10d. Framing a mill & setting it up with four stamps to make line and white oakum £13 10s 8d.*

The rope-walk was uncovered and Joshua Downing, the Resident Assistant Commissioner, wrote to the Navy Board:

*I also advise you the necessity of covering the ropewalk; it is a great loss to the King to have 50 men give over their work every shower of rain ...*

A new ropewalk 600 feet long and 20 feet wide, with other buildings was erected in 1626. (This was lengthened in 1675)

Two new cranes were built, Russell and Nicholas Bennet received £10 16s 10d for sawing 8,764 feet of timber and plank at 2s 6d per 100 feet for the new cranes. Thomas Rocke was paid £4 0s 7d for painting the crane wheels, and John Freeman, carpenter, received £50 for framing the cranes.

1 Friday was paid an additional 2s a week for 'looking after the plug at new dock and opening and shutting same every tide and cleaning the dam as well by night and day.'

As a shipwright Friday was paid 20d a day and 2s 6<sup>1</sup>/<sub>2</sub>d a quarter lodging allowance.

From 1620 Richard Payne was paid an extra £5 for 'keeping of the plug at new dock and mast dock at Chatham and also the barricades there.' After the Restoration the Plugkeeper was paid £6 per year, the pay in the 18th century was £10 per year.

1726 John Bryant, Plug Keeper, Chatham. William Tuson held the post from 1733 to 1764 and was followed by Augustine Tuson whose name appears on the Chatham Ordinary List of 1787, at a salary of £10 per year. He was buried in St Mary's Churchyard, Chatham; the inscription reads *.. he died 3 . 1803, aged 73.*

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Accidents happened: in the *Rochester Costumal* 13 September 1621, it was recorded that the City Coroner delivered to the use of the City 18d, the value of a plank forfeit to the City as a Deodand, the meaning of which plank caused the death of Jasper Maye in the New Dock at Chatham.<sup>1</sup>

In 1622, Richard Crayford, House Carpenter, received £31 ... *for setting up a new house for lodging and dwellinghouse, 91 feet long, 21 feet wide.* This is the house which may have been occupied by Thomas Norreys, the Assistant Commissioner, at the south east corner of the Yard. Elias Blackett, House Carpenter, in addition to various other works in the New Yard, built the frames for dwelling houses and lodgings on the south side of the Yard, 122 feet long, 25<sup>1</sup>/<sub>2</sub> feet wide. On the same frame he set up a turret and bell house and made a gateway, a pair of gates and a wicket. In the middle of the east range of the Yard was a clock attended to by the Porter.

The southern entrance to the New Yard must have been impressive; there was a high turret with a bell house embellished with a spindle and a vane cut with the King's arms. Thomas Rocke received £10 in 1622 for: *painting the turret and gilding in fine gold a vane cut with the King's arms and a spindle for the same turret, and gilding the King's arms in stone over the gate.*

The carving of the King's arms in stone was done by Garret Christmas.

The building programme was carried on in 1623 and a new storehouse, 201 feet long, 22 feet wide, was built on the north side of New Dock. The third range of buildings, 330 feet long and 21 feet wide was also completed. For this part of the programme over a million bricks were made at 3s a thousand and John Chapman, Bricklayer, received £247 3s 7<sup>1</sup>/<sub>2</sub>d.

In 1622, James I and the Prince and their courtiers visited the ships, and inspected the new Dockyard. The bill for wines, cherries, etc for their entertainment was £23. James I dined at Cobham Hall during the visit. Lord Cobham was in the Tower of London with Raleigh, attainted to high treason, but his wife Frances, daughter of Lord Howard of Effingham, the Armada victor, was in occupation.

A comparison of the activities of various Yards at this time may be drawn from the table of charges of 1621:

Chatham	£8,458	Deptford	£2,238
Portsmouth	£ 21	Woolwich	nil

The charge at Portsmouth was the pay of the Clerk of the Checque there. All the shipbuilding was done at Deptford; Burrell built two ships a year between 1618 and 1623; the fitting out and repair work was done at Chatham; Portsmouth was mentioned only for victualling ships and emergency repairs.

In 1623, a new dry dock was started at Chatham. It was sited approximately in the position of the present No 2 Dock. The 1619 Dock which occupied approximately the site of No 1 Machine Shop was by then in use for the docking and repair of warships. The second Dock was completed in 1625.

The Commissioners ordered the use of some of the materials of the storehouses in the Old Dock, anticipating its redundancy. It was estimated that £300 could be saved in the cost of the second dock by this move.

In 1627 there is an account of paving about the new Dockyard and Ropery and along the pales on the back side of the new buildings at Chatham. There was no wall round the establishment at this time.

<sup>1</sup> p.159 F.F. Smith, History of Rochester



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Andrew Bowen received 40s for making two *plottes* of HM New Dock at Chatham in 1619, but there seems to be no Map of the new Yard when the building work was completed! The Yard was laid out with three ranges of buildings formed into three sides of a rectangle, the fourth side of which was the river. The south range consisted of officers' houses which also formed the opening for the entrance gates which were close to the front door of the present residence of the Admiral Superintendent. The east range faced the river and ran parallel to and about 40 yards in front of the present Officers' Terrace. This included the remainder of the officers' residences and some storehouses. The north range consisted of storehouses in line with the present No 3 Dock. The space thus enclosed accommodated the dry docks, workshops and storehouses. On the south side of the Yard were the ropery buildings, storehouses, stables, etc. A wharf had been constructed on the river side of the Ropery, Anchor Wharf.  
(see 1688 Map)

On the 12th of December 1626 a special Commission, the Council of the Sea, was appointed to enquire into the inefficiency of the Navy, revealed by the defects in the ships which had sailed to Spain in 1625 and 1626. The next day a committee, including Phineas Pett, was sent to Chatham to prepare the ships for survey. The list of ships in the Medway and in dry dock at Chatham at this time is given below:

<i>First Rate</i>	<i>Second Rate</i>	<i>Third Rate</i>
Prince Royal	Dieu Repulse	Dreadnought
Merhonor	Defiance	Adventure
Bear	Red Lion	Moon
Anne Royal.	Vanguard	Henrietta Pinnace
	Nonsuch	George Drumler
	Assurance	Eagle
	Victory	Lighter
	Reformation	Desire *
	Mary Rose	Esperance **
		George **

\* pinnace new returned from the sea

\*\* prizes

The committee finished their business at Chatham by 20th December. Instructions were issued about docking several of the vessels and alterations and repairs were ordered. Shortage of money for the Navy was a very serious problem. In February 1627 the repair of **Defiance** and **Vanguard** in dock at Chatham was at a standstill for the want of 'necessaries' to the value of £400. The shipwrights with wages owing to them were not very cooperative.<sup>2</sup>

The survey had revealed that the majority of the ships were in need of substantial repair; the 10 ships built by Burrell between 1618 and 1623 were found to be defective. Buckingham, the Lord High Admiral, ordered the ships to be prepared for immediate service, and when he came to Chatham to inspect the ships in April 1627 he addressed the shipwrights 'in courteous terms,' and urged them to use the utmost diligence in fitting out the Fleet for action against the French to relieve the Huguenots at La Rochelle.

1 A Map was prepared for the Duke of Northumberland, Lord High Admiral in the 1630's, showing clearly the new Dock. This Map is referred to in the section on Hill House

2 See chapter 3 on dockyardmen

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Charles I paid a visit to Chatham in 1631, lodging at The Crown Rochester. He inspected the fleet, landed at the Old Dock, counted the ordnance belonging to every vessel which lay ashore marked and sorted for his Majesty's view. He then walked to the New Dock 'taking notice of the ropehouse and storehouses without the Dock gates.'

As £6,717 was owing for wages, the King was seen with mixed feelings by the Yardmen; these arrears were not paid off until 'Ship Money' was levied. The King visited Commissioner Pett's lodging; Pett had moved into his house in New Dock in 1631 after his appointment as Resident Commissioner. Charles walked back to the Old Dock and was rowed back to Rochester, where after dinner he took his coach back to Greenwich.

The inspection was prompted by the alarm created by the increase of shipbuilding by both the French and the Dutch. One result of the visit was that Admiralty ordered that instead of sails and rigging being kept in confused heaps at Chatham, a room with the ship's name painted on the door, was to be provided for the sails and rigging of each vessel.

In December of the same year, the Due de Vendome was taken to see the Yard and was much impressed. He was rowed along the Yard at high tide:

*in full view of the ordnance lying on the wharf, the orderly laying of anchors, the convenience of the new buildings, and the stateliness and orderly contriving of the storehouses for the magazine and the great commodity of the dry docks.*

The Yard was probably superior to anything of that kind in France or Spain at that period.

After the levying of Ship Money proposals for the future development of Chatham Yard were made by the Navy Board. They wanted to increase the security of the Yard by building a brick wall round it and the construction of more storehouses.

On 20 May 1636 the Board informed the Lord Admiral:

*the graving dock at Chatham is too shallow at the head and must be speedily digged lower ... or else it will be dangerous to bring in the great ships*

The estimate for this item was £800. The repair and deepening of this dock was completed during the Civil War. In April 1645 the Committee of the Navy wrote to the Committee of the Admiralty:

*endorsing the recommendations of Phineas Pett and William Batten for a gratuity of £40 to be given to Hy Goddard, Master Shipwright at Chatham, for the great care and pains taking in rebuilding the graving dock there, the charge of which came to £1,400 at least.*

The dock was deepened and lengthened and would accommodate two ships at a time. It was called a double dock, although it had only a pair of gates. Isaac Ewell, by bill dated 20 October 1648, received £4 for:

*attending in the extremity of winter both day and night in the new making of a pair of gates and apron of the double dock at Chatham.*

This dock was the one built in 1619, and after lengthening had the dimensions, 350 feet x 45 feet extreme breadth.

In 1639, a wall, 49 rods long and 12 feet high, enclosing the sail field, was built at the northern end of the Yard at a cost of £1,067 1s 9d by John Chapman. A large storehouse, 123 feet long and 38 feet wide was built in the Yard, and a number of improvements were made in the Ropery to meet the ever increasing demand for its output.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

The growth of expenditure in the Dockyards is shown by the table below:

Year	Chatham	Woolwich	Deptford	Portsmouth
1627	£8,445	£1,522	£1,714	£ 370
1628	5,860	704	3,171	359 (Ordinary)
1630	4,977	185	2,141	1,460
1632	6,700	97	1,025	1,591
1633	7,453	100	1,233	1,834
1636	5,050	625	3,029	3,000
Jan 1648 to	22,000	3,414	2,247	5,189
May 1649				

Portsmouth was growing rapidly in importance whilst Woolwich was almost disused in peace time; part of it was leased to the East India Company in 1633 at a rent of £100 per year. Chatham at this period was the premier Yard.

When Civil War broke out in 1642 the Fleet went over to the Parliamentary side; Phineas Pett, the Commissioner at Chatham, handed the Dockyard over to Colonels Seaton and Sandys, the representatives of Parliament, and until 1660 Chatham Yard was loyal to Parliament. The Yard was of vital importance to the Navy during the Dutch War and the development and improvement initiated by the Stuarts was continued.

The storehouses in Old Dock were still used and Warwick wrote to the Commissioners of the Navy:

*I am informed by several officers at Chatham that much of the navy stores are embezzled and stolen out of the old storehouses at Chatham Hill. You are to confer with officers and give me your opinions whether it would be advantageous to remove the storehouses to the new Dockyard.*

The centralisation policy was carried out, and in 1649, the Old Dock, or part of it, was leased to Richard Isaackson for 21 years at a rent of £18.

The following is a list of vessels built at Chatham Yard since its inception until the Restoration in 1660:

### List 1586-1660

Date	Name	Ship	Guns	Tonnage <sup>1</sup>
1586	Sonne (Sunne)	Pinnace	5	40b. m.
1586	Seven Stars	Galley	5	140
1613	Phoenix	Ship	20	246
1626	Henrietta	Pinnace	6	68
1626	Maria	Pinnace	6	68
1647	Dragon	Ship	38	414
1652	Merlin	Yacht	14	129
1653	Fairfax	Ship	52	745
1655	Norwich	Ship	28	265
1656	Blackmore	Ketch	12	90
1656	London	Ship	64	1104
1657	Cygnet	Sloop	8	58
1657	Parrot	Ketch	6	60
1658	Bradford	Ship	24	294

<sup>1</sup> See Notes on the Rating and Tonnage of Ships on page 15

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

The list on the previous page does not include rebuilds<sup>1</sup> and certainly some are missing from the list. For example the galley built in 1659 by Captain Taylor, the Master Shipwright, which was launched and rowed to Rochester by 240 men where she saluted the City with a gun 11 feet long in her prow.

*The quantity of men that must manage her will be weary of her before she is of them.*

The development of the Yards during the Interregnum may be judged by the following table:

Year	Chatham £	Woolwich £	Deptford £	Portsmouth £
1652	22,744	8,8381	10,900	6,860 ) First Dutch
1653	29,085	12,500	12,600	13,700 ) War 1652/4
1654	25,527	13,500	11,700	15,700)
1655	21,800	7,600	8,700	7,700
1656	20,000	7,000	8,000	7,000
1657	19,400	10,300	9,000	6,200

Details of the expenditure at Chatham

	1653	1654
Ordinary Expenditure	£1,358	£2,064
Extraordinary Expenditure	24,249	19,663
Ropeyard	3,477	3,799

Harwich had been brought into use as a naval base during the First Dutch War, and the skill of the Commissioner, Major Nahemiah Bourne, revealed the faults of management at the Thames Yards and Chatham. In January 1653 Commissioner Pett wrote from Chatham that he had graved nine ships in one spring tide:

*... truly it makes me stand amazed at the goodness of God in such unparalleled successes.*

The Generals at Sea had a different view and Monk wrote to the Admiralty Committee a few months after:

*It is strange that 20 ships should be so long fitting from Chatham, Woolwich and Deptford where there are so many docks, when there have been 22 or more fitted out from Harwich in half the time by Major Bourne.*

<sup>1</sup> The rebuilding of a ship involved virtually taking it to pieces and using as much of the old wood as was serviceable in the new one. In some cases a ship was rebuilt several times, e.g. see the account of the *Royal Sovereign*

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Notes on the rating and tonnage of ships

### Rating

The rating of a ship from the latter part of the 17th century depended on the number of guns carried by the ship. (The figure after the name of the ship in the table.) The classification varied over the years but very generally it did not differ appreciably from the table below:

Rate *	No of guns
1	100 and over) armed on 3 decks
2	90 and over)
3	70 to 80 ) carried on 2 decks
4	50 to 60 )
5	30 to 40 ) carried on 1 deck
6	20 to 30 )

\*From the second half of the 18th century the first three rates were ships of the line or battleships.

### Tonnage

In the 17th century and earlier the tonnage was the number of tuns (wine casks) that could be stowed in the ship, i.e., tunnage, later tonnage.

In 1694 the tonnage was defined from:

Tonnage-  $\frac{L \times B \times D}{94}$  where L is length of keel (so much as she treads on the ground)  
B is breadth amidships (inboard from plank to plank)  
D is the depth of hold

From 1720, half the breadth was substituted for measured depth of hold.

### Builders' Old Measurement (1773)

The English Tonnage law, enacted in 1773, remained in use as the official mode of measurement for ships of the Royal Navy until 1872.

Tonnage (B.O.M.) =  $\frac{(L - 3/SB) \times B \times B/2}{94}$  (The symbol *bm* has been used in this account of ships built at Chatham)

The length *L* was taken in a straight line along the rabbet of the keel of the ship from the back of the main sternpost to the perpendicular line from the fore part of main stem under the bowsprits.

The breadth *B* was taken from outside of the outside plank in the broadest part of the ship.

After 1873 *displacement* tonnage was used, a measure of the weight of the ship. For a few years both displacement and B.O.M. tonnage appeared in the Navy List.

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Estimate of costs for a Third Rate. (NMM PNS /2)

*An estimate of the charge of all materials and workmanship of a 3rd rate ship to be built for His Majesty as followeth, viz.*

<i>Elm timber for a keel, and jour inch plank underwater, and for carved work, and wedges and co 100 loads at 5210</i>	£ 260. 0.0
<i>Compass timber for floor timbers, futtocks and toptimbers, 260 loads at 65s per load</i>	845. 0.0
<i>Straight oaken timber for kelson, footwaling, clamps, beams, wales, carlines, pillars, and co 340 loads at 50s</i>	850. 0.0
<i>Four inch plank for planking her underwater and up to the lower edge of the ports without board, and for spirket wales and co within board. 120 loads at £4 per load</i>	480. 0.0
<i>Three inch plank for berthing her up from her ports without board and for her decks, waterways and co. 70 loads at £4</i>	280. 0.0
<i>Two inch plank for all other work. 40 loads at £4 per load</i>	160. 0.0
<i>Trenails, per estimate</i>	1,120. 0.0
<i>Fir timber, 45loads at 46s per load</i>	103.10.0
<i>Spruce deals</i>	160. 0.0
<i>Ordinary deals</i>	90. 0.0
<i>For all sorts of great ironwork, ordinary and extra, 14 tons at £34 per ton</i>	476. 0.0
<i>For lead and lead scuppers, black and white oakem, pitch, tar, oil, resin, all sorts of small ironwork and co per estimate</i>	1,700. 0.0
<i>For the wages of platers, bricklayers and plumbers, per estimate</i>	60. 0.0
<i>For joining, painting and carving, per estimate</i>	500. 0.0
<i>For a complete set of masts</i>	300. 0.0
	<b>£6,884. 10.0</b>

*Rt Honourable, In obedience to His Royal Highness's command, intimated to us by your letter of 31st August last.*

*Signed Peter Pett, Christopher Pett.*

### Monmouth

Third rate, 66 guns	Builder Phineas Pett II Chatham Dockyard 1667
Length Keel 118ft 9in	
Breadth 36ft 10in	
Depth in hold 15ft 6in	
Tons 856	

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Portsmouth Yard grew in importance towards the end of the 17th century. A dry dock was constructed there and the amount of money spent on Portsmouth Yard continued to increase despite some pessimism expressed by the other Master Shipwrights about the suitability of the site of the Yard. By 1670 there was expressed for the first time the idea of closing Chatham Yard. It was proposed that the Yard between Erith and Greenhithe should be established and Chatham closed owing to the shoaling of the River Medway below Rochester. Nothing came of this proposal but the problem of the river occurred again and again

The relative importance of the Yards towards the end of the 17th century is shown by the following tables:

*The number of watchmen and warders attached to each Yard in 1681*

<i>Chatham</i>	Watchmen	16	Warders	2
<i>Portsmouth</i>	Watchmen	14	Warders	3
<i>Deptford</i>	Watchmen	14	Warders	4
<i>Woolwich</i>	Watchmen	8	Warders	2

*Wages for 1½ years ending Midsummer 1695*

	<i>Shipwrights</i>	<i>Ropemakers</i>
<i>Chatham</i>	£39,723	£6,870
<i>Portsmouth</i>	35,540	6,671
<i>Deptford</i>	21,244	
<i>Woolwich</i>	18,507	6,372 (1¼ years)
<i>Sheerness</i>	4,513	

*Expenditure -September 1696 to Michaelmas 1697 (War of English Succession 1689/97)*

	<i>Ordinary</i>	<i>Extraordinary</i>	<i>Ropeyard</i>
<i>Chatham</i>	£4,511	£29,318	£5,130
<i>Portsmouth</i>	4,438	33,354	5,860
<i>Sheerness</i>	2,049	3,554	

### Sheathing of Ships

In the 1670's experiments on the sheathing of the bottoms of ships were carried out. The Tudor method was to nail wooden planks over a layer of hair and tar or felt. In the 1670's lead sheathing was tried. In September 1672 it was reported that Phineas Pett of Chatham was proceeding to sheath with lead the **Lyon** and **Henrietta** and required for that purpose 20 tons of lead. A fortnight later Pett was asking if the ships were to be: *... lacquered under the sheathing like Dreadnought ; if so 200 gallons will be needed ..*

Doubts as to the efficacy of the method were raised in 1678:

*Re your letter of 25 inst. touching the evil of lead sheathing on rother irons ... you do not for time to come sheath any of **HM** great ships with lead until more certain knowledge be had of the said evil.*

The electrolytic action between lead and iron caused the resumption of wood sheathing but this had a drawback since it concealed defects in the exterior skin of the hull and made

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

the periodic survey difficult. It was then decided to restrict sheathing to those ships directed for service where the teredo worm might be expected. Experiments with copper sheathing were made as early as 1708 but again there was the problem of electrolytic action. The replacing of iron by copper bolts about 1780 overcame this problem.

Wooden ships were subject to internal attack by dry rot. This appeared as a tough, leathery but spongy cocoon as described by Pepys on his visit to the ships at Chatham in 1684. This attack could only be prevented by sound construction and careful ventilation.

The Yard then stretched from St Mary's Church, Chatham to the present Alexandra Gate. The Dockyard worker from Rochester would have journeyed to the Yard along Landwall (now Globe Lane) up Chatham Hill (now Dock Hill) and along the road constructed in 1620. In 1660, John Taylor, the Master Shipwright at Chatham, reported that the wharfing of *Landwall leading to the State's Dock at Chatham is much decayed, there is old ship timber enough to repair it and the cost will amount to £36.*

The Commissioners of the Navy were directed to repair the wharfing and to place . . . *two posts and a chain on the same to keep it entire for the State's use.*

(In the Estimates of 1694 and 1697 appeared the item: *Keeper of Key of Landwall, £1.*)

The ships were at moorings which extended from Rochester Bridge to below Upnor Castle. A description of the ships and the Dockyard is given in Thomas Bakerville's *Journeys in England* written in the reign of Charles II.

*In the river along by Chatham I told 30 stout ships then riding within the command of the castle on the western side of the river except the Royal Sovereign which lay at Gillingham, two miles lower . . . For her defence and to exal line those that pass up and down the river a little lower, do constantly ride two ships, whose names are the **Bramble** and **Truelove**, and these ships are the utmost guards on the river.*

The **Royal Sovereign** launched at Woolwich in 1657 as the **Sovereign of the Seas**, was rebuilt at Chatham in 1659/60 by John Taylor, the Master Shipwright. She had taken part in the action against the Dutch at the Kentish Knock in 1665 and after her first rebuild was in action at St James's Fight, 1665, Solebay 1672, and Texel 1673. After the Restoration the ship was renamed the **Royal Sovereign**; she was again rebuilt by Robert Lee, the Master Shipwright at Chatham, in 1685, and was destroyed by fire at Chatham in 1696.

### Mooring chains

Experiments had been tried in the use of iron mooring chains. On 17th August 1648 it was ordered that two moorings of chain were to be laid at Chatham for the mooring of ships there . . . *in the same manner as hath been done at Woolwich.* The chains weighed 2 cwt 2qrs 14lb to the fathom and cost 5d a pound. It was found that Medway mud had a very deleterious effect on hempen cables.

### Building Programme 1677

In 1677 Parliament approved of the building of 30 ships, the money being derived from a land tax. The Act, 29 Charles II, c 1, stipulated that the 30 ships were to be completed within the time in which the money was supplied, viz two years. The ships comprised one First-Rate, 9 Second-Rates and 20 Third-Rates. The ships at a cost of £584,978 2s 2½d were to be built, all save one, in the Royal Dockyards rather than . . . *expose them to contractors who would . . . build slight* to save money. In fact six of the Third-Rates were built in the Thames Yards by contract and another at Bristol. Chatham was to build



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

four of the 30 ships. The ships took longer to build than planned. In his diary entry 17 April 1683, Evelyn wrote:

*I was at the launching of the last of the 30 ships ordered to be new built by Act of Parliament, named the Neptune, a second-rate, one of the goodliest vessels of the whole navy, built by my kind neighbour, young Mr Shish, his Majesty's Master-Shipwright at the dock.*

On 9th October 1677 Commissioner Beach asked Phineas Pett, the Master Shipwright and John Lawrence, his Assistant, for an estimate of Yard improvements for the new ship-building programme. Within a week, Pett and Lawrence provided these estimates:

### Upon New Account

Laying ways for South slip and making an additional wharf to it	£170
For new sawpits and houses over them; two store rooms under sail/oft	£139

### Upon Repairs

<i>Lowering North slip and lengthening it 20 feet into the river, Laying ground ways and planking the bottom of it also lengthening wharves on each side of it</i>	£680
<i>Making new slip for boatmakers by boat house</i>	80
<i>Taking wreck of <b>Royal Oak</b><sup>1</sup> to pieces</i>	25
<i>Building new mast house with reed loft over it, etc</i>	779

The new sawpits were needed for the new ship construction. It had been proposed in June 1667 that there should be five in the Yard, two near the docks and three adjoining the Pitch house.

There was a mast pond to the north of New Dock but the need for increased space for the storage of masts etc, led to the renting of river creeks.

The Accounts show such entries as:

*Jno Dove, rent of creek at Chatham, 1673, one year £3.*

*George Minors, half years rent of Galley Creek at Chatham for masts 24 June 1673, £4.10s.*

*Martha Norwood, rent of creek in Medway, quarter ending Christmas 1671, 20s.*

From the 1677 programme three third-rates, **Ann**, **Pendennis** and **Berwick**, and the 1st-rate **Britannia** were launched at Chatham between the years 1678 and 1682. **Ann** was built in the Double Dock and launched in 1678; the other 3rd-rates were built on the slips.

1 The *Royal Oak*, second-rate of 76 guns, which had been built at Portsmouth in 1664, was one of the casualties of the Dutch attack on the ships in the Medway in June 1677. A Navy Board Letter dated 9th December 1667 stated: The wreck of the *Royal Oak* is to be rebuilt again and for the most convenient doing you propose that the slip at Chatham be lowered six feet and wharfed and new foundations laid. The slip is to be fitted accordingly and the *Royal Oak* built therein.

Presumably this was not carried out and it was not until 10 years later that further consideration was given to the lowering of North slip for the laying of the keel of the new third-rate of the 1677 programme. A Navy Board letter of 22 February 1676f7 stated: 'Royal Oak ready to be taken to pieces at head of double dock if approved, the Charles being repaired at the after end.'

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*Ships building and under repair*

28 January 1677/8

*An account of how all HM own Docks and launches are this date employed:*

Chatham

<i>In the head of the Double Dock</i>	<i>New Ship 3rd Rate</i>
<i>In the stern of that Dock</i>	<i>Charles</i>
<i>In the Single Dock</i>	<i>St Andrew</i>
<i>On the new launch</i>	<i>New Ship 3rd Rate</i>
<i>Preparing for launch, almost ready to be raised, the frame of a new 3rd-rate</i>	
<i>The keel is laid</i>	
<i>In the head of the Double dock</i>	<i>Norwich</i>
<i>In the stern of that Dock</i>	<i>Greenwich</i>

Ref: Pepysian Library Sea Mss 2266, F128

The Commissioner, Sir Richard Beach, was always prepared to challenge his professional advisers, as is illustrated by the following letters to the Navy Board.

18 June 1677

*Double Dock: length from campsell of the head to the gates, 340 feet, so that we find there will be room for building a First-rate ship at the head and for docking any of the old built Second-rates or Third-rates at stern.*

*Signed Phineas Pett and Jos Lawrence.*

Beach disagreed with this and said he feared that the dock was not wide enough for a First-rate as the breadth pretended by the ship is 48 feet, the dock being but 50 feet from campsell to campsell at the mouth and half way down not above 44 feet, but he (Pett) pretends to lift her high enough at her launching.

14 November 1678 Beach suggested laying keel of new first-rate in single dock after launching **London** and .. *not in double dock as Shipwright intends, owing to charge there was of getting **Prince** out of the double dock, as she was wider than the dock.* He said that **London** when repaired and finished would be little inferior to the First-rate and could not see the urgency for First-rate which could wait for the launching of **London** and be built in the single dock leaving the double dock for two ships at a time. (**London** was a 96 gun ship which had been built at Deptford in 1666 and had been another casualty of the Dutch attack on the Medway. **Prince** was a First-rate launched at Chatham in 1670; during the battle of Solebay of 1672, Sir John Cox, who was Commissioner at Chatham 1669/72, was killed in action aboard her.)

Another ship which had suffered damage in the Dutch raid was the **Old James** which was converted from a Second-rate to a Third-rate in 1677. In a letter from Chatham to the Navy Board dated 22 February 1676/7 it was stated:

*According to the Surveyor's order we have set jury masts in **Old James** and rigged them and tomorrow will haul her ashore to put on a rudder then she not need a vessel to tow her about when she is ready to be set up.*

Mention has been made of the Dockyard wall built to enclose the sail field at the northern end of the Yard. In 1673 Commissioner Beach recommended the completion of the wall around the Yard, as repairing the fence would cost nearly as much. The building was authorised but its construction raised troubles: the officers desired doors, communicating with their own houses, made in the wall, and ... *hardly seem to have troubled to conceal*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*their motive.* A further complaint dated 13 October 1678 was submitted by the Commissioner:

*By making an end of building the brickwall about the Yard your Honbles were pleased to give order and to direct me likewise to see no use should be made of the ground that lies between the brickwall and the Shipwright's Garden but only to set up some posts for drying there of clothes. The Shipwright (Phineas Pett) hath digged up all that ground at his backside which you intended for a sail field.*

This Dockyard wall lay approximately on the line of the rear wall of the present Dockyard Terrace.

### Pumps

One of the problems of the Dockyard was the pumping out of the graving docks. Chain pumps were used; these consisted of balls, discs or packed material strung together with links into an endless chain, dipping into the water below, drawn upwards through a pipe on one side and hanging free from the other side. The motive power of the pumps was provided by men or horses. The Admiralty was interested in a pumping engine designed by Sir Samuel Morland, tutor to Pepys at Cambridge, a kind of force pump which was driven by wind or horses. On 10th September 1673, the King, attended by the Principal Officers of the Navy, saw Morland's pumps in action at Woolwich Dockyard. They were impressed and Morland undertook to transport the pump to Chatham whereby wind

*... or the easy labour of a horse when at any time the wind shall Jail it may clear that dock of the water with which it is continuously annoyed.*

The Navy Board were instructed to make out a bill to Morland for £350. The pump, however, was not up to the duties that had been required of it and in the end the pump was used for pumping the bilge water from a ship rather than a dock.

### The New Storehouse

In June 1685 the Navy Board proposed the erection of a new storehouse at Chatham; they had observed a large number of cables and most of the ship rigging lying on board the ships liable to damage and incurring extra cost of moving them from ship to ship for their docking or careening.

The Special Commission appointed by James II in 1686 approved an estimate:

*... for building a storehouse at Chatham for the great cables lying full length and to fit same with capstan and windlass; also post and owles, to have three floors, the two lower for cables, cordage and sails, and the upper for rigging, to be by the side of the bank without the ropehouse; timber £1830, stone, bricks and tiles, £810, labour £855.*

The storehouse was 600 feet long, of three storeys, and attics with dormer windows.

In 1685, Pepys (appointed Secretary of the Admiralty in 1684), the Duke of York, Prince George of Denmark, the Duke's son in law, and the Earl of Dartmouth, visited Chatham. They found that the ships in ordinary had been neglected and many of the storehouses were empty. From 1679 to 1684 there was a period of neglect in which the Fleet including the 30 new ships of 1677 suffered.

In 1686 the Navy Board was superseded by Special Commissioners for reorganising the Navy. On 27th April 1686, James II, Prince George of Denmark and the Special

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Commissioners visited Chatham Yard. The ships lay rotting at their moorings, their plank patched with old boards and canvas, their holds, according to Pepys, ...*with toadstools growing in them as big as one's fist*. There was a conference at the house of Edward Gregory, Clerk of the Checque. James II visited Chatham again in May 1686 with Pepys. He examined the famous New England tree, 39 inches in diameter, which was being made into a mainmast for the Royal Sovereign.<sup>1</sup> James ate in Sir Phineas Pett's house and met his Officers in the Banqueting house in the garden. To save further expense to Pett, James after had his meals on his yacht. .

As a result of this Commission's work the Fleet was put into fighting trim:

*20 ships of the line rebuilt, repairs on 69 others carried out and the various yards equipped with a total of 30 storehouses, all stocked so that they hold an aggregate of 8 months' reserve of stores for every ship afloat.*

William's Commission of Public Accounts which investigated the 1686 Commission found that the latter had built 12 storehouses at Deptford, 1 at Woolwich, 21 at Chatham and 20 at Portsmouth, beside docks.

In the Accounts appears the item:

*For new storehouse at Chatham, Sire John Fitch and John Fitch, £5350, abating £38.10s, 7 September 1687.*

The total cost of the storehouse and wharf was £7,362. This storehouse is shown on the 1698 Map (3).

A similar one was to be constructed at Portsmouth and in the Accounts is the item:

*Isaac Betts, Master Shipwright at Portsmouth, journey to Chatham to see new storehouse lately built there, 24 to 28 June 1687, £2.10s.*

### The Two New Dry Docks (1698 Map 58 & 59)

The increase in size of the ships was rendering the Chatham docks obsolete, and plans were drawn up for new and larger docks; ships were supposed to be docked at least every three years. The docks were built of wood with smooth sides and steps at each corner leading to the bottom. It was not until 1693 that the first stone docks, stepped at the sides, were built at Plymouth and Portsmouth.

The double dock at Chatham suffered flooding owing to springs welling into it. It was 350 feet long but only 45 feet wide; **Britannia**, 100, built in 1682 was of 48' 8" beam.

By 1682 the construction of one or more new dry docks at Chatham was being seriously considered. There was some indecision whether to build a double dock to take two ships or two single docks; the first scheme was from 20 to 30 per cent cheaper than the second, but far less effective for rapid work. In November 1683 it was decided to build two

<sup>1</sup> A rough rule in mastmaking was that the length of the mast was 1 yard for every inch diameter. 'Made masts,' i.e., masts made of several pieces, were used at this period. In a communication dated 3rd February 1689/90 it was reported Oake and Britannia are in the two new docks at Chatham. Lee (M S) suggested a made mast to be used as Britannia's mainmast and the foremast from a single tree: 'As to Royal Sovereign's made mast they may be provided in the time and at the charge following; Mainmast by 45 men in a fortnight and foremast 40 men in the same time which will require each 6 Riga trees, 22 hands each, and a ton of iron each. There are two fletchers here, which may serve as cheeks for the mainmast, but none for the foremast. The charge for mainmast will be £490 and for the foremast £440.'

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

docks, one by contract and one by the Navy Board on Mr Lawrence's ground to the north of New Dock each 200 feet long. An entry in the Accounts dated 24 February 1683/4 reads:

*... Sir Phineas Pett, contract with to be prepared for building single dock at Chatham.*

In a communication of 25 October 1684 the dimensions of the single dock were given by Robert Lee, the Master Shipwright.

Gates to head	198feet
Breadth at boome	53 feet
Main breadth	67 feet
Breadth at apron	32 feet
Breadth at altar	6feet
Depth at gate	22 feet

On the 4th December Lee suggested making the two docks larger.

In December 1684, negotiations were opened with John Rogers, House Carpenter, to build the second new dock at Chatham, and he offered lower terms than Sir Phineas Pett. On 6 May 1685 the Navy Board stated Rogers' proposals:

*... his lowest price to be £5,000 and if he does any more wharfing than is herein mentioned for such as shall be 22 feet and 12 feet in depth he will have £5 a foot. The estimate of the charge of a single dock, finding all manner of materials, to be length 200 feet, breadth at boom 54 feet, at the apron, 36 feet, was £5,157 6s. This included 16 bitt posts and nine substantial crabbs and the floor of timber to be five inches thick and 34 feet broad from the apron ... the groundways to lye across the same to be 34 feet long, 20 inches broad and 16 inches thick to lye within 24 inches of one another ...*

The payment terms were £1,000 on signing the contract and the remainder spread over the 15 months allowed for constructing the dock. An entry in the Treasurer's ledger dated

27 September 1689 reads:

*To John Rogers, House Carpenter, 27th September 1689, in full satisfaction of a new single dock lately built by him in the marsh adjoining their Majesty's Dockyard at Chatham together with outwharfing thereunto belonging ... according to contract made with Navy Board dated 22nd June 1685, £5310. More for work done supp. above contract £62.*

A second entry of the same date reads:

*The aforesaid John Rogers, 27 September 1689, for workmanship performed according to dimensions, scantlings of timber, depth of wharf to the new single dock lately built below HM Yard at Chatham. Also for making the gates wickets to the said dock according to two contracts dated 26 November 1684 and 26 January 168516, £1,327. More for work done over and above contract, £56 8s.*

(Gates of two leaves instead of triple wicket gates, were first erected at Portsmouth and Plymouth in 1693)

In the period 1686 to 1688 the new works at Chatham were enclosed by a brick wall and the storehouse mentioned on page 18, together with the wharf to front of it was completed. Ten new masts, each 112 feet long and 17 feet broad were also put up (1698 Map 62) and the ground at the back levelled.

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In 1687 some of the buildings were removed from Old dock then in possession of the Ordnance Office including the Locksmith's shop, Anchor Forge and Boat houses. In the Map of 1698 the Anchor Forge is shown between the Ropery and the river (11) the Great Smiths' Shop just to the south of the first New Dock (54) and there is shown in the Payhouse Field the Locksmith's forge (2). The plan and elevation of the Locksmith's Forge is shown on the reproduction of the Inventory of 1698, together with those of the Great Long Store (3), the three small cranes (4) and the storehouse for *cordige* (5)

### Ship List 1660-1690

To illustrate the work done at Chatham for the Navy apart from rebuilds and refits, etc, a list of ships built from 1660 to 1690<sup>1</sup> is given below:

Dale	Name	Guns	Tonnage
1665	UnityTransport		68bm
1665	Prosperous	Hoy	68
1665	Little Victory	5th-rate 28	175
1666	Monmouth	3rd-rate 66	856
1670	Prince	1st-rate 100	1395
1671	Queenborough	Yacht 4	27
1672	Little London	Smack 16	16
1672	Sheerness	Smack 2	18
1673	Hound	Sloop 4	50
1673	Chatham	Sloop 4	50
1673	Chatham Double	Sloop 4	50
1674	Katherine	Yacht 8	131
1675	Defiance	3rd-rate 64	898
1677	Mary	Yacht 8	155
1678	Anne	3rd-rate 70	1051 (1677 programme)
1679	Pendennis	3rd-rate 70	1093 (1677 programme)
1679	Berwick	3rd-rate 70	1041 (1677 programme)
1680	Isabella	Yacht 6	52
1682	Britannia	1st-rate 100	1708 (1677 programme)
1687	Salamander	Bomb Ketch 10	134
1687	Sedgemoor	4th-rate 50	633
1689	Experiment	5th-rate 32	370
1690	Dolphin	Fireship 8	267

### Further Improvements 1691-1694

There were complaints that the docking and undocking of the ships in the second new Dock was dangerous for the want of a pier head on the north side. An estimate of the charge dated 22 January 1691/12 for:

*Building a piece of wharfing upon the front of the north peere or wharf of the new dock at Chatham to stand out towards low water mark as per draft thereof for the safety of docking and undocking HM ships, length 134 feet, £1,013.*

This is shown on the Map illustrating the improvements made at Chatham between 1688 and 1698.

<sup>1</sup> 1664/1667 Second Dutch War. 1672/1674 Third Dutch War. 1689/1697 War of English Succession

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In 1693 an estimate of £1,700 was approved for repairing the apron, wharf and gates of the Old Single Dock. The condition of the docks in 1694 is shown in this letter from Chatham Officers to the Navy Board dated 19 February 1693/4:

*... 7 o'clock in the morning ... as to the time it will take up (girdling<sup>1</sup> the Royal William<sup>2</sup>), the second new dock being rendered unserviceable by the Sovereign's breaking some of the ways whilst she lay there ... the Old Single Dock being to be taken up by the Royal Katherine, the double dock not having water enough for either of them (Duke and Royal Katherine)<sup>3</sup> nor the breadth to heel them ...*

Signed Robert Lee, Robert Shortis, Thomas Kirke, Sampson Bourne

Vast quantities of ballast were required. In the Accounts appear:

*14 February 1687 to 23 April, Jeremy Gregory, Clerk of the Checque, for payment for 2,320 tons of ballast from Greenwich to the New Wharf at Chatham, £77.*

Originally it was proposed that a new ballast wharf was to be built to the north of the Yard, but finally it was decided to build it before the old cordage house lying between the dock gate and the new long storehouse. In the Accounts appear:

*John Rogers, 27 October, 1691, for carpentry, materials and workmanship in erecting and finishing a new ballast wharf against the old cable storehouse without HM Yard, Chatham, containing 338 feet at 23s 6d per foot, £397 3s*

*John Leatherhead, 21 October 1691, for filling up new ballast wharf against the old cable house, 337 floors at 8s a floor, £134 16s<sup>4</sup>*

In the Map of 1688 masthouses are shown lying to the east of the old mast pond. In the Estimates of 1694 appears:

*For taking down 10 masthouses fronting new dock at Chatham and setting them up further eastward in the marsh near the 8 masthouses lately built and filling up the mast pond now situated between the masthouses and the heads of the new docks which very much annoy them by constant draining of the water through the ground into the dry docks and to make room to lay timber, £702.*

The masthouses referred to are 63 on Map of 1698.

### South Mast Pond

In the Estimates of the following year:

*For making a mast dock before masthouse on north side of Chatham Yard 360 feet long, 240 feet broad in one part and 240 feet long and 60 feet broad in another. Digging of said dock and replacing gates of the old mast dock in the new one and levelling of hollow ground, £800. (64 on 1698 Map)*

1 Girdling was one of the methods of increasing the stability of a ship; it consisted of adding strakes at the water line to the ship's side

2 The Royal William (ex Prince) was launched at Chatham in 1670

3 The Katherine, a 2nd-rate was built at Woolwich in 1664. Duke, 2nd-rate 90 was built at Woolwich in 1682

4 Floor = 18 feet square and 1 foot thick

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In the Accounts appear:

*Edward Hill, 7 September 1695, for scavel work in digging a mast dock on the north side of Chatham Yard, 28301!2 floors at 6s a floor, £849 3s.*

*Edward Hill, 3 June 1696, for digging it 2 feet deeper in wake of gates and apron, 149 floors at 6s a floor, £44 13s and rest, 752 floors at Bs a floor, £300 16s.*

*Richard Billinghamurst, 1 December 1697, for bricklaying in two ranges of brickwork. with 16 arches<sup>1</sup> in each to lodge mast in HM Dockyard, Chatham, £1,306 10s.*

*(In the following year he received £247 4s for similar work.)*

South Mast Pond was filled in about 1885.

A letter to the Commissioner from the Navy Board dated 1 February 1699/1700 confirmed the estimate of £593:

*... for erecting a wharf before the mouth of the Great sluice of the Mast Dock to riverwards, 80 feet long and 18 feet deep in one part and 120 feet long and 14 feet in the other part.*

John Rogers, Master House Carpenter, received £180 for his part in the erection of the wharf.

The brick wall shown on the Map of 1688 was moved. In June 1696, William Elfy, Teamer of the Yard at Chatham, who rented the land from Admiralty, petitioned for a decrease of rent:

*... because of (1) building a brick wall to ye new Yard, (2) digging a new mast dock, (3) their carrying ye said brick wall, a great way further out enclosing thereby a piece of very good land, (4) laying great quantities of timber on a larger part ... behind ye dock, (5) cutting away of ground for digging of chalk to level to ye yard and ram in about ye dock.*

The rent was abated by £7 per annum.

*Edward Hill, 22 January 1696/17, for digging down and levelling the bank whereon the brick wall stood in HM Yard, 1,212 floors at 6s a floor, £363 12s.*

The Estimates of 1695 mention:

*The charge of removing the new Smith's forge from the side of the Mast Dock at Chatham directed to be filled up and to place the same between the Old and New Docks near the Plank Yard and to make an addition thereto of 63 feet in length and 25 feet wide with yards for coals and fix in said additions all old fires that now stand near the new Boathouses which since those buildings were made and the New Docks built do inconvenience work and danger the whole Yard in case of fire, £342. (The forge is marked 54 on the 1698 Map)*

Further improvements were made by the building of new wharves. A new wharf was built before Boat House Square in 1699. An Order dated 21 January 1702/2 authorised:

*... the building of a new wharf 10 feet further out than the old between the stern of the old Single Dock and North slip which will contain stern of the Double Dock, £22 15s.*

For these works permission was given to enter 20 House carpenters and 20 scavelmen.

<sup>1</sup> The searches were to keep the masts underwater



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In the Estimates of 1694 appears an item:

*For building a New Wharf with bricks before the old Storehouse in the rope ground at Chatham in lieu of the old one decayed and the foundations of storehouses in danger thereby to be 280 feet long and 35 feet deep in front towards the river for conveniency of loading and unloading vessels at all time,  
£1,098. Erecting a capstan house upon the same, £80.*

An additional building for the storage of cordage, etc was built in 1692.

The Double Dock was lengthened in 1703.

### North Mast Pond

In 1702 work started on the digging of the North Mast Pond which exists today. The warrant for the contract with Edward Hill is dated 22 May 1702; a similar warrant authorised the entry of 20 more house carpenters for wharfing the new mast dock. In the Declared Accounts of 1703 appears the item:

*Edward Hill, for digging a mast pond at Chatham, £726 15s*

### Further Improvements 1703-1716

On the 12 July 1703 estimates of the charge of building a new house for Commissioner St Lo, and erecting a jetty head adjoining the old Single Dock were sent to the Secretary of the Admiralty. The jetty head and the Commissioner's new house is shown on 'Lempriere's Map' of 1719. The warrant for this work was sent on the 16th July 1703. The Map also shows Boat Houses erected in 1703 between the South Mast Pond and the river and a Masthouse to the north of the North Mast Pond.

Commissioner St Lo proposed the building of offices in the middle of the Yard for all officers. The Navy Board considered that the officers having offices already (in their houses) it would be a double charge but the proposal was approved and in July 1708 the officers were asked to survey the:

*.. dyall lately to be sett against the new offices in the Yard <sup>1</sup> and to report what Messrs Walker and Hasted may deserve for the paint and quill work done thereto.*

Mr Burton, the Smith, had charged 6s for the new stile for ye dyall of ye new offices.

(The Map of 1698 showed a clock in the east range of the Yard)

The great gale of 27 November 1703 damaged buildings at Chatham and Sheerness. The Navy Board wrote on 1 December 1703:

*Upon what you write of the scarcity of tyles, the price they are started to and the great quantity wanting for repairing the buildings at Chatham and Sheerness, we shall write to Captain Wright, the Commissioner at Plymouth to provide and freight a vessel from there with slate for the service of HM buildings at Chatham and Sheerness.*

The dry docks were still giving trouble. In 1714 the Master Shipwright reported that the **Sandwich** in the double dock was having her bottom caulked and that the apron of the dock was in such a bad condition that the water could not be kept out. Approval was sought for the employment of house carpenters and scavelmen to work early and late depending on the tides for necessary repairs to the dock. On the 11 August 1715 the Navy Board proposed the entry of 20 house carpenters for repairing the apron of the first new dock.

<sup>1</sup> Shown on Lempriere's Map of 1719

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On January 1714/15 the Navy Board directed that 3 sheds were to be:

*... done with old stuff and covered with deales, which deales are to be so fixed as not to render them un-serviceable.*

Each shed was to be 80 x 24 feet. One was to be placed between the second new dock and the Golden Horn slip and the other two along the side of the Top House. The sheds which were for preserving the planks which were otherwise exposed to the weather are shown on Lempriere's Map.

In 1716 a new brick Anchor Wharf was built. 1,629,000 bricks were ordered for this purpose and 10 more labourers were entered to assist the bricklayers. For expediting the work in the Yard, approval was also given for the entry of 20 joiners, 20 house carpenters and 20 scavelmen. The old wooden wharves were being rebuilt in brick when renewal was necessary.

In February 1716 **St George**, Discovery ship, 654 bm 132ft x 34ft was sunk as a foundation at Chatham

### Movement of Ships

The ships were moved to and from their moorings by oared boats such as galleys. About 1680 a tow engine was developed by Admiral Sir Edward Spragge which was driven by a paddle, the motive power being 96 men, replaced later by 6 horses. According to report, empty hulls of third-rates could be towed from Blackwall to Woolwich in an hour against the wind, giving a speed of about 3 mph. Fourth and Fifth-rates could be towed with masts and rigging standing.

An In-letter to the Navy Board dated 7 December 1689:

*Re your Hans of 28 September on petition of Geo Raleigh and Partners proposing making Towing Engine for Thames and Medway discoursing with Stratford one of the partners ... We have agreed with Mr Stratford for building same (horses, harness, anchors and cable excepted) for £760. £250 to be paid when the boats are built, £200 when the engine is completed, £100 when the same is arrayed at Chatham.*

A similar letter dated 30th September 1682:

*Petition of George Raleigh and Thomas Stratford Gent for payment of bill of £173 made out by the Principal Officers of the Navy for the service of their engine in towing ships down the river and for future they are to be paid as Pilots. Bill to be paid and Pilots granted.*

The towing engine at Chatham was ultimately condemned as unserviceable and in 1690 an estimate for £200 was given for building a vessel to row with 40 oars, 4 men at each oar, for towing ships to and from Chatham and the Black Stakes. The vessel was to be 80 feet long, 16 feet 6 inches in breadth, with oars and ground tackle.

Another method of moving the ships in the Medway adapted during the 18th century was by means of warping posts placed on both banks; these were discontinued in 1773 when warping buoys were laid down.

*17 August 1702 By the Principal Officers and Commrs of HM Navy Whereas articles of agreement have been made and executed between Sir Tho Littleton Bart Daniel Furzer Esq and Sir Edward Gregory Knight three members of this Board for and on behalf of Her Majesty of the one part and Philip Staines of Frindsbury*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*in the County of Kent Yeoman of the other\_ part for the use of several fleets ditches and creeks now in the possession of the said Philip Staines which is found convenient for HM service for the better preservation of her masts and other tumber as also for the use of several salt marshes for the setting up and placing posts or bollards for the more convenient transporting of HM ships up and down the River Medway and likewise for the use of the creeks and ditches aforesaid for laying such sullidge ballast rubbishes etc as shall be taken out of the said river for the more secure riding of HM ships therein.*

*And whereas it is therein agreed that the said Philip Staines shall have the sum of*

*£37 12s 6d paid present for all arrears of rent ... and for the future to have £4 per annum for the use of the said creeks and ditches etc and 20s per annum for setting up and continuing the said posts or bollards*

At this period, trials were carried on at Chatham with Savery's paddle boat, operated by oars fixed to drumheads and geared by means of iron bars to a capstan turned by horses. With the aid of 4 horses it was possible to tow the biggest ships down stream against wind and tide. This device was rejected by the Navy Board and the conventional man- driven boat was used for towing purposes.

To assist navigation a beacon was erected on Oakum Ness in 1773; the rent for the site was paid for by the Navy.

Members of the Navy Board and of Trinity House reported on the 8th March 1680 on the moorings at Chatham. They recommended that each ship should have two new cables each year; a new ship to have three new cables the first year and afterwards two each year. The other recommendation was to lay up on Stanlett (Stangate) Creek all 3rd-rates and old 2nd-rates, the place being suitably defended by fortifications.

### Dredging

Mention has been made of the silting up of the River Medway. An account of the ships that ground at their moorings in Chatham Harbour from the Bridge downwards was despatched on 24 September 1680:

1. *Resolution hangs on ground to the N in her swing with wind at south but very little*
2. *Hampton Court sues<sup>1</sup>, 3 feet abaft on bank*
3. *Lenox sues 1<sup>1</sup>/<sub>2</sub> feet abaft on the bank in midst of channel*
4. *Restoration sues 1<sup>1</sup>/<sub>2</sub> feet with S wind*
5. *Grafton sues 2<sup>1</sup>/<sub>2</sub> feet on bank in middle of channel*
6. *Anne sues 6 inches on the bank in the middle of channel but enough water each side*
7. *Hope sues 1 foot at spring tide wind NW*
8. *Duchess hangs a little on east shore (at very low ebb with her stern) wind being straight west*
9. *St Michael sues 5 or 6 inches in midst of channel*
10. *London sues 3 or 4 inches*
11. *Cambridge sues 8 inches*
12. *Royal Sovereign grounds her stern at edge of channel at NE, the wind as SW, 10 or 12 inches*

Numbers 1 to 7 and 11 were 3rd-rates, numbers 8 to 10, 2nd rates and Royal Sovereign 1st -rate. Some of these ships are shown at their moorings in 'Almond's Map' of 1685.

1 Sue or sew. Sewed- a ship resting upon ground where the water has fallen, is said to be sewed by as much as the difference between the surface of the water and the ship's floating mark

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The account goes on:

*There is middle ground Lymehill (Limehouse) Reach occasioned by a breach in Dels Marsh which broke in 7 or 8 years ago and was not stopped until 4 years ago which has spoiled one mooring and occasions 6 of the other ships to trail aground. If the banks were removed there would be another good berth and prevent the other grounding, though as yet they have received no damage as the water rises 4 feet before the stream is made up.*

In October 1680, Sir Phineas Pett and some knowing men went to Chatham to look at the moorings; presumably dredging took place after, since the Navy Board contracted for a dredging machine.

On 4 June 1685, the Navy Board wrote to Pepys:

*The members of this Board who were lately down, with several Master Shipwrights, upon the survey of HM ships at Chatham having observed that some of the first and second-rate ships in that harbour which do all lye above Upnor Castle are very liable to cambering for the want of great quantities of ballast to be put on board them which cannot now take in without prejudice in regard of the shoalness of the water where they ride at present and thereupon propose their removal into deeper water. (i.e., lower down the river)*

A Map dated c.1688 showed sufficient moorings at Chatham for some fifty vessels, 14 First-rate, 1 Second-rate, 22 Third-rates and 14 lesser rates.

Ordinary May 1698

	1st Rate	2nd Rate	3rd Rate	4th Rate
Chatham	4	8	7	5
Woolwich	-	-	2	6
Deptford	-	-	1	4
Portsmouth	2	3	6	8
Plymouth	-	-	2	8

Richard Arden, Lighterman, was paid £2,700 by Jeremy Gregory, Clerk of the Checque, on 15 December 1699 for:

*... removing a shoal between Cockham Wood and Gulchiness being 200 yards long, 160 yards wide, making it from 8 to 13 feet deep at ordinary spring tides, between 21st December 1698 and the above date.*

The estimate for this project reads:

*.. for removing bank of sullage at mid-channel att Gulchiness, Medway, shoal 600 feet square, £3,000.*

The Commissioner was ordered on the 9 December 1699 to go ahead with the deepening of the river before the docks.

*Mr Arden, Ballastman, who is employed in removing the bank Gulchiness, has promised to undertake by removing the soyle, to make 16 or 17 feet of water more, the charge whereof is estimated at about £2,500.*

In the Estimates of 1702 the sum of £1,950 was assigned for dredging the river and on

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the 5 June 1702 the Navy Board ordered a Bill of Imprest to be made out to the:

*Clerk of the checque, Chatham, for £400 on account of his paying Mr Arden, the Undertaker, for removing a piece of shoal ground in the Medway against the lower dock which shall be assigned for payment, etc.*

Further payments of £300 and £340 were made in April and September 1703 respectively.

The dredged material was:

*to be taken up to such creekes and other convenient places as should be appointed by the Master Attendant as it might be clear without danger of returning to any further annoyance of the river ...*

On 30 September 1702 the Master Attendant asked that Mr Arden:

*... be employed on shoal ground between the 13th and 14th mooring from the Key and the bank or shoal between the 4th and 5th mooring from the Key*

Commissioner Kempthorne of Chatham wrote to the Navy Board in November 1723 about the shoaling of the Medway, which had progressed so rapidly within his experience that large ships could only come between half-flood and half-ebb tides. He said:

*We find the banks in the river daily increase, especially near the Docks.*

The Muscle Bank he remembered 12 or 14 years previously as only dry for 10 or 12 yards at low water was then (1723) showing three quarters of a mile. A survey followed but the report was not so unfavourable as Kempthorne's, who, however, was embodying the results of daily experience.

The mooring sites were dredged, but the increased draught of warships meant that fewer vessels could be laid up in ordinary at Chatham. In Elizabeth I's reign any ship could be moored above Upnor; but by 1774, when 74-gun ships were of 1600 to 1700 tons, there were few moorings, possible five, for such ships at their ordinary draught between Rochester Bridge and the lower end of Gillingham Reach. By taking out ballast, a procedure considered wrong, since water-logged timbers were exposed to air and might decay, twenty could be moored. Others were at moorings lower down the river and in Stangate Creek. Again ships moored in the river which were lightly ballasted were liable to capsize when carrying sail.

In 1743 the Navy Board placed a contract with Messrs Major & Haydon for clearing mud from the mooring sites in the Medway. Messrs Pantin & Machin offered to do the task more expeditiously and cheaply and in 1745 were given the contract. Between 1745 and 1759, £8,000 was spent in taking up sullage from the river, Mr Pantin providing 19 lighters and 3 engines at a cost of £5,000. The attempt was a failure and the contract was cancelled in 1749; and by the 1770's it was no longer possible to ballast fully the largest warships and keep them afloat at Chatham.

### **Problems of ownership of the land on which the new Dockyard was built**

Mention has been made of the land which was leased by the Navy from Sir Robert Jackson, Lord of the Manor of Chatham. In addition, there were parcels of land owned originally by the Levesons of Whome's Place, Cuxton, and the Dean and Chapter of Rochester Cathedral which were rented by the Navy at this time. The total area taken on lease was about 80 acres.

The Manor of Chatham passed from Sir Robert Jackson to Sir Oliver Boteler of Barham Court, Teston, and from 1637 there were payments of rent, £15 for Lordship fields to Sir

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William Boteler, his son. Tithes amounting to 24s were paid on Lordship Fields employed for making cordage to John Pyham, Minister of Chatham, and after 1635 to John Vaughan, his successor. In 1664 the tithes were given as 24s but in the Estimates of 1696 the tithe payment was stated to be £2. In 1787, Doctor John Law, Minister of Chatham, received the £2 for tithe payment.

About 1641 the 71 acres of Lordship Fields was conveyed in freehold to the Crown. Some of this land, not needed for Dockyard purposes, about 50 acres, was let out to tenants by the Navy. In the Accounts for 1650 appears:

*Rent received for Lordship Fields of Edward Orice, farmer, for 3 years last December, £42.*

After the Restoration this land was let to Thomas Wood, Teamer of the Yard<sup>1</sup> and by the end of the century the rent was £30, for, with the growth of the Yard, more and more of the 71 acres were taken over by the Navy. In 1677, a letter from the Yard to the Navy Board stated:

*We are necessitated to use part of Teamer's Field next to the Ropehouse for storing timber so that he (John Wild) must be allowed for it.*

When the new docks were built in 1685/6, more ground was taken from the Teamer, and later his complaints were heard when the new Mast Dock was built.

Details are now given of a parcel of land about 9 acres, on which the docks of 1685/6 were built. This land, owned by the Dean and Chapter of Rochester Cathedral, had been leased to Peter Buck<sup>2</sup> followed by his son, and later Sir Peter Pett, the Commissioner of Chatham Yard, who charged the Navy a rent of £4 10s until his death in 1674. In 1665, Pett was paid £35:

*... in consideration of his damage sustained in his corn and hay eaten up by horses belonging to the train of artillery at Chatham*

and in 1672 he was paid 70s by the Commissioners of the Ordnance:

*... for loss sustained by building a new fort in his marsh near Chatham for the better securing of that harbour.*

The lease of this land was then sold to Joseph Lawrence, AMS at Chatham. He charged the Navy a rent of £12 a year until 1677, when he increased the charge to £19 a year with the proviso that the lease could be passed from Lawrence to the Crown on a payment of £240. In 1681 Lawrence renewed the lease from the Dean and Chapter for a term of 21 years.

The Navy continued to pay this rent to Lawrence until 1694 when in the Accounts appear:

*5 December 1694 Joseph Lawrence, Master Shipwright, Woolwich, for price and in full satisfaction for a piece or parcel of marsh ground of about 9 acres adjoining HM Yard at Chatham assigned to HM use 14 September 1694 for the remainder of term of 21 years, £240.*

<sup>1</sup> The Teamer was the contractor who provided teams of horses for hauling timber and carting stores in the Yard. The lease held by the Teamer included a house and stables situated at the bottom of Westcourt Street, Brompton, a spot which was handy to the Yard and for farming the rented land. In 1677 Commissioner Beach was asking for an order to repair the Teamer's house and barn.

<sup>2</sup> Buck was Clerk of the Checque at Chatham from 1583 to 1596. He held the office of Clerk of the Ships after. He died in 1625.

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The Navy then paid the rent of 9s to the Dean and Chapter:

*Tenants to maintain and keep repaired the Docks, Masthouses and other appurts. and the fences and to pay and discharge all taxes etc.*

In addition to the rent of 9s there was a fine (or lease renewal fee) every seventh year payable to the Dean and Chapter which meant that the overall rent of the ground was of the order of £19 per year as was paid to Lawrence. The renting of this ground was carried on until 1805 when on 24 December 1805 the freehold was acquired from the Dean and Chapter for the sum of £648.

The other piece of land, of about 9 acres, where the original docks were built, involved a series of negotiations which lasted until 1707. This land together with the Manor of Westcourt, was sold in 1627 by Richard Leveson of Whome's Place, Cuxton, to John Duling of Rochester; the lease was held by Peter Buck, followed by his son, who rented it to the Navy. The Duling's estate passed to Eliza Salmon, his daughter, from whom it passed to George Bowers, a Royalist. He was involved in risings against Parliament in 1649 and 1654/5. His leader, John Gerard, was executed and Bowers was forced to flee. The land, on the expiry of Buck's lease and the confusion of the Civil War, was left in the hands of the Navy, and in 1656, an investigation was started into its title. Negotiations were opened with the children of Eliza Salmon, and whilst the estate of George Bowers was examined; nothing was done about the situation.

In 1661 the widow of George Bowers conveyed his estate to Augustine Caesar, MD of Rochester, who in turn gave the estate to his nephew Augustine Caesar and his wife Alice. On the death of her husband Alice married John Higgins. In 1692 the Higgins and the Caesars started to claim the ownership of the land on which two docks and some of the principal buildings of the Yard were built. The problem was to distinguish between the land which had originally belonged to the Boteler's from that which belonged to the Duling's. There were stones marked JD which presumably marked off John Duling's land and these enclosed about 9 acres, the area of the original Dockyard; the Higgins and the Caesars claimed only three acres. (See Almond's Map of 1685)

After a series of petitions, the Crown in 1707 settled for a payment of £4,000; £1,200 to Mr & Mrs Higgins, and £700 apiece for the four daughters; an expensive settlement, but at stake was the ownership of a substantial part of England's largest Dockyard.

An excellent and detailed account of the rents and leases associated with Chatham Dockyard is to be found in 'Archaeologia Cantiana', Vol LXXIII, 1959, pages 75/6 by Frederick Cull.

### Development of the Yard in the early part of the 18th century

The architectural description of some of the buildings mentioned below have been taken from 'The Buildings of England, West Kent & The Weald,' by John Newman.

Many alterations and additions were made in Chatham Yard at this period and some of the buildings may still be seen:

Commissioner's House	1703	Clock Tower Building	1720
Sail Loft	1734	Dockyard Terrace	1729
Stables	1724	North Mast Pond	1702etc

The Commissioner's House, the residence of the Superintendent of the Yard is now called Medway House. This house was built roughly on the site of the original Commissioner's House, at the request of Commissioner St Lo, to replace the house built

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about 1622. Newman's description

*The crown is the Admiral's House (Medway House), built about 1703. Plum coloured brick. Seven bays by five. Three storeys and a hipped roof on a cornice with deep, carved brackets. Fine staircase with three slim twisted balusters per tread, and a ceiling, painted by Thornhill, that depicts Neptune crowning Mars. Tradition has it that the painting was intended for the Great Cabin of the Royal Sovereign, built in 1701. <sup>1</sup> Additions to the south including a billiard room, decorated c 1790. The house stands in an extensive walled garden.*

Most agree that the house is a glorious example of Queen Anne architecture. According to some critics, its appearance has been marred by alterations to windows and the addition of the front porch but these modifications have produced a more convenient house.

The southern entrance to the Yard is Main Gate. Newman's description:

*The Main Gate is dated 1720 on its inner face. Towards the outside world it presents a Vanbrughian appearance, <sup>2</sup> shamming fortification, with its massive square towers left and right of the entrance arch, the turret-like chimney stacks at their angles, and the small blank windows, bulls-eyes over pairs of round-headers. In the centre an immense coloured relief of the Royal Arms. This is not contemporary, but dated 1812, and signed Coade & Sealy, i.e., it is of Coade stone. Inside, the towers are seen to house lodges, with windows at three levels.*

On the inside face of the Gate there is a Coat of Arms of George I bearing the date 1720. Presumably this coat of arms was originally on the south face of the Gate.

The East Lodge housed the Boatswain of the Yard and the West Lodge the Porter. The Boatswain was in charge of the labourers of the Yard. He was responsible for loading and unloading the ships, the handling of cranes and slings, haulage, and the cleaning of the Yard. In the 18th century most of the stores were transported by water. Originally the post was held by a warrant, later a commissioned officer of the Navy, but after 1961, the post was held by a civilian. The Porter was responsible for the security of the Yard.

In the period 1718/1720, the Yard and the Ropery were enclosed by a brick wall which ran from the site of the Royal Marine Barracks to Alexandra Gate. Initially it was not intended to enclose the Ropery at the southern end which had always been outside the confines of the 17th century Yard. However, the wall was extended in 1719 after the Dockyard Officers had pointed out that the Ropehouses:

*... lye naked and (liable) to the ill designs of every desperate sly villain and the bolder attempts of a giddy rabble and unruly mobb, whenever spirited up by ill- designing men, or it may be by the secret and sudden attempts of desperados hired by the foreign enemy.*

The Dockyard Wall ran directly behind the gardens of the Terrace Houses; there were six watch towers in the Wall and two of them are still standing. The watch towers carried similar decorative motifs to those on the Main Gate. They seem to have been ornamental

<sup>1</sup> See 'Mariners Mirror' Vol 72 No 4 August 1986

<sup>2</sup> In 'History of Today' November 1964 there is an article on Sir John Vanbrugh by Christopher Lloyd. He wrote: "The commissions that crowded upon him during his last ten years between the end of Blenheim and his death in 1726 are too multifarious to describe here- Military Academy at Woolwich, the Dockyard Gates at Chatham, the Gun Wharves at Plymouth and Portsmouth ..."



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rather than defensive. In 1764 one became a subaltern's guard room when Marines took over Yard security and another was used as a powder magazine. In 1771, the latter, probably the northern of the existing pair became the home of two Dockyard model makers. Number 1 Tower House, the southern one, was converted into quarters in 1879, and about 1960 was occupied by the Admiral Superintendent's Steward. No 2 Tower House, the northern one, was entirely reconstructed in 1909, and in modern times was occupied by the Inspector of Mains.

The Dockyard Terrace was built some 40 yards to the east of the original range of Officer's houses. John Newman describes the Terrace as follows:

*The other officers were only a little less nobly housed (than the Commissioner). For them, the three storeyed Officers' Terrace was erected c 1727/9 further north east. Twelve houses in all, two brought forward each end and two more in the middle. These are four windows wide, the rest three. Deep Doric porches. Battlements of idiosyncratic shape, justified by the associations they conjure up. Once more the spirit is Vanbrugh's. Service road at the back, mews and a garden for each house beyond that.*

On one of the original drawings of the Terrace, the occupants starting from the north end, were shown as: First and Second Master Attendants, Master Caulker, First and Second Assistant Master Shipwrights, Master Shipwright, Clerk of the Checque, Surgeon, Clerk of the Ropeyard, Master Ropemaker/Master Joyner, Clerk of the Survey, Storekeeper.

No 1 The Terrace has a rainhead marked Geo III. There is an oval sign on the front of the Terrace marked: Thomas Penn fecit 1790. At the southern end of the Terrace is a house which was occupied by the Captain of the Dockyard; this appears to be a 19th century building dated about 1850.<sup>1</sup>

The southern end of the Sail Field was terminated by two ranges of brick-built stables, a harness room and a coach house for the Commissioner. These were built about 1737; some of the space was used by the Commissioner for keeping cows. In the 1960's these buildings were used as a garage for the Admiral Superintendent and for a Church room. The stables for the Officers were built a little earlier up against the northernmost wall of the officer's gardens.

In 1718 a cordage house and tar cellar was built on Anchor Wharf. It was 194 feet long and 35 feet wide and had three storeys and vaulted fireproof cellars. There were sets of wide doors serving each floor each with their own wall crane. There were no fixed partitions allowing maximum freedom for storage. This was pulled down about 1793.

The area of the Yard after the building of the new brick wall in 1720 was 61 acres. The extent of the increase of the area of the Yard from 1698 to 1720 is shown by the examination of the Map of Lempriere of 1719 and the Inventory Map of 1698.

In addition to the land required for the expansion of the Yard, a large area had been acquired for the defence of Chatham.<sup>2</sup> The latter was on the river side of a road which ran in a fairly straight line through a point corresponding to the Middle Basin in the Dockyard, through the bend in the Brompton Road to the top of the Lines. After the completion of the purchase of this land for defence it was decided not to commence the fortifications, and in 1716 the whole of the area was leased to Mr Goatley for a term of 31 years at a yearly rental of £330.

1 See chapter 9 on Captain of the Dockyard

2 See chapter 20 on Defences of Chatham

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A letter referring to the acquisition of land for the extension of the Yard is quoted below:

*Navy Office*

*29th April 1720*

*Re land in occupation by Mr Turner, partner with Mr Goatley. Mr Turner is unwilling to spare so much of two fields as the officers of Chatham represented to be necessary for enlarging the Yard. We represented in ours of the 22nd March last that the whole 16 acres contained in the two fields Mr Turner mentions will be of great use to HM service.*

*The land Goatley holds was purchased for the use of the Officers of Navy Ordnance and Victualling as well as for fortifications and in the lease granted there is power for redemption reserved in the following clauses ... We desire Treasury to take possession and pay six months' rent and assign them to the Navy as was understood they were purchased lying contiguous to Chatham Yard.*

*J. Acworth, &c*

A further extension northwards occurred about 1770 when the area of the Yard was increased to 68 acres. By then the Yard was defended by the fortifications erected after 1756.

### The Sail Loft

In the development of the Yard in the early part of the 18th century the old sail loft, then about a hundred years old and shown on Lempriere's Maps was replaced by the building seen today which bears the date 1734. The actual building was probably started in the 1720's. John Newman describes this building as follows:

*The long three-storeyed block south of the Mews was built in 1734 as the Sail Loft. Given an ugly coat of rendering in the 19th century, it is interesting for its construction with the top floor slung from the roof structure. On the floor below, where the sails were finished off, the original benches and lockers of the sailmakers survive.*

Early drawings show that the parapets of the Sail Loft were originally crenellated in keeping with the style of Main Gate.

Apart from the basement there are three floors: Machine (including colour loft), finishing and cutting-out floors, each 270 by 35 feet. The wall thickness is between two and three feet. The top floor was pillarless to give space for laying out the sails. To get some idea of the size of the sails of a 1st-rate, the length of the main yard of the Victory was 34 yards long. Sewing machines were introduced into the sailmaking and rigging departments in 1881. To strengthen the floor, oak pillars, presumably ships' timbers, were inserted between the basement and the machine floor.

In modern times the Sail and Colour Loft were used for the manufacture and fitting of canvas awnings, sails, loose covers for furniture, curtains, overalls, protective covers for ships' equipment and flags, etc.

On the east side of the Loft was a sail field where sails were spread out to dry before storing; most of this has now been built on.

From the early days of the Yard, sails for the Navy were made both inside and outside the yard at Chatham by contractors, often using canvas supplied by the service. In 1637 Hildebrand Pruson died; both he and his father had been sailmakers to the Navy for 60 years. Edisbury, the Surveyor of the Navy, then tried in vain to have sails for the Navy *made ... in his Majesty's own storehouses in Chatham and at cheaper rates than formerly.*

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There was a Master Sailmaker in the Yard and sailmakers were entered for limited periods to work under him. In the Account of Chatham Extraordinary Christmas Quarter 1622, there was a charge for five sailmakers at 20d a day each. After the pay revision of 1695, the Master Sailmaker was paid 18s a week.

The contract Sailmaker for Chatham and Sheerness in 1702 was Mr Hayes. The Button family provided Master Sailmakers in the Yard from about 1670 to 1730. The warrant of the last, John Button, was renewed after the accession of George II in 1727. Most of the sailmaking work was put out to contractors but the supply of sails by these often proved unsatisfactory. A letter sent by Captain Sir William Juniper, Superintendent at Chatham and at the Nore, to the Secretary of the Admiralty, dated 17 May 1708, concerning the delay of sails for the Norwich states:

*I have frequently applied to the Contractors' Foreman for their dispatch. And after many promises made me ... they at last plainly told me that their workmen will work no longer for their master unless he will come down and adjust with them and pay their wages, he having engaged to clear with them every three weeks. And they assure me he has not done it for the last three months and they have had very little from him in all that time; so that they cannot hold out, having neither money nor credit ... Several other ships at the Nore and Sheerness have sails to be made by the contractor, Mr Blakeney of Chatham, which are not in Stores ...*

The contractors complained that they could not get the stores received nor the bills for them without bribery.

*All the clerks and even the watchmen and labourers do expect and insist upon "treats", the officers required a douceur.*

The difficulty of ensuring a regular supply of sails when they were urgently needed in wartime led to the practice of making most of the sails in the Yard. By Navy Board Order dated 31 July 1716:

*The Rt Honble the Lords of the Admty having been pleased by the Lordships' order of the 15th June past to direct that the sailes for the Ships of the Royall Navy should henceforth be made by Day Work in His Majesty's own Yards, whenever it can be done, in the manner that has been proposed by the Master Sailmakers in His Majesty's Yards of Deptford, Chatham, Portsmouth, Woolwich and Sheerness ... in regard a very great difference hath been found in the sails made by day work in HM Yards and those made by contract not only in charge but in their durability.*

Sailmakers were entered and to increase their number apprenticeship was encouraged. When the pay of the dockyardmen was in arrears the sailmakers did not leave the place of their employment; they knew they would get their money ultimately and in the meantime they could get credit from tradesmen and others. The delays in payment led to malpractices such as the making of clothing out of canvas to sell to other men in the Yard and the taking of canvas and rope out of the Yard<sup>1</sup>

The number of sailmakers in the Yard remained fairly constant over the years, about 30 men; in 1803, the complement of sailmakers was 36 men and 8 servants. In times of urgency, such as the Napoleonic Wars, sails were still made by contractors.

By 1808 the salary of the Master Sailmaker was £250 per year but the privilege of having

<sup>1</sup> Details of their pay etc, are given in chapter 3 on Dockyard workmen

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apprentices was abolished. He was assisted by a Foreman paid £140 per year and Leading Men appointed one to every fifteen sailmakers. The pay of the Leading Man<sup>1</sup> was:

*Superintending Day Work: 4s 9d a day in summer and 3s 9d a day in winter  
Extra - 6d an hour*  
*Superintending Task Work: 5s 9d a day in summer and 4s 6d a day in winter  
Extra - 7d an hour<sup>2</sup>*

A store cabin was established for the Sail Loft and a cabin keeper appointed for it with a pay of £70 per year. For some reason this post was abolished and in 1811:

*The Master Sailmaker stands charged with all stores demanded for the use of the Sail Loft as no cabin keeper is employed.*

The Master Sailmaker was a subordinate of the Master Attendant. The Master Attendant stated in 1811:

*The Honble Board's orders are received and read by the Commissioner every morning at 10 o'clock. The Master Sailmaker attends the Master Attendant's Office and receives any orders respecting his department.*

George Roome, appointed Master Sailmaker at Chatham in 1855 stated in evidence given at the Dockyard Enquiry of 1858, that he was 61 and had a salary of £200. There were 20 sailmakers, two Leading Men and one apprentice.

In 1866, the office of Master Sailmaker was abolished and the Foreman of Sailmakers received £160 per year, changed in 1873 to the range £130 to £180 per year.

By 1880/90 the propulsion of warships by sail had virtually ceased. However, there seems to be always work for the sailmaker in modern times. As well as the tasks mentioned above the sailmakers repair safety equipment such as life rafts and even make portable containment tents of polythene for the Nuclear Refitting Centre. The work of the colour loft will never be out of date.<sup>3</sup>

In 1974 there were 31 sailmakers, 12 skilled labourers and 3 apprentices. In addition there were 53 women colour makers<sup>4</sup> two supervisors and 3 labourers.

Apprentices in the 1960's were given formal trade training in their first two years. In the first year they learnt how to hand sew canvas articles and ropes; to fit covers, etc, and the splicing of ropes and lines, etc. In the second year they were taught the measuring and cutting of covers, awnings, etc and the preparing of them for machining; the preparation of lagging for ventilation trunking and pipes; carpet laying, including measuring, cutting and fitting; and the cutting of materials for the repair of life rafts. They spent two months in the colour loft learning the assembly of signal flags, etc and the last six months of the year was spent on the Finishing floor of the Sail Loft, three months with an Instructor and the last three months on their own.

1 Only shipwrights and caulkers were supervised by salaried Quartermen. The other trades had (besides Masters and Foremen) Leading Men paid a daily rate.

2 See chapter 3 on Dockyardmen

3 In a booklet about Apprenticeships in the Royal Dockyards 'A Job worth Doing,' it was stated: 'According to Dockyard reckoning, a battleship of today uses almost the same amount of canvas gear (awnings, gun covers, etc) as did the Victory when in full commission.'

4 Their output was mainly protective clothing for the Dockyard

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### Master Sailmakers

1660	John Pollard	1729	Stephen Newell
1661	Peter Ellis	1729	Nicholas Stanbridge
1662 (as at 1668 gap in records)	John Smith	1759	Nicholas Stanbridge Jnr (suptd)
1671	Francis Button	1768	Thomas Moulden from Sheerness (suptd)
1708	Thomas Button, M Sailmaker Sheerness to Chatham	1803	William Beare <sup>1</sup>
	Francis Button, M Sailmaker Chatham to Sheerness	1811	Abel Hubbard
		1818	Thomas Rencker <sup>2</sup>
1726	Thomas Button	1843	George (or William) Colvill
1727	John Button	1855-64	George Roome

Admiralty did not appoint another Master Sailmaker but promoted John Hands to be 'Foreman of the Sail Loft.'

### The Clock Tower Building

On the 1698 Map is shown the Sail & Rigging Loft (No 37) near the head of the Double Dock. In the 1720's the Navy Board ordered its rebuilding and the sailmaking activities were moved to the new Sail Loft,<sup>3</sup> whilst the Riggers were transferred to a new Rigging House on the Ballast or Anchor Wharf shown on the map of 1755, built in 1719.

The original Sail and Rigging Loft had nine sawpits underneath; six at the north end were kept and a 15 bay three-storey building was erected in 1723. From a model of the Yard made in 1774 it is seen that only the southern end of the lower part of the building was of brick, possibly a part of the original structure, weatherboarding was used for the upper two floors. The clock tower from the eastern range of the original buildings of the Yard was erected above the new building.

The new building was used for various purposes; the sawpits were used until after the Saw Mills were in operation; an upper floor became the first Mould Loft <sup>4</sup> at Chatham, and other parts were used for stores and offices.

In 1802, Samuel Bunce <sup>5</sup> was responsible for the rebuilding of the Clocktower building in red brick; the wooden framework was found to be defective. The building has a timbered structure on the roof containing four clock faces which is very similar to the one erected over the Rope House at Woolwich in 1698. This structure is surmounted by a wooden belfry with a weathervane on top. The clock on the present building is said to date from 1802.

The Mould Loft in the Clocktower Building proved to be too small and great care had to be taken not to break the moulds. In 1753 a Mould Loft was built above the new Mast House and the space in the Clocktower Building was handed over to the Storekeeper. A small portion of the original Mould Loft floor still retains the scribed building lines of

1 See chapter 3 on Dockyardmen

2 See chapter 4 on Apprentices

3 See chapter 4 on Apprentices

4 On the wooden floor known as the Mould Loft the lines of a ship were drawn and faired full size -- a process known as 'laying off.' It is thought that ships were not laid off on the Mould Loft floor until the early part of the 18th century.

5 See chapter 8 on Civil Engineering

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ships, one set of which is traditionally believed to be those of the **Victory**. Some have expressed the opinion that some of the lines on the floor are those of ships much later in date than 1753 throwing some doubt on the above statement.

The Clocktower Building was for many years a Present Use Store but was later used as a Return Store.<sup>1</sup>

### Mast House & Mould Loft

Mention has been made of Mast Houses on the south side of the South Mast Pond (No 63 on the 1698 Map). Between 1753 and 1755 new Mast houses and a Mould Loft were constructed on the site of the Mast Houses mentioned above. The sub-soil under the site of the new building was of an unstable nature and elm piles were driven in to provide a good foundation. The houses were timber-framed with gabled roofs. Originally there were eight houses and the whole building was 121 feet long and 230 feet wide, later the demolition of the westernmost bay reduced the latter measurement to 199 feet. The original cladding was timber and this survives under a sheet iron skin added later. Originally the roofs were tiled. The buildings were designed by Yard Officers and erected by Yard workmen.

When the erection of the Mast Houses was well under way it was decided to put a Mould Loft above two bays of the building. The 1755 Estimates allowed for:

*making six new sawpits in the New Mast Houses for convenience of fitting trussletrees to ship masts.*

At each masthead there was a structure consisting of trestle-trees, cross-trees, top and cap, the whole combination being needed to support the topmast and spread its shrouds. The topmast had its heel between the trestle-trees, which ran fore and aft on either side of the lower mast just above cheeks; it also passed through the cap, which sat on the extreme top of the lower mast. The topmast shrouds came to dead-eyes at the edge of the top, which was a platform resting on the trestle-trees and cross-trees.

The main frame of the building is carried on 8 rows, originally 9, of massive oak posts 12 x 14 inches thick. The posts are set at 11 feet intervals, and the rows of posts are 28 feet apart. Each row supports substantial wall plates, and tie beams connect rows. The pitched roofs are framed up with tie beams, king posts and short collar bars. Each mast house had double doors at each end; those at the north end opening directly onto a slip leading to South Mast Pond. The Mould Loft was 55feet x 119 feet, and to span this area 13 tie beams, each 57 feet long, 12<sup>1</sup>/<sub>2</sub> inches wide and 18 inches deep, were employed.

From the tie beams rise queen posts; these in turn have collars on which are king posts.

Each side of the Mould Loft building had 11 sash windows running almost down to floor level; augmenting these were a single row of dormers on each side of the roof.

In 1833, the Mould Loft was extended on either side to allow for workshop space and board and mould stores. The area under two adjacent mast house roofs were taken for

<sup>1</sup> The storehouses in the Yard served many purposes. There were those associated with manufacture such as the hemp and yarn stores of the Ropery. The stores holding cordage were close to the Rigging House so that ropes could be cut to the required length and prepared for the ships.

There were general stores and similar versions, present-use stores, which provided stores required by ships preparing for sea. The lay apart stores were divided by wooden partitions, each space being used to store equipment for a ship in ordinary or undergoing refit: sails, standing and running rigging. Over a long period the functions of these stores became interchanged. In addition there were return stores. Further details of modern stores are given later

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this purpose. The rafters of these were altered and the sash windows swept away and a second row of dormers were inserted in the roof as compensation.

The Mould Loft floor was laid on closely spaced joists which were housed on the tie beams of the Mast Houses. In 1835, the present floor was laid over the original one; the lines of warships may still be seen on this floor.

A catwalk supported on the tie beams of the Mould Loft runs the length of the building. This walk led to the original Drawing Office at the north end. The benches of the early Dockyard draughtsmen could be seen in the 1960's together with memorials to old employees in the form of urns painted on the walls of the attic. The names of some are given below:

R Pemble	10 years Draughtsman	December 31 1858
G Eldridge		
J Allen	Apprentices	
R Hopper		
W Beveridge		1875
T Logan		

Secured to the beams there are half-block models of ships built in Chatham Yard. The practice of making a scale model of a warship before the actual vessel was built continued into the 19th century. The civilians of the Navy Board could not follow ships draughts which were of beauty rather than of obvious clarity. After 1720 the hull was fashioned from a solid block of wood, usually yellow pine, instead of the expensive framed construction. During the Napoleonic Wars simplified models, such as half-block models fixed to a back board, were employed. In the days of the iron ships the half-block models were used for arranging the edges and butts of the outer bottom plating.

In the building there are boards giving details of some of the ships whose lines were laid-off on the Mould Loft floor.

The building was the scene of a ghastly crime. George Blampied killed James Catt, a fellow shipwright, by a blow with an adze on the 16th April 1875. The killer who had been working on a mast was certified insane and had, indeed, been earlier discharged from Barming Asylum.

After 1885, the upper part of the Mast Houses became a Pattern Store: later it was used as a shop for the instruction of Joiner apprentices. A new Mould Loft and Drawing Office was opened in 1885 on a site near Alexandra Gate; this was destroyed by fire in 1902. During the period of rebuilding, the top floor of the gunnery shop and the floor of the Lower Rigging Shop were used temporarily.

### Mastmaking

By the end of the 18th century all large masts were 'made' masts; iron hoops were then shrunk on to give additional strength. Masts for warships built in both Royal and private yards were made and fitted in the Royal Dockyards.

To prevent the wood for the masts from drying and splitting much of it was stored under water in the Mast Ponds. the Mast Houses were connected to the Mast Ponds by short slipways and because of the simple equipment needed for mast making there was little difference between a 'working masthouse' and a masthouse for storing masts.

An extract from instructions for the preservation of masts and spares ashore is given:

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*They are to lay cool, have the benefit of the air free from damp, not nearer than within two feet of the ground, quite disencumbered from any other stores, easy to be got at when wanted, either for use or to be paid with a coat of stuff once a year to keep their surface from growing dry and crusty, and the whole of their disposition to be such as, that, in your opinion, the said masts will lay in a better state for being preserved than they were to be continued in their places on board.*

The following is provided to give some indication of the magnitude of the materials used in mast making. The dimensions of some of the masts were given by the following rules:

Main lower mast:	Length= (length of lower deck+ extreme breadth) ÷ 2
Fore lower mast:	8/9ths main lower mast
Mizzen lower mast:	3/4ths main lower mast
Main top mast:	3/5ths main lower mast
Fore top mast:	8/9ths main top mast
Mizzen top mast:	3/4ths main top mast
Top gallant mast:	1 1/2 top mast

Thus the main lower mast of the **Royal George**, 1st-rate, 100 guns, 17 feet x 51 1/2 feet, was in length 38 1/4 yards and diameter 38 1/4 inches. (Diameter reckoned as 1 inch to the yard length)

The dimensions of the main lower mast, top mast, gallant mast, and yards of a 100-gun ship according to the 1745 Establishment were:

		Mast		Yard
Main lower mast	38 yds 5in	38 1/8 in	33 yds 8 in	23 3/8 in
Main top mast	22 yds 32in	20 1/2 in	23 yds 33 in	15 1/4 in
Main gallant mast	11 yds 0 in	11 in	16 yds 18 in	10in

With the transition from sail to steam the importance of mast making declined. When metal masts displaced wooden ones the work was transferred to the iron workers in the Yard. The making of swinging booms was one of the few tasks left for the mast maker.

### Master Mast Makers

The making of masts, yards, spars, tops and capstans was specialised work carried out by shipwrights. This work was supervised by the Master Mastmaker, a post filled by the promotion of a Yard shipwright or by a Carpenter of a warship. Assisting the Master were Foremen and Quartermen. The highest paid craftsman was the Liner of Masts.

The first mention in Declared Accounts of payments to a mastmaker is in 1619:

*Richard Holborne, Wm Weyborne, for making with HM materials a new mast, etc for the Defyance, £20 5s.*

When the Pett family was under attack in the Interregnum, complaints were levied against Richard Holborne, the Master Mastmaker, a cousin of Commissioner Peter Pett, that he had joined the Kentish Rebellion, purloined the State's stores, made bedsteads at the State's charge, .. *also two coffins for himself and his wife when they die, which coffins are now in his house.*

In defence, Holborne said that he paid for the workmanship of the coffins and bedsteads. Orders were given for his discharge together with other Dockyard employees.



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

By warrant dated 13th May 1647 Thomas Gardiner was to be entered as Master Mastmaker at Chatham and Richard Holbome, discharged. He held this office after the Restoration and was followed by William Pett, the son of the Assistant Master Shipwright, who was charged with Holbome in 1651. The duration of his appointment is not known, but a letter dated 31st January 1671 stated:

*Re row over the Newcastle's. masts, J Cox, Commissioner at Chatham, says he. sent for the mastmaker who wrought under William Pett, formerly mastmaker, who says it was New England tree or Bronsden ...*

In 1690, Commissioner Gregory was ordered to prosecute William Wyborne, the Master Mastmaker at Chatham who had been suspended on suspicion of embezzling iron work. He was discharged and his son, Nathaniel, was appointed to succeed him. An Admiralty letter dated 8th January 1690/1 stated:

*Their Honrs have appointed Nathl Wyborne, Master Mastmaker at Chatham, and I desire you will send him hither to receive his warrant. J Southerne*

In the Pay Revision of 1695, the salary for this post was raised from £32 13s a year to 18s a week, i.e., £46 19s a year. The shipwright received 12s 6d a week.

In a letter from Admiralty dated 10th January 1698/9 appears:

*Warrant for Jacob Ackworth to be the Master Mastmaker at Chatham . . . which I desire you cause to be delivered .. after . . taken Oaths and Tests required by Law.*

Ackworth held this post from January to August 1699 when he was appointed 2nd AMS at Chatham. He held the post of Surveyor of the Navy from 1715 to 1746.

When the office fell vacant in 1701, the Master Shipwright at Chatham, Mr Shortis, asked for this post for his son. The Navy Board showed no favouritism, replying:

*It having been all along the practice of the Navy Board to lay before them (the Commissioners of the Admiralty) the names of proper persons when a vacancy occurs in the Yards. They have decided to do the same in this case.*

Shortis's son did not get the post which was given to Cornelius Purnell, former' Carpenter of Ships and Purser for ten years in the River Thames.'

In 1748, Adam Hayes, an ex-carpenter of the **Kent**, was appointed Master Mastmaker; he held the office of Master Shipwright at Chatham from 1753 to 1755.

In the Revision of 1808 the salary of the Master Mastmaker was raised to £250 a year. He was assisted by the Foreman of Mastmakers and Top and Capstan Makers with a salary of £200 a year, who in turn was assisted by the Quartermen with salaries of £160 a year. A quarterman was appointed when the number of mastmakers exceeded thirty and another for every additional twenty men.<sup>1</sup>

### HOLDERS OF THE OFFICE OF MASTER MASTMAKER

pre	1652	Richard Holbourne	
	1660	Thomas Gardiner	
		William Pett	
	1686	William Wybourne	Dismissed
	1691	Nathaniel Wybourne	

1 Another important subordinate was the Mast House Liner of Masts paid about 1850, 6s a day

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### HOLDERS OF THE OFFICE OF MASTER MASTMAKER continued

1699	Jacob Ackworth	2nd AMS Chatham (ex-Carpenter of HMS Swiftsure)
1699	William Boswell	
1701	Cornelius Purnell	
1705	John Glover	Died 1724, memorial in Gillingham Church
1724	Gideon Firmin	
1748	Adam Hayes	AMS Plymouth
1749	George Goodes	AMS & Master Caulker, Sheerness
1755	Moses Henniker	
1759	Richard Everall	
1780	Thomas Coleman	3rd AMS & Master Caulker, Chatham
1793	John Knowles	2nd AMS Chatham and then AMS Sheerness
1796	Richard Hughes	Master Boatbuilder, Chatham
1803	Robert Moore	
1804	Daniel Cowley	previously Purveyor and then Foreman for a short period
1822	John Hellyer	Foreman of the Yard 1822/3

The office of Master Mastmaker was discontinued after 1822.

### Boat Building

The Boat Houses shown on the 1698 Map and Lempriere's Map were taken down when No 1 slip was constructed. Boat sheds dated 1703 were built to the west of the South Mast Pond. These seem to have been replaced by the Lower Masthouse and a Store Boathouse built on the northern side of the North Mast Pond together with Boathouses to the west of this Store.

After the construction of the Dockyard Basins, the Main Boathouse was built on the north side of No 3 Basin. The other Boathouses were cleared away leaving the Lower Boat Store which replaced the structure mentioned above. In the 1950's shipwright apprentices were trained in boatbuilding in the Lower Boat Store.

### Master Boatbuilders

The supervision of the work carried out in the Boathouses was the responsibility of the Master Boatmaker or Builder, an officer similar in status and pay to that of the Master Mastmaker. Again this post was often a step up for the ambitious shipwright seeking one of the higher posts in the service.

The earliest Account is for 1630:

*George Wiggins, Boatmaker, for repairing boats & ships at Chatham, £19 18s*

One who held this office for nearly 50 years was Edward Springfield. In 1684 Edward Springfield ... *of good testimony* was appointed to succeed Samuel Miller, transferred to Deptford. The phrase 'of good testimony' usually indicated a first appointment to naval service. A warrant dated 7th November 1689 was issued to Springfield after the accession of William & Mary; on the accession of George I and then George II, the warrant was renewed.

In the Pay Revision of 1695, the salary of the post was raised from £32 13s a year to 18s a week, £46 19s a year. In the Revision of 1808 the salary of the Master Boatbuilder was raised to £250 a year. He was assisted by the Foreman with a salary of £200 a year, who

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

in turn was assisted by Quartermen with salaries of £160 a year, appointed under the same conditions as the Quartermen of Mastmakers

### MASTER BOAT BUILDERS

1630	George Wiggins	
1660	James Marsh	
1679	Samuel Miller	To MB Builder at Deptford
1682	Edward Springfield	
1730	James Summers (Somers)	
1753	Abraham Webber	
1765	John Tovery	To Master Caulker and 2nd AMS Deptford
1766	Edward Tippet	To Master Caulker and 2nd AMS Woolwich
1779	Charles Keveme (Kivem)	To Master Caulker and 3rd AMS Chatham
1789	Robert J Nelson	To AMS and Master Caulker Sheerness
1791	Philip Hellyer <sup>1</sup>	To AMS and Master Caulker Sheerness
1792	Henry Boyce	
1794	Robert Moore	
1803	Richard Hughes	Deceased
1816	Wharton Amner <sup>2</sup>	To Foreman of the Yard 1822/3

### Facilities and Activities of the Yard in the early years of the 18th century including numbers of Workmen

The Dockyard Officers were provided with boats. By Navy Board Order 15th January 1749/50, the establishment of boats for Chatham Yard Officers was fixed as below. The crews of the boats were to be borne in the Ordinary, the Rigging House or the Yard.

*1 boat 6 oars for Master Attendant, for Master Shipwright and for the Clerk of the Checque  
2 boats 4 oars for Assistant Master Shipwrights and 1 for Master Caulker*

*The Clerk of the Survey was to use the Master Attendant's or the Master Shipwright's boat when going afloat*

*1 boat 2 oars between Master Joyner and Master Mastmaker*

*1 boat 2 oars for Master Bricklayer*

*1 boat 2 oars for Foremen afloat*

*1 boat 2 oars for Master Painter*

The establishment of sailing vessels: Chatham Yacht, Supply Hoy, Longboat and two Cutters.

An excellent illustrated account of Chatham Mast Houses and Mould Loft has been given by Jonathan Coad in 'Mariner's Mirror' May 1973.

During the latter part of the 17th century and for a large part of the next century, when the French and Spanish were the adversaries, the Channel, the Mediterranean and the Atlantic were the scenes of many naval operations and Chatham and Sheerness were eventually exceeded in size and importance by Portsmouth and Plymouth. Chatham was then used to build, fit out and repair a few large, and many small warships, but it ceased to function as

1 Appointed from Sheerness in the same grade  
2 Ex-Foreman of Chatham, 1804/1816

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

a base for active fleets. For shipbuilding and major refits the long passage from Chatham to the Great Nore, often causing delays up to six weeks, was not such a handicap.

It was said of Chatham that:

*. . . the dockyard is situated on the south side of the River Medway the course of which is so crooked that there is only six points <sup>1</sup> of the compass for the wind with which ships of the line can sail down and ten to sail up and that only for a few days during the spring tides.*

An Act 2 William & Mary (1690/1) set up a special fund for financing the construction of 27 ships; the money was provided by additional Excise duties on beer and other liquors. The programme included 17 Third-rates of 80-guns, 1200 tons and 10 Fourth-rates of 60 guns, 900 tons. The 27 ships were to be completed within four years of 25th March 1691. Three third-rates of this programme were built at Chatham, **Sussex**, **Chichester** and **Somerset**

The state of the Dockyards may be judged from a letter sent by the Navy Board to Admiralty dated April 17 1695:

*Your Honours would be informed what places are qualified for building such ships (60 to 90 guns),*

*At Chatham; a slip ordered, and four docks and two slips, where a second-rate of 90 guns, and a third-rate of 80 guns, are building and the **Victory** rebuilding.*

*At Portsmouth: In HM Yard there is one dock and two slips (besides the new docks not yet finished where a second-rate of 90 and a fourth-rate of 60 guns are already ordered to be built.)*

*At Plymouth ... at Hamoaze is one dock and in Catwater, one slip ...*

*At Deptford: there is a dock and a slip and launch in HM Yard ...*

*At Woolwich: two docks and a slip.*

*At Harwich: two slips.*

It was estimated that Chatham could build five rated ships at once; Portsmouth four; Deptford two and Woolwich two. When a heavy shipbuilding programme was formulated the Navy Board had to resort to construction in private yards. (In the 1691 programme, 8 ships were to be built in such yards.)

By 1700 Portsmouth had one double and two single dry docks and two wet docks, whilst Plymouth had a dry dock capable of taking a first-rate, and a wet basin, beside a building slip.

As mentioned earlier an inventory of Chatham Yard was made in 1698; details are given as follows:

Waterfront of the Yard	3,500 feet (excluding Ordnance Wharves, 700 feet)
Greatest depth of the Yard	820 feet
Extent of Dockyard Walls	3,777 feet (brick)
Value of Chatham Yard in 1698	£56,059 <sup>2</sup>

<sup>1</sup> There are 32 points of the compass

<sup>2</sup> Deptford £28,641. Woolwich £15,801. Sheerness £6,960

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

<i>Inventory cont.</i>	<i>Length</i>	<i>Breadth at top</i>	<i>Breadth at apron</i>
Double Dock	<i>One 270ft<sup>1</sup></i>	<i>52ft</i>	<i>39ft</i>
Single Dock	<i>One 135ft</i>	<i>56ft</i>	<i>38ft</i>
	<i>Two 200ft</i>	<i>58ft</i>	<i>36ft</i>
Building Slips	<i>One 95ft</i>	<i>42ft</i>	<i>25ft</i>
Cranes	One swinging crane Three small cranes		
Workshops & Buildings	One ropewalk 365feet long One boatyard Three deal yards with store shed, including one Joiners' shop and one forge One cordage house One spinning house One rigging house with 14 sawpits beneath One trennel house One pitch house Two Mast houses One building with 8 masthouses One taphouse One space for joiners' work One painters' shop One sawhouse Three sawpits		
Storehouses	One 'long' storehouse (660 feet long) Two tar stores One store for blocks and colours Four stores for rosin, pitch, tallow and old hammocks with a sail making room One store for iron One store for cordage Accommodation		
Accommodation	Ten houses for Commissioner, Clerk of Survey, Clerk of Checque, Storekeeper, Master Shipwright, Master Attendant, Second Master Attendant, Master Caulker, Boatswain of Yard, Assistants. Teamer's house Officers' stables Commissioner's Coach house		

In addition there was the Pay office and the Clerk of the Ropeyard's office.

The expenditure of Chatham during the first three years of the War of Spanish Succession is given below:

	1702	1703	1704
Ordinary	£13,400	£5,000	£7,200
Extraordinary	37,800	29,100	40,200
Ropeyard	5,500	3,200	5,600
Total for all Yards	£820,200	£569,400	£611,000

Ordinary expenditure was the maintenance charge of the Dockyard and of the ships laid up in Ordinary. Extraordinary expenditure covered the wages of the workmen and other shipbuilding costs. As the war (1702-1713) progressed, ships were moved from the Ordinary and reduced the charge whereas the extraordinary expenditure increased with new construction and refits.

<sup>1</sup> Measured along bottom of dock from apron to lowest end step. The dock was lengthened in 1703

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

During the War of English Succession (1689/1697) the number employed at Chatham Yard ranged from 800 to 900 at the beginning and end of the War and reached a maximum of the order of 1300 to 1400 about 1693. The numbers in this period were higher during the winter months when the ships were put out of commission and refitted. Nothing larger than a 4th-rate was expected to keep at sea even in wartime.

There was a similar pattern of employment during the first part of the War of Spanish Succession (1702/13) but after 1705 seasonal variations began to diminish. A large number of ships were kept in commission overseas and a greatly increased force was employed in commerce protection all the year round. We had Bases in the Mediterranean, Lisbon, Port Mahon, Gibraltar, and in the West Indies. A large shipbuilding programme was put into operation, a factor which tended to keep the numbers in the Yard reasonably constant. The changing tempo is reflected in a letter of 16 February 1703/4 from the Officers of Chatham Dockyard in which they observe:

*In the last war our great ships which usually came to us about Michaelmas, seldom sailed from the Nore until April, so that we had six months at least to refit them, and now we have scarce so many weeks allowed us.*

Owing to the difficulty of manning the Fleet during the War of English Succession the crews of some of the warships were kept in sea-pay during the winter months instead of discharging them. This led to a shortage of riggers, for normally seamen discharged from the ships, worked as riggers in the Yards during the winter refits. Fishermen among others were impressed to serve as riggers. Greenwich Hospital pensioners were employed in the rigging house. Their pension was stopped whilst they were so employed and restored when their service was no longer required and they returned to Greenwich.

In 1691 five companies of Royal Marines were stationed at Chatham and from time to time some served as labourers in the Yard heaving in and out ballast, manning cranes, etc. They were paid 6d a day above their military pay. The Civil authorities were not happy about their employment mainly because of the difficulty of forcing the Royal Marines to work without the attendance of their officers and the uncertainty of their availability.

As a measure of the activity in Chatham Yard, the following information was supplied by the Navy Board to the Secretary of the Admiralty on 26th August 1708:

*There is now in hand at Chatham the Vanguard rebuilding, the Prince George newly docked for a thorough repair, and the two new 4th-rates building, one of 60 and the other of 50 guns ...*

*The Navy Board, in consequence, was ordered to give directions for the entering of additional workmen in the Yard' ... as can well be employed therein'*

The numbers rose again from about 900 to 1400 in 1720, and then fell again during Walpole's Ministry (1720/1742) to rise again at the beginning of the War of Austrian Succession (1739/48) to a figure of the order of 1,800, again falling to the normal peacetime figure after 1747. By this time Portsmouth was the largest Royal Yard.

An idea of the work undertaken at Chatham Yard and the numbers of craftsmen employed in the first half of the 18th century can be gained from the Weekly Progress Reports submitted to Admiralty. By means of these reports the Dockyard Commissioners had to report the number of men assigned to each ship, the progress made with the work in hand and the date of completion. The reports were sent direct to Admiralty and a copy simultaneously prepared for the Navy Board.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*The progress of the works at Chatham dated 19 November 1734*

<i>Rate</i>	<i>No of guns</i>	<i>Ship's Name</i>	<i>When may be completed by Master Shipwright</i>	<i>Nature of the Repair Time when taken in hand Works performed. Time when finished by Master Shipwright</i>	<i>Artificers on each ship and other works. Shipwrights, Caulkers Joiners, House Carpenters</i>
3	80	<b>Chichester</b>	June 1735	Middling Repairs taken in hand 19 June 1733	170 Shipwrights
4	50	<b>Chester</b>	2 New Dock 18 December next	Small repairs taken in hand, 2 October 1734	83 shipwrights, 12 caulkers 19 joiners
New ship in lieu of		<b>Stafford</b>	North Slipp. Date of completion uncertain	Building taken in hand 15 September 1733	172 shipwrights
3	80	<b>Cambridge</b>		Middle repair taken in hand and finished 9 August 1734	
3	80	<b>Newark</b>		Fitted for sea and finished 2 July 1734	
1	100	<b>Royal Anne</b>		Repairing her frames	
3	70	<b>Elizabeth</b>		Siding timbers for her frames	
4	50	<b>Colchester</b>			42 caulkers
1	100	<b>Royal Sovereign</b>			8 joiners
		<b>London</b>			8 joiners
		<b>Tyger</b>			4 joiners

Boathouse	40 shipwrights	Nine wharves without	36 house
Mast House	40 -do-	the N & S Mast Dock	carpenters
Lighter	26 -do-	South Mast Dock	8 -do-
New Dock Gates)			
wharves & Apron)	42 caulkers	Old Single Dock	8 -do-
Conversions	11 joiners	Ordinary Repairs	17 -do-
New Boathouse	19 house carpenters		

Total Numbers borne:	Shipwrights	531
	Caukers	96
	Joiners	55
	House Carpenters	101

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*The progress of the works at Chatham dated 6 January 1735*

<i>Rate</i>	<i>No of guns</i>	<i>Ship's Name</i>	<i>When may be completed by Master Shipwright</i>	<i>Nature of the Repair Time when taken in hand Works performed .Time when finished by Master Shipwright</i>
1	100	<b>Royal George</b>	Single Dock	Large repairs taken in hand 13 March 1734
3	70	<b>Northumberland</b>	South Dock	Taken in hand 21st last. Launched 2nd inst
3	90	<b>Prince George</b>	1 New Dock	Taken in hand 22nd of last month. Launched 2nd inst
3	70	<b>Stirling Castle</b>	2 New Dock	Refitting for sea, taken in hand 22nd of last month. Launched 2nd inst
3	80	<b>Newark</b>		Taken in hand S Dock Yesterday

Boathouse )	60 shipwrights
Mast House)	3 joiners
South Mast Dock	40 shipwrights
Smiths' Shop	35 House carpenters
Picketing Pond 15	-do-
Knotting House	13 -do-
Landing Bridge	13 -do-
Conversions	24 -do-
Ordinary Repairs & caulking	40 shipwrights

Total employed:	Shipwrights	592
	Caulkers	118
	Joiners	55
	House Carpenters	125

*The progress of the works at Chatham dated 13 January 1735*

<i>Rate</i>	<i>No of guns</i>	<i>Ship's name</i>	<i>When may be completed by Master Shipwright</i>	<i>Artificers on each ship and other works. Shipwrights, Caulkers Joiners, House Carpenters</i>
1	100	<b>Royal George</b>	Old Single dock to be completed by June 1737	47 shiprights
3	80	<b>Newark</b>	South dock to be completed 22 inst	74 Shipwrights 90 caulkers 6 joiners
		Total employed:	Shipwrights	592
			Caulkers	158
			Joiners	55
			House Carpenters	127



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

A cause of delay and confusion in the Yards was the inadequate planning and coordination at high levels. It was up to the Admiralty to decide which work should have preference and its decisions were forwarded to the Yards through the Navy Office. Admiralty in 1746 claimed that the information it received from the Navy Office and from the Dockyards in the form of Yard Survey Reports and Weekly Progress Reports was inadequate. In May 1746 Admiralty introduced Daily Progress Reports.

In 1757 Admiralty resumed the attack and the Navy Board was told their reports seemed intended ... rather to mislead than to inform the Admiralty .. and the latter was directed to transmit an account that can be depended upon.

The repairs were classed as large, middling and small. Earlier, an ordinary repair was understood to be:

*.. the annual trimming of the ship in harbour by caulking all those parts which lie to the weather, and laying on of pitch or other mixed stuff of rosin, tallow, etc upon the same; and once in three years at furthest to dock them and burn off the old matter under water; to search the seams and caulk them as occasion is and to grave them anew, which is to say to pay them all over under water with pitch or other mixed matter, with rosin etc. And in this ordinary trimming and repair we allow only of putting of small pieces, or of plank where the seams are grown too wide, or where knots or rents or a particular plank too much perished to hold oakum for tightness against the weather or other leakage.*

Extra Repair was more thorough, decayed planks etc were renewed; Re-building consisted of virtually pulling the ship to pieces and building into a new ship as much as the old wood as was practicable.

### List of ships built between 1690 and 1754<sup>1</sup>

Date	Name	Rate	Guns	Tonnage
1691	Towing galley No 1			91 bm
1692	Towing galley No 2			91 bm
1691	Chatham	4th rate	48	696 bm
1691	Supply	Dockyard Hoy	4	94 bm
1693	Maidstone	6th rate	24	250 bm
1693	Rochester	4th rate	48	607 bm
1693	Sussex	3rd rate	80	1203 bm
1693	Mortar	Bomb	12	260 bm
1693	Serpent	Bomb	12	260 bm
1693	Unity II	Hoy	4	79 bm
1693	Unity III	Hoy	4	79 bm
1694	Chatham Hulk	Sheer Hulk		714 bm
1694	William & Mary	Yacht	10	172 bm
1694	Lizard	6th rate	24	250 bm
1694	Squirrel	Yacht	4	37 bm
1695	Serpent	Bomb	4	140 bm
1695	Chichester	3rd rate	80	1210 bm
1695	Swift	Ketch	18	220 bm
1695	Royal Transport	6th rate	18	220 bm

1 1689/1697 War of English Succession  
 1702/1713 War of Spanish Succession  
 1739/1748 War of Austrian Succession

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of ships built between 1690 and 1754 continued

Date	Name	Rate	Guns	Tonnage
1697	Ramborough	6th-rate	24	252 bm
1697	Lowestoft	5th-rate	28	357 bm
1698	Triumph	2nd-rate	90	1482 bm
1698	Somerset	3rd-rate	80	1263 bm
1699	Tilbury	4th-rate	54	691 bm
1699	Merlin	Sloop	2	66 bm
1699	Swallow	Sloop	6	66 bm
1702	Nightingale	6th-rate	24	251 bm
1704	Mary	3rd-rate	64	914 bm
1705	Fowey	5th-rate	32	414 bm
1705	Stirling Castle	3rd-rate	70	1122 bm
1707	Salisbury	4th-rate	54	703 bm
1708	Chester	4th-rate	50	704 bm
1709	Lion	3rd-rate	60	906 bm
1711	Bonaventure	4th-rate	50	703 bm
1712	Rose	6th-rate	20	273 bm
1716	Chatham	Yacht	14	60 bm
1721	Hawke	Sloop	8	103 bm
1724	Sunderland	4th-rate	60	951 bm
1725	Supply	Hoy	4	122 bm
1732	Spy	Sloop	14	201 bm
1733	Tilbury	4th-rate	60	963 bm
1734	Chatham	Dockyard Lighter		73 bm
1735	Stratford	4th-rate	50	1067 bm
1739	Chatham	Longboat		23 bm
1741	Chatham <sup>1</sup>	Yacht	6	74 bm
1742	Stirling Castle	3rd-rate	70	1225 bm
1748	Somerset	3rd-rate	64	1436 bm
1752	Speedwell	Sloop	8	142 bm
1754	Wolf	Sloop	10	141 bm

### The Building of the Victory

In December 1758 the Newcastle-Pitt Ministry presented the Naval Estimates for 1759 and these included the building of 12 ships of the line, the list being headed by a first-rate of 100 guns. The Commissioner at Chatham, Captain Thomas Cooper, was ordered by Admiralty:

*.. prepare to set up and build a ship of 100 guns as soon as dock shall be available for the purpose.*

There were only five first-rates in the fleet of 1756 which numbered over 300 ships. The new first-rate was to be improved **Royal George** (this ship sank in 1782 at Spithead and was a hazard to shipping until well into the following century when she was blown

<sup>1</sup> This vessel was rebuilt at Chatham in 1793; it was the official yacht of Commissioner Grey of Sheerness and carried Nelson's body from the Nore to Greenwich Hospital for laying-in-state

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

up by the Royal Engineers). Sir Thomas Slade, Senior Surveyor to the Navy, copied the dimensions of the **Royal George** almost exactly, except that he made **Victory** eight feet longer in the gun deck.

Slade had served at Chatham for a short period as Master Shipwright before being transferred to Deptford, from where he was promoted Senior Surveyor of the Navy in 1755.

The Navy Office Minutes of 6 June 1759 record:

*Sheer draught proposed for building a First Rate ship of 100 guns at HM Yard at Chatham pursuant to an order from the Rt Han Lords Commissioners of the Admiralty of 13th December last and of the dimensions undermentioned:*

<i>Length on the gun Decks</i>	186ft
<i>Length on the Keel for tonnage</i>	151 ft 3 <sup>5</sup> / <sub>8</sub> ins
<i>Breadth moulded</i>	50 ft 6 ins
<i>Breadth extreme</i>	51 ft 10 ins
<i>Depth in hold</i>	21 ft 6 ins
<i>Burthen in tons</i>	2,162 <u>22</u> 94

Thos Slade

<i>To carry on the Lower Deck</i>	30 guns of	42 pounds	(later changed to
<i>-do- Middle Deck</i>	20 guns of	24 pounds	52 pounds)
<i>-do- Upper Deck</i>	30 guns of	12 pounds	
<i>-do- After Deck</i>	10 guns of	6 pounds	
<i>-do- Forecastle</i>	2 guns of	6 pounds	

Admiralty Office,

J Cleveland  
15 June 1759

In July 1759, the following letter was sent by the Navy Board to the Officers of Chatham Dockyard.

*By the Principal Officers and Comm<sup>rs</sup> of his Maj<sup>ty</sup>s Navy*

*Pursuant to an order from the Right Honble the Lords commrs of the Admiralty dated the 13th December 1758 and 14th of last month, these are to direct and require you to cause to be set up and built at your yard a new Ship of 100 guns agreeable to the Draught herewith sent you and of the Dimensions set down on the otherside hereof, and you are forthwith to prepare and send us in due form an Estimate of the Charge of Building and Fitting for sea the said Ship, and providing her with Masts, Yards, Sails, Rigging and Stores to an eight months' proportion. For which this shall be your warrant. Dated at the Navy Office the 7th July 1759.*

*Richd Hall      Tho Slade      G Adams  
                         Tho Brett*

This letter, as was usual with all letters to the Chatham Officers, was initialled by the Commissioner at the bottom and the Officers in the left hand margin.

The keel was laid on 23 July 1759 in the Old Single Dock which occupied the site of the

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

present No 2 Dock. It is probable that Pitt himself came down from London with a party of Admiralty representatives to see the keel laying.

It was then customary to build the largest ships in docks rather than slips. In 1747, there had been trouble in launching **Newark**, an 80-gun ship. After passing 40 feet down the slip she stopped and despite the use of tackles remained firm. She was then secured until the next spring tides for the launching ways had settled. The inclination of the slip was increased and on the next spring tides she moved 97112 feet and again stopped. On the following morning at high water further efforts were made to launch her and the ship remained stationary until the tide had ebbed about two hours when she was launched without external aid. She was found to have strained a little but did not leak. Royal George 100-guns, launched at Chatham in 1788, is reputed to have been the first ship of that rate launched from a slip.

Chatham Yard was busy at this period. **Sandwich**, 90-guns, was floated out in April 1759; another 90-gun ship, **Ocean** was in the early stages of construction, while two 74-gun ships, **Valiant and Bellona** were almost ready for launching.

In the Estimates of 1759, £3,500 was allowed for the hull of **Victory**. In addition to new construction, ships were coming in for repair while others in Ordinary were being fitted out. Work on the **Victory** continued through the year, though slowly. The frame of **Victory** was nearing completion by August 1760. It was normal at this stage to leave the ship 'standing in frame' to season for several months, before planking was started. The ship would be roofed over at this stage.

In October 1762, the following letter was sent to the Officers of the Yard:

*Navy Office, 30th October 1762*

*Gentn,*

*The Right Honble The Lords Commrs of the Admiralty having directed us to cause the ships and sloops mentioned on the otherside, to be Registered on the List of the Royal Navy by the Names against each exprest; We direct you to cause them to be Entered on your Books and called by those Names accordingly.*

*We are,*

*Your affectionate friends.*

*Tho. Slade      W Bateley      Tho. Brett*

*Otherside: Ships building in Chatham Yard.*

*Guns*

*100      Victory*

*90      London*

*74      Ramillies*

In May 1764, the Navy Board were enquiring the time needed to complete the sails and rigging of the ships nearing completion or being fitted out in the Yard at that time. It was customary to complete the sails and a set of rigging of a new ship even if she was going straight into Ordinary. The sailmakers were ordered to be employed:

*.. at the rate of One Day and One Tide by Task until further order on completing the sails of the Triumph, Victory, Jersey, Revenge and Sapphire and One Day and One Tide extra on such works of the sort that cannot be carried on by task, observing to appropriate the worn sails in stores that are serviceable belonging in ships in want of large repairs to others in good condition that may first want them.*

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### Details of Main Mast of Victory

	Yards	Inches	Diameter inches
Lower	38	32	38 <sup>7</sup> / <sub>8</sub>
Top	22	34	20 <sup>5</sup> / <sub>8</sub>
Gallant	11	17	11 <sup>5</sup> / <sub>8</sub>

The length of the main yard was 34 yards 4 inches and was of 24 inches diameter.

In 1764 there was a dispute with France over the Newfoundland fisheries. The situation was so threatening that the workmen were withdrawn from new construction and engaged on preparing the reserve ships in Ordinary for active service at sea.

On 1 September 1764, Edward Allin, the Master Shipwright, who succeeded John Locke in 1762, wrote to the Navy Board stating that a further eight months would be required to finish the **Victory**, the end of April 1765 being the new date of launching. The pressure of work in the Yard was such that the establishment of workers was increased 1,194 in May to 1,325 in November 1764.

In the London 'Public Advertiser' of 7 May 1765 appeared:

*This day will be launched his Majesty's ship the **Victory**, estimated the largest and finest ship ever built. Several of the Lords of the Admiralty, Commissioners of the Navy and many Persons of Quality and Distinction, are expected to be present, for whose receptions great preparations are making through the Town.*

A full account of the occasion was promised for a future issue. On 8 May, nevertheless, the same paper merely stated:

*Yesterday was launched at Chatham his Majesty's ship the **Victory**, esteemed the largest and finest ship ever built. The particulars have not yet come to hand.*

No other paper covered the launching.

Before **Victory** was floated out of the dock, three tall flagstaffs would have been stepped in place of the masts; the Admiralty flag on the fore, the Royal Standard with the arms of Hanover in the fourth quarter on the main, and the Union Jack on the mizzen. Smaller staffs would have carried the Jack at the fore and the Red Ensign with the Union in the canton at the stern, all of great size.

When the **Victory** was afloat, work on her practically ceased for she was to be 'completed for Ordinary,' which meant that only her lower masts were got in before she was laid up in reserve. She must have appeared to the people of the Medway Towns as the Vanguard did to the people of Portsmouth after the Second World War.

**Victory** was being prepared for sea in 1770/1 when war with Spain over the Falkland Islands was expected, when it was found that a large part of the planking was rotten and had to be replaced. In 1778 she was fitted out as the flagship for Admiral Keppel. At her next refit her hull was sheathed with copper. In 1797 **Victory** was used as a prison hospital ship after which she was virtually rebuilt and fitted with a less ostentatious figurehead.<sup>1</sup>

**Victory** was floated out of dock in 1803 and two years later won lasting fame at Trafalgar. In the period 1814/16 **Victory** was again rebuilt and the old square beakhead bulkhead was removed and replaced by a built-up bow to give additional protection to the

<sup>1</sup> See Master Carvers in chapter 19

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men on the upper and main decks. (She has now been restored to her appearance at Trafalgar) .

During the bi-centenary celebrations of the laying of the keel of the **Victory** on 23 July 1959 the Collingwood Oak Tree was planted near Queen's Stairs. The sapling was taken from the oak trees grown from acorns planted by Admiral Collingwood 150 years ago. To mark the 200th anniversary of the launching, the Naval and Civil Authorities organised a week of celebrations and exhibitions which commenced on 7 May 1965.

The sails of the **Victory** were stored in the Sail Loft at Chatham after her arrival from Trafalgar. For many years these were periodically stretched on drying posts to be aired. Later the sails were sent to Portsmouth and deposited in the **Victory**. (The sails were marked: 'Miller, Contractor, Portsmouth, September 1805')

### Muster Table of the **Victory** between 12th and 30th April 1778

Time when mustered	Place where	By whom	Muster letter	Complement
14March	Chatham	Clk Checque	a	850
21 March	Chatham	Clk Checque	b	850
28March	Chatham	Clk Checque	c	850
3 April	Chatham	Clk Checque	e	850
11 April	Chatham	Clk Checque	f	850
20April	Blackstakes	Captain & Officers	g	850

Time when mustered	Borne	Ships company mustered	Cheqld Sick	Marines				Supernumeraries for victuals					
				B	M	C	S <sup>1</sup>	B	M	C	S		
14March	56	48	8	-	-	-	-	-	-	-	-	-	-
21 March	61	53	8	-	-	-	-	-	-	-	-	-	-
28March	66	58	8	-	-	-	-	-	-	-	-	-	-
3 April 86	78	8	-	-	-	-	19	19	-	-	-	-	-
11 April	92	84	8	-	87	87	-	-	34	34	-	-	-
20April 3	34	309	8	17	88	87	1	-	-	-	-	-	-

### Role of Chatham as Shipbuilding Centre

Lord Sandwich was the First Lord of the Admiralty from 1771 to 1782 and he was responsible for many improvements in the administration of the Navy. He realised that the role of Chatham Yard was that of a shipbuilding and major repair base. In 1773 the time taken for eight warships to go from Sheerness to Chatham was noticed. The quickest took 1 month and 13 days, the slowest 4 months and 3 days. As a Fleet base for sailing ships Chatham was virtually useless; but as a shipbuilding centre the time taken to get to sea from Chatham was not of overwhelming importance. Garrison Point to Chatham Yard is about 10 miles.

In Sandwich's Report of the Admiralty Board's visit in 1773 he wrote:

*I am more and more convinced that if it kept singly to its proper use as a Building Yard, possibly more useful service may be obtained from it than from any other*

1 B=Borne; M= Mustered; C= Checqued; S= Sick

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*dockyard in His Majesty's Dominions; the great extent of the yard which faces the River, and the great length of the harbour, which has room to moor half the fleet of England of a moderate draught of water, are conveniences that are not to be found elsewhere; and it will appear by the repairs that have been carried out during the Visitations I have lately made, that more business in the way of building and repairs has been done here than in any one, possibly more than in any two, of the other yards ... The best use to be made of this port now, is to build or repair ships sent from Portsmouth or Plymouth; and therefore all improvements at this yard should be for that end in preference to any other considerations: smaller ships only should be laid up constantly here.*

### **Timber and its treatment**

After the Seven Years' War (1756/63) there was a period of rigid economy. In 1770 the Falkland crisis <sup>1</sup> brought the country nearly to the brink of war and it was found that the Fleet was in a poor condition to fight. Owing to the use of unseasoned timber and possibly inadequate maintenance the life of warships was found to be very short, in some cases only six or seven years.

To build up the Fleet the Dockyards acquired a three years' supply of timber and as well as endeavouring to recruit shipwrights for the service, the concept of Task work was revived.<sup>2</sup> Finally great attention was paid to the seasoning of the timber needed in shipbuilding and detailed instructions were given with a view to ensuring greater reliability.

In April 1771, the Navy Board ordered that the building slips in each yard should have new ships set upon them: line-of-battle ships should stand in frames to season for' at least one year before the plank and thickstuff were brought on; frigates should stand at least six months. All thickstuff and planks should be sawn at least one year before it was used and stacked with battens placed between the planks for the air to circulate freely between them Beam pieces should be cut out and be stowed on and round the bows and standards of the ships and should not be used till they should have stood six months. All knees should be sided as soon as received in the yard and kept side by side under dry sheds with battens between them. No plank was to be boiled except for the bows and buttocks of ships and that salt water only should be used.

A further order in August 1771 stated that sheds should be erected for the seasoning of timber. Modular timber seasoning sheds were to be built in the Royal Yards and by 1775 Chatham was supplied with these, of which two still survive. They were strongly constructed timber racks covered with tiled roofs with louvered gables and slatted sides to keep out the rain. They were later used as iron stores; one carried a plaque dated 1809. In the 1970's one timber shed was restored to its 18th century appearance by the Directorate of Ancient Monuments and Historic Buildings. It is used for seasoning timber for use in that Department.

The order about seasoning had to be modified in 1777 during the War of American Independence (1775/1783) owing to the press of shipbuilding. After the war the ships were allowed to 'stand in season' to avoid dry rot. In addition roofs were built over the upper decks of the ships in Ordinary to protect them from rain and snow.

<sup>1</sup> There had been disputes about the sovereignty of the Falkland Islands but matters were brought to a head when in 1770 a Spanish naval force evicted the British Garrison and nearly brought England and Spain to war. The dispute was settled peacefully.

<sup>2</sup> See chapter 3 on Dockyardmen

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The amount of timber for a 74-gun ship of 1610 tons burden in 1759 is detailed below:

Oak timber, straight	720 loads <sup>1</sup>	Thickstuff <sup>2</sup>	10 inch	20 loads
Oak timber, compass <sup>3</sup>	1890 loads	-do-	9 Inch	60 loads
Elm timber	50 loads	-do-	8 inch	80 loads
Fir timber	120 loads	-do-	7 inch	30 loads
Knees, square	70 loads	-do-	6 inch	150 loads
Knees, raking	80 loads	-do-	5 inch	70 loads
Oak plank, English 4 in x 3 in	200 loads			
Oak plank, Danzig 4 in x 3 in	100 loads			
Plank, English elm	60 loads			
			Total was 3,700 loads	

A similar set of figures given in 1813 showed that a 74-gun ship required 3,000 loads of timber, i.e., two thousand trees. Until the early part of the 18th century, to bring planks round the bows and sterns of ships, the practice was to burn the inner surface by a fire made of bavons etc, keeping the outer surfaces wetted. Mr Cumberland proposed in 1719 a stoving machine to supple timber by placing it in wet sand and heating the sand and salt water until the wood was brought to the condition of suppleness required. He was allowed one tenth of the saving for fourteen years provided it did not exceed £200 per year. The method remained in general use until 1736 when Mr Boswell, Purveyor of Timber at Deptford Yard, introduced the method of supplying timber by steam. After eight years this practice was succeeded by the use of kilns in which the thickstuff and planks were boiled. Generally the planks were boiled for as many hours as they were inches thick. At some periods it had been thought beneficial to use fresh, at other times, sea water for this purpose. There appear no good grounds for preference of salt water in boiling and certainly none in the steaming of planks. The wood was eventually supplied by steaming in kilns.

In the Map of Chatham Yard dated 1755, a pickling pond which contained salt water for the treatment of timber is shown to the east of the Mast House.

To this day timber is normally purchased in log form and converted in the Saw Mills. Timber is liable to deteriorate more rapidly in the log, and consequently it is the aim to convert supplies of log as soon as possible after delivery. The exception is elm which is found to remain in a better condition for certain purposes such as boat work if the log is kept in wet storage - in the mast pond- and converted shortly before use.

### **Further improvements made to the Yard during the periods of peace in the 18th century**

Through the 18th century the records are full of references to the repairing and rebuilding of docks and slips. The docks continued to be built of wood long after the yards at Portsmouth and Plymouth had adopted brick and stone. In 1726 the Navy Board had ordered the infilling of the head of the old double dock and its conversion to a single one.

1 A load is about 50 cubic feet. It was the size of an average oak tree, weighing slightly more than a ton

2 Thickstuff was plank over 4 inches thick and up to 12 inches wide.

3 Compass timber was curved timber used for frames, knees, standards, etc and was more expensive. (A standard is an inverted knee placed upon the deck instead of underneath it) Because of the scarcity of knees and standards new rules were laid down in 1747 for the purveyance of compass timber. Under the old scheme everything curving more than 5 inches to 12 feet qualified as compass timber; it had been assumed that the average load would contain a suitable proportion of the scarcer, more sharply curved pieces. By the new rules every sixth load of compass timber had to contain either odd shapes or pieces curving at least 17 inches in 12 feet. (British Naval Administration in the Age of Walpole, Daniel A Baugh)



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In 1736, £7,000 was allowed for the repair of one of the docks of 1685/6. In the following year the slip between the original docks, <sup>1</sup> shown in the Map of 1698 was filled in. The Boat Houses to the west of the Commissioner's House were pulled down at this period and No 1 Slip built on their site in 1737. In 1738, a new building slip (Old No 3) was built to the north of old No 4 Dock; the Old No 4 Slip was built between 1755 and 1775. The Map of 1771 shows 4 Docks and 4 launching slips. The Joiners' shop at Chatham was on fire on 27th December 1738.

### The Pay Office and Surgery

On the north side of the Commissioner's garden a series of single-storey offices were erected between 1710 and 1755: the Commissioner's Office, the Surgery, the Pay Office and the Chest Room. It is believed that the Surgery was built in 1711. In 1854, a Surgeon's room was added to the Surgery-shown by the change in brickwork. In 1866, a new Surgery was built behind the Main Offices, and the old surgery was turned into a Reading Room and Library for the Officers resident in the Yard.<sup>2</sup>

The Pay Office was transferred from Hill House to the Yard about 1750.<sup>3</sup> The Chest Room is dealt with in the section on Chatham Charities. The administration of this charity, and the actual chest itself was moved to Greenwich Hospital in 1803. The Chest Room and the Pay Office were known for years as the Cashier's Office. Between 1800 and 1820 an additional storey was added to the eastern building to provide extra accommodation for the Pay clerks. On the wall of the Cashier's Office is a plaque stating that the building was occupied from 1808 to 1856 by the Storekeeper and the Pay Office; from 1856 to 1865 by the Accountant; and from 1865 to 19th February 1962 by the Cashier.

In the period 1771/1774, No 5 Slip was added.<sup>4</sup> At this time Benjamin Franklin's lightning conductors were fitted at Chatham Yard. The Navy Board ordered models, scale 40 feet to the inch, to be made of all the Royal Dockyards, these are in the National Maritime Museum.

The area of the Yard was increased. From 61 acres in 1746 to 68 acres in 1774, the area enclosed by the fortifications of 1756. In the time of Elizabeth I any ship could have been moored above Upnor, but by 1774, 74-gun ships were of 1600 to 1700 tons and there were few moorings, possibly five, for such ships at their ordinary draught between Rochester Bridge and the lower end of Gillingham Reach. By taking out ballast, a procedure considered wrong, twenty could be moored; others were at moorings lower down the river, and at Stangate Creek.

After the Treaty of Paris 1763, more than seventy ships were laid up in the Medway, many requiring extensive repairs. This number included the **Victory**, a 1st-rate launched at Chatham in 1765. The Yard was extremely busy during this period of peace. The number of workmen at Chatham Yard in 1772 was 1,553 and at Sheerness 439. The number employed in peace time was higher than in some earlier war periods.

An idea of the activity in Chatham Dockyard in the 1780's may be judged from the report

<sup>1</sup> From the details of the Map of the Yard of 1755 it would appear that the Old Single and Double Docks had been altered; the latter had been shortened and the former lengthened so that their lengths were about 200 feet.

<sup>2</sup> In 1962 the Surgery was transferred to the offices of Engineer Rear-Admiral, built in 1881, next to the old Pay Station; the opening was conducted by Vice-Admiral Sir Robert Panckridge, Medical Director General of the Royal Navy

<sup>3</sup> See chapter 21 on Hill House

<sup>4</sup> No 6 Slip was built soon after and is shown on the Map of 1821. Nos 5 and 6 Slips were small slips suitable for frigates.

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of the Admiralty Visitation in July 1785. They reported the **Royal George** building; they found the material good and the workmanship well performed. Incidentally this ship of 100-guns, launched in 1788, was the first ship of this rate to be launched from a slip. In the First Dock the **Raisonnable** was undergoing repair; in the second, the **Hulk**, a great repair; in the Third, the **Inflexible**, a small repair, in the Fourth, the **Prince George** to be undecked the spring (tide) after next. They reported that No 2 Dock wanted great repair, new gates, and the whole of the after part well stowed with clay. The **Leviathan** would be completed in that year for housing - a 3rd-rate launched in 1790.

They commented that in the South Mast Pond, 25 masts which had been in the Pond for 13 years had been eaten by the worm which reduced them 1 1/2 inches diameter. The Pond had been emptied in the previous year and a quantity of lime laid over the masts since when no worm had been found. The 1821 Map shows a Mast Store built over the northern end of the South Mast Pond and a Boat Store over the northern end of the North Mast Pond.

The Map of 1771 shows the Reed House at the northernmost end of the Yard. The Commissioners considered that only a small part would then be required for reed as only a few ships required breaming. On the 1821 Map this building is shown as divided between use as a Guard House and as a Plank Shed.

The Visitors visited various centres in the Yard including the Smiths' Shop, the Ropery Buildings and the No 3 Storehouse which had just been completed.

They ordered that the ballast was to be removed from the new Storehouse Wharf to a wharf near the Boat House. The Storehouse Wharf was to be used for issuing stores, etc.

They commented on the appearance of the work force; 'The Master Workmen, Foremen and Leading Hands had a decent appearance.'

A visit was made to Frindsbury to see the **Bellerophon** building and found the frame well seasoned the planking of bottom and top sides well performed and the materials used good.

They noted that they did not observe any ships with their names painted on a label but had them painted on the counter. They gave instructions that the name of a ship was to be painted on a label and hung on the counter, so as to be taken off when the ship goes to sea.

A return of ships up to 1st August 1788 was given in the "Gentleman's Magazine" of that year:

### *Chatham*

Ordinary:	<i>37 of the line, 7 of 50-guns, 26 frigates, 3 sloops, 2 cutters</i>
Ordinary increased:	<i>1 ship <b>Suffolk</b> of 74-guns from Plymouth to repair</i>
Building:	<i>2 of 110-guns, 1 of 74-guns</i>
Repair:	<i>3 of the line, 1 of 50-guns, 2 frigates</i>
Serviceable:	<i>24 of the line, 1 of 50-guns, 2 frigates</i>
In Commission:	<i>None</i>

### *Sheerness*

Ordinary:	<i>9 of the line, 2 of 50-guns, 4 frigates, 5 sloops, 2 cutters</i>
Building:	<i><b>Leopard</b> (one of 50-guns)</i>
Under Repair:	<i>One of 50-guns, 2 frigates</i>
Serviceable:	<i>8 of the line, 1 of 50-guns, 4 frigates, 3 sloops</i>
In Commission:	<i>2 of the line as guard ships</i>

Ships that were under repair were included under the general heading of ships in ordinary.

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The Naval Estimates of 1792 included for Chatham £2,000 for building two new bays of Mast Houses with slips. (Presumably these are the buildings show on the west of the South Mast Pond on the 1821 Map)

During the period 1792 to 1810 Dockyard accommodation was overtaxed. Chatham possessed four docks and six slips: on three slips First-rates could be constructed; Third- rates on two of them, and small vessels on the sixth. The depth of water on the sills of the dry docks at H W springs varied 'between 15 feet 3 inches and 18 feet 4 inches, and the large ships could not dock at neap tides; first and second-rates could only be docked at spring tides.

The state of the Ordinary at Chatham just before and just after the war started is given below:

	Line	50's	Frigates	Sloops etc	Total
June 1791	28	5	13	6	52
December 1793	14	5	3	1	23

In 1790, **Queen Charlotte** 100-guns, was launched at Chatham. At the victory of 'The Glorious First of June' in 1794, **Queen Charlotte** flew the flag of Admiral Earl Howe, the C-in-C. In 1795, the **Ville de Paris**, 112-guns, designed by John Henslow, was launched at Chatham. According to D G Browne, author of 'The Floating Bulwark' she was the biggest ship yet built in British Dockyards and the first to have a gun deck of over 200 feet. In July 1793, **Temeraire**, a second-rate 98-gun ship, was laid down at Chatham and launched 11 September 1798. She took part in the Battle of Trafalgar and in 1836 was a guardship at Sheerness. Her guns were fired for the last time at the coronation of Queen Victoria in June 1838; six weeks later she was sold out of the service. It was the sight of the Temeraire being towed to the ship breakers that gave Turner the inspiration of his famous picture, 'The Fighting **Temeraire**' which hangs in the National Gallery, London.

### The Rebuilding of the Storehouses and the Ropery

A collection of buildings including the Ropehouses and Storehouses at the southern end of the Yard were regarded as a considerable fire risk since many were of timber. In 1770 the wooden ropehouse at Portsmouth was burnt down and replaced by a brick built building. In December 1776 'Jack the Painter', the arsonist, set fire to this building and though considerable damage was done the fire was confined to the double Ropehouse and the rest of the Yard was saved. To diminish fire risks the Navy Board ordered in January 1782 that when wood buildings in the Dockyards were taken down they were to be replaced by brick structures.

The Admiralty realised the difficulties of obtaining the large quantities of stores required at the outbreak of war and ordered the provision of a reserve of materials with adequate storehouses to accommodate them.

About 1780 the building of the brick storehouse, now designated as No 3 Storehouse, was started and completed by 1786. This replaced the long storehouse erected in 1686. The building nearly 700 feet long with four floors, was re-roofed in 1929. It is the largest naval storehouse ever built. On the east side of this storehouse is an interesting feature; a lean-to shed supported by upright gun barrels.

In the 1786 Visitation by the Lords Commissioners of the Admiralty, they noted that the rigging house and cordage houses adjacent to the new storehouse of 1786 were in a poor state of repair. They proposed to the Navy Board that those buildings might be replaced and the Rigging House made large enough for the working of longer shrouds for the increasing size of warships. To make a larger Rigging House it was necessary to rebuild the wooden Ropery to avoid fire risk. The new building now known as No 1 Rigging House and No 2 Storehouse, was commenced in 1793 and was completed by 1805. The

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northern half of this building was a Rigging House and the southern half was for storage. This building was re-roofed in 1928.

Another step to reduce the fire risk was the replacement of the two single-storeyed wooden buildings, the spinning and laying houses of the Ropery, sited side by side, by a brick double Ropehouse which is still in use today.

A Navy Board Minute of 5th April 1787 read:

*Acquaint Chatham Officers that money is granted for erecting a new double Rope House, tarring and black and white yarnhouses and a hatchelling house in their Yard.*

Another Minute of 4th July 1787 reads:

*Send Chatham Officers a copy of the contract for building a double Rope House by Messrs Samuel Nicholson & Son, Mr Richard Martyn and Mr Samuel Baker and a warrant for their seeing the work is carried out.*

The double Rope House was built by an outside contractor since there was insufficient labour in the Yard to carry a project of this size; it must have been one of the largest industrial buildings in the country at the time. The Rope House is a three-storeyed building 1140 feet long and just over 47 feet wide. The other buildings mentioned in the Minute were erected by Yard labour; the Ropery was completed by 1792.

The two Hemp Stores, built about 1720, were not rebuilt at this period. The Hemp Store to the north of the double Rope House remained in use until about 1820 when it was used as a receiving room and later as a Boiler and Engine House. A beam engine was installed by Boulton and Watt.<sup>1</sup> The Ropery was provided with electricity in 1907. The other Hemp Store to the east of the Ropery, built in 1728, was extended on the eastern side in 1743. When the Hemp store to the northern of the Ropery was used for other purposes the remaining Hemp store was extended to the White Yarn House; the old small hatchelling house being demolished. An additional storey was added to the Hemp House to accommodate spinning machinery in the 19th century. A hatchelling house built by Yard labour at the northern end of the Ropery and east of the old Hemp house was later used as a testing house.

The tarring and the white and black yam houses built by Dockyard labour after 1787 now form a complete block owing to brick infilling. The tar was stored in cellars at the northern end of the Rope House and taken by a tunnel under the building to the Tarring House.

The double Rope House has three floors and two lofts. The first and second floors were spinning floors and the apprentices worked in the lofts, but with the introduction of machines about 1860, spinning was confined mainly to the spinning room above the Hemp Store. The ground floor has always been the Rope-making or Laying Floor. Originally the first floor had three spinning frames at each end, the second had four, and the twin lofts used by apprentices, one apiece.

### Ropemaking

For the manufacture of rope, the raw hemp, generally in bales weighing about a ton apiece, was stored in the Hemp House. Parters weighed off the hemp into bundles which were taken to the hatchellers who pulled the hemp over boards, in which were set spikes, until the fibres in the bundle were all parallel. From the hatchelling house the bundles of

<sup>1</sup> This powered capstans at the end of the Laying Floor and from these ropes transmitted power to the forming and laying machines.

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hemp were carried to the spinning floors. Each spinner was given a bundle of hemp and out of this he spun a given number of threads each 1,020 feet long. The threads or yams were warped or made up into bundles or hauls and taken to the White Yam House.<sup>1</sup>

The haul was passed from the White Yam House over a series of rollers to the Tar Kettle. From there, propelled by the action of a horse capstan, it was wound into the Black Yam House where it was allowed to dry. The hauls were then separated and the yams wound on bobbins before being taken to the Laying Floor where the strands were formed.

The majority of ropes made were hawser-laid; they consisted of three strands each composed of an equal number of yams, twisted to the right, and laid up to the left. Thus 3-inch hawser-laid rope consisted of three strands each containing 20 threads or yams. In cable-laid rope, each strand is a hawser-laid rope.

The laying of rope involved the use of jack wheels which had to be turned manually. For some operations these jack wheels had to be pulled from one end to the other of the Laying floor by winches which again had to be turned by labourers. Sir Samuel Bentham, Inspector General of Naval Works, wished to see if steam power could lessen the vast amount of manpower required in the Ropery and his assistant, Simon Goodrich, was sent to Chatham to study the matter. In 1811 the Yard was supplied with Maudsley's forming machines. These were made of cast and wrought iron and were designed to be driven by endless ropes running the length of the Laying Floor, over capstans which were driven by a steam engine. These new jack wheels were supposed to dispense with the manual labour but there is no evidence that a steam engine was used until 1836, when the Hemp House at the northern end of the Ropery was converted into an Engine House and a Beam Engine installed by Boulton & Watt. Laying machines were built in the Dockyard between 1854 and 1856.

At the time of Goodrich's visit, 1808, there were 205 spinners, including 27 apprentices. The apprentices were kept on spinning until such time as they were able to perform the tasks with the journeyman, about three years. The spinners did spinning, tarring, dividing yam and laying. There were 62 labourers employed on hatchelling, coiling the white haul in the White Yam House, reeling the yam, wheel turning, and assisting the Ropemakers in laying. There were 37 House boys, one boy to every 4 spinners to take the threads off the hooks. They also swept up the place.

In his book 'Treatise on Ropemaking' published in 1857, Robert Chapman, Master Ropemaker of Deptford Dockyard gave the following table of men and their offices:

39 men land 25 tons of hemp	One man attends 6 tar-kettles
One man parts one ton of hemp	One man spins 26 threads, 170 fathoms
One man carries to 10 hatchellers	One man superintends 48 spinners
One man hatchels 51;2 bundles	Two labourers warp 640 threads per day
One man turns the wheel to 8 spinners	Two boys assist labourers warping
One man tends the wheel to 8 spinners	Two spinners setting up yam
Two boys tend to 8 spinners	Two spinners wind 500 threads
One boy attends 4 winding machines	

The large industrial complex, the Ropery was initially created in the early years of the 17th century and grew in importance as the Navy expanded in the 18th and 19th centuries. The circumference of cordage required for a 74-gun ship in the late 19th century ranged from  $\frac{3}{4}$  inch to  $18\frac{1}{2}$  inches and over 26,000 feet of  $3\frac{1}{2}$  inch rope was needed. Large quantities of such rope was needed for the rope woodings of the lower masts. Iron bands or hoops were not used extensively until after 1800. Cables of 101 fathoms in length and 25 inches in circumference could be made in the Ropery. The

<sup>1</sup> See chapter 3 on Dockyardmen

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rigging of a ship had to be renewed at intervals dependent on the climate of its station, storms and naval actions. The **Victory** in dry dock at Portsmouth has its rigging renewed every 4 or 5 years; the rope was made in Chatham Ropery.

A major change in the operation of the Ropery was the use of spinning machines starting about 1860. The effect of the introduction of these machines and their operation by women is detailed in the section on Dockyardmen; the number of male ropemakers fell from about 150 to the order of 30.

Work in the Ropery started to decline when chain cable replaced rope for moorings and wire rope began to replace hemp rope for standing and running rigging. When sails were no longer used, the demand for cordage fell off. Woolwich ropery ceased production in 1835; Portsmouth Ropery in the 1860's; Devonport Ropery was heavily bombed in the Second World War but some of its machinery was transferred to Chatham. Chatham, using the traditional methods of ropemaking survived, a shadow of its former importance.

In the 19th century and later, Chatham-made rope was distinguished by a strand of yellow jute; Devonport-made rope by a strand of red and commercially made rope by a strand of blue. The use of red jute thread instead of worsted thread for the distinguishing mark is said to date from 1869 when Mr Jesse Redman received 4s per week for this improvement, which was reckoned to save Admiralty £1,800 a year. Today (1966) Chatham is the only Yard with a Ropery and these coloured strands distinguish sisal and manila rope.

In the 1950's the work carried out in the Ropery was: Ground floor, laying of rope; First floor, spun yam; Second Floor, signal halyards; Cockloft, line work. The hatchelling and spinning of the threads for ropemaking has been effected by machines since 1860. The forming the strands and laying of rope is still carried on by methods which have not changed appreciably for the best part of 200 years. The forming and laying machines used in these processes are driven by rope systems powered by electric motors instead of by labourers manually operating winches. The materials used in modern rope making include man-made fibres.

One of the major complaints of the workers in the ropery was the cold in winter. Until 1956 the windows were unglazed being covered by shutters which had to be opened for the admission of light and the removal of dust.

### Personnel of the Ropery

In the Declared Accounts of 1561 there is the first mention of a Ropemaker:

*16s 4d for wages and victualling of Botolph Mungey giving his daily attendance in providing cables, ropes and other cordage.*

Before the establishment of a government ropery, cordage was supplied by contractors working in rope walks in and near the Yard.

The Ropery was run by the Master Ropemaker, his Foreman and Layers responsible for all stages of the manufacture of cordage, and the Clerk of the Ropeyards and his clerk who handled all the paper work of the organisation.

### Master Ropemaker and his officers

In the Declared Accounts appears:

*1628, William Lane, Master Ropemaker, Overseer of making cordage at Chatham, £6 2s, and 1637, William Lane, Ropemaker and divers other ropemakers at Chatham making cordage for the whole time of this account, 19,290 days among them at 16d a day, £1,286 0s 9<sup>1</sup>/<sub>2</sub>d*

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In the Account of 1642, appears:

*John Wallis, Clerk of the Ropeyard, and William Lane, Master Workman, for journey from Chatham to London, 35s.*

From 1649 -62 the name of Robert Putman, <sup>1</sup> Master Ropemaker appears in the Accounts:

*1656, Robert Putman and sundry other spinners making cordage, 1st of January 1655/6 to 31 December 1656, £2,650.*

Robert Sliter who held the post of Master Ropemaker from 1662 to 1691 was an interesting character. He married Sarah Yardley of the famous Chatham family, some of whose portraits are in Maidstone Museum. In the Yardley family tree he is described as a Mathematician. In 1677, he offered to do some part-time teaching of mathematics and navigation in consideration of being borne on a ship at Chatham as an able seaman with allowance of victuals and wages.

*My salary in my place relating to ye Ropeyard being butt small and not a competent subsistence for myself and family.*

Sliter offered the following syllabus of instructions (3 March 1676/7):

*Arithmetic:* Natural, vulgar & decimal; Artificial, the construction and application of the table of logarithms.

*Geometry:* So much as is necessary for navigation.

*The doctrine and use of ye sphere or globe:* Terrestrial, Celestial; spherically and in plane.

*The doctrine of the triangle:* Plain, spherical, with the calculation and application of ye tables, sines, tangents and secants.

*Astronomy:* The doctrine of the second motions and eclipses of the luminaries with such other propositions touching the Diurnal motions as are necessary in ye art of navigation.

*Navigation:* Propositions of sailing according to the Plaine and Mercator's chart and the arch of a great circle.  
Construction and applications of instruments for taking observations, heights and distances &c, and making of maps and charts, etc.

There was a precedent for such appointments and Samuel Pepys wrote to Commissioner Beach at Chatham that the ... *business about Mr Sliter is under debate before the Lords*. Whether his offer was accepted is not known.

He was pensioned at Michaelmas 1691 at £16 per year. After his death in 1694 his widow, Sarah Sliter, applied unsuccessfully for the post of housekeeper at Hill House. She pointed out in her application that her late husband's pay was under a half of the present holder of the office and that he had done:

*lasting piece of service in calculating the rules established by the Navy Board as standard for working all sorts of cables.*

<sup>1</sup> Phineas Pett signed a petition on behalf of Mary Pulman, relict of Robert Pulman, Master Rope-maker, deceased, to save her from the 'miserable assistance of the Parish'

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His daughter, Elizabeth, married Jacob (late Sir Jacob) Acworth in 1696. As widow of the Surveyor of the Navy she was given a pension of £300 per year in 1749.

From the Restoration until the Pay Revision of 1695 the salary of Master Ropemaker was £44 per year. After the Revision in 1695 the pay for this office was raised to £100; he also received the benefit of a number of apprentices.

In a letter from the Secretary of the Admiralty to the Commissioner at Chatham dated 22nd July 1669 appears:

*Warrant for Benjamin Long to be Master Ropemaker at Chatham ... deliver to him ... after he has taken the Oathes, etc and paid half a crowne for the King's duty.*

During a large part of the first half of the 18th century the Guy family were the Master Ropemakers at Chatham. There are memorials to the Guys in St Mary's Church, Chatham:

*Neare this place lies the bodies of Mr Geo and Will<sup>m</sup> Guy who were many years Mas<sup>r</sup> Ropemakers of His Majys Yard at Chatham. The former died 9th of June 1743, aged 83. The latter dated the 6th of July 1769, aged 53 years.*

*William Guy, Master Ropemaker at HM Yard, Chatham, died 6th August 1753, aged 66.*

### Wages paid to workers in Chatham Ropeyard

Began wages 1st January 1765 and ended 31st March following.

#### *Officers*

William Campbell, Clerk of the Ropeyard, his salary at £100 p.a.	£25. 0. 0.
More to him for 15 gallons of oil bought for spinning whirles	3. 0. 0.
William Guy, Master Ropemaker, his salary at £100 p.a.	25. 0. 0.
William Nalk Clerk to the Clerk of the Ropyard at £40 p.a.	10. 0. 0.
More to him for extra attendances 77 days at 15d per day	4.16. 3.
Henry Barnette) each for heating the Tarkettles	2. 6.
James Parett ) -do-	2 .6.
Maurice Delamere for making and repairing wheelbarrow	5. 0.
	<u>£68. 6. 3.</u>

### Wages paid to workers in Chatham Ropeyard continued

	Rate	Days		Full Wages			Lodging			
		Ord	Extra	Total	£	s	d	£	s	d
Spinners										
Peter Burton ) Servants to	20d	77	81	158	13.	3. 4	2. 8			
William Bumstock) the Master	19	77	81	158	12.	10.2				
Michael Abrahams) Ropemaker	19	77	79	156	12.	7. 0				
William Perryman )	17	77	79	155	10.	19.7				
Thomas Howell 1st Storeman	22	77	86 <sup>1</sup> / <sub>4</sub>	163 <sup>1</sup> / <sub>4</sub>	14.	19.3	2.9			
Thomas Nailor )His servants	17	77	78	155	10.	19.7				
Thomas Howell )	17	77	78	155	10.	19.7				
Henry Burnette Layer	20	69	64 <sup>1</sup> / <sub>4</sub>	133 <sup>1</sup> / <sub>4</sub>	11.	2. 1	2.4			
Benjamin Johnson His servant etc	20	72	69 <sup>1</sup> / <sub>2</sub>	141 <sup>1</sup> / <sub>2</sub>	11.	15.10	2.6			



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The total wages for the first quarter of 1765 for Chatham Dockyard was laid out:

	Board <sup>1</sup>	Full Wages	Lodging
Officers, etc		£ 68. 6.3	
Spinners	£59. 12	1,227.16.3	£11.14.3
Hatchellers		158. 2.5	1.19.6
Labourers		163.16.0	
Boys		31. 1.1	
	£59.12	£1,649. 2.0	13.13.9
		13.13.9 Lodging	
		£1,662.15.9 Full	
		59.12.0 Deductions	
		£1,603. 3.9 Nett	

The rates of pay were:

Spinners	20d per day
Hatchellers	17d per day
Labourers	15d per day
Boys	6d per day

By the Pay Revision of the first part of the 19th century the Officers of the Ropery were given substantial pay rises, but the benefits of apprentices were taken from them.

Master Ropemaker	£250
Foreman of Ropemakers	£200
Foreman of Line & Twine spinners	£160
Layer	£120

### Ropery Officers

In 1833 the pay of the three Layers was reduced from £120 to £100 to bring them in line with the Inspectors of Shipwrights. By the Estimates of 1869/170 one of the posts of Foreman of the Ropemakers was to be abolished and in the following year the office of Master Ropemaker was also abolished. In the Estimates of 1871/172 the Officers of the Ropery appeared to be the Foreman of Spinning Machines whose salary was £200 per year and the Layer whose salary was £100, increased in the following year to £125. By 1882 their salaries were: £180 - £300, and £125, respectively. By 1889 the office of Layer seems to have been abolished.

A member of the Ropery staff whose name was well known in the ropemaking industry was Mr Bryant, author of 'Theory and Practice of Ropemaking.' He was appointed First Layer in 1809 and later became a Foreman of the Ropery.

James Burton was the Master Ropemaker from at least 1837 to 1859 when he was succeeded by the Foreman of Ropemakers, J T Taylor. 'Chatham News' of 20th December 1862 reported that Mr Burton, Master Ropemaker, who had been superannuated 5 years ago, had died. Taylor held his office for a short time only because of .. *a very serious illness owing to exposure when examining hemp in London*, probably tuberculosis. He was awarded a pension of £193.13s 4d in 1862: In 1865 his widow was given a gratuity of £100. It was judged that her husband had died as the result of injuries received at work.

When sails were the motive power of ships the Master Ropemaker was an important Yard Officer; he was provided with a residence in the Yard. On the 1844 Map the Ropemaker's house is shown on the south eastern corner of the Commissioner's garden. When the

<sup>1</sup> Board or board wages represented advances made during the quarter and deducted at the end

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Marine Officers' Quarters were built in 1864, this house was demolished and a house built nearer Main Gate. This led to protests from the Master Ropemaker, Joseph Parsons, that there had been two surrenders of the official residence of this post despite the fact that Chatham Ropery was the largest producing factory of the trade. He declared that his predecessors had occupied No 9 The Terrace from 1730 when it was built, until 1830.

In June 1837, the Chaplain, Mr Whitehead, had been ordered to vacate the Master Ropemaker's house which was to be given to Mr Burton, the holder of that office. (This was the house in the Commissioner's garden.)

In 1864, the Director of Engineering and Architectural Works writing about the proposed Master Ropemaker's house, stated that it was near the Lead Mills <sup>1</sup> and should be moved 10 feet from the Dockyard wall. This residence known later as The Cottage,<sup>2</sup> subsequently occupied by the Superintending Electrical Engineer in charge of the Power Station, was in 1966 occupied by the Yard Services' Manager.

The Master Ropemaker, Joseph Parsons, was paid £1 .1s lodging allowance until his house, then under construction, was ready for occupation. In 1870 he moved in but his occupation was very short; his post was abolished and he was superannuated with a pension of £160.15s a year. The house was occupied for a short time by the Accountant, Mr Clatworthy, who then moved to The Terrace.

In 1873, the Ropery was in charge of Mr Steel, Foreman of the Ropery, with a salary of £180/£250 per year. Owing to extensive use of machinery for ropemaking, the Ropery was transferred at the time from the Department of the Master Attendant to that of the Master Shipwright and Engineer. The Master Attendant had to certify the quality of the cordage before it was received into store. In March 1875, the Ropery was transferred to the Chief Engineer's Department.

'Chatham News' of 12th February 1887 announced a Civil Service Examination for the post of Foreman of the Ropery on the retirement of Henry Cooper. Mr Cooper was still designated Master Ropemaker.

The last Foreman Ropemaker retired in 1981, Mr Cyril Holms. He came to Chatham in 1956 and since 1975 had been in charge of both the Ropery and the Sail/Colour Loft. His post was not to be filled. (No ropemaker apprentices were entered after 1951)

### Clerk of the Ropeyard

Monson in 1635, in his list of Navy officials, gives as the duty of the Clerk of the Rope- makers, as receiving into his charge the stores of hemp, tar, etc, for the manufacture of cordage, and keeping check by calling all workmen twice a day to their labours, a duty formerly that of the Clerk of the Checque. Until the Dockyard and the Ropery were walled, in about 1720, the Ropery was a separate establishment from the remainder of the Yard which was entered through its own gate. Neither the Clerk nor the Master Ropemaker were representative Dockyard Officers. The Clerk of the Ropeyard acted as a combination of Storekeeper and Clerk of the checque and with the Master Ropemaker who supervised the works, had separate dealings with the Resident Commissioner and the Navy Board, at least until the 19th century.

The first reference to such an Officer occurs in the Declared Accounts for the period 1628 to 1643. John Waller (Wanler or Wallis) received 2s a day, £36 10s a year, and 10s paper money. In 1637, he received as reward £6 13s 4d for keeping an account of the junk delivered to Thomas Billing, Ropemaker, for making twice-laid cordage. The picking of

1 See chapter 8 on civil Engineering

2 The bungalow at Pembroke Gate was originally occupied by the Assistant Electrical Engineer, Mr Fletcher.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

junk oakum was sometimes given to the poor of Chatham who were paid piece-work rates. The Clerk of the Ropeyard kept account of ...*ground towes drest into hemp ocum*

From about 1652 to the Restoration, Major John Brown (ex-Captain of Upnor Castle) held the office of Clerk of the Ropeyard. In 1658 he was appointed Deputy Storekeeper of Ordnance at Chatham at £50 per year.

Captain Allen held the post after Major Brown; he is mentioned in Pepys' diary:

*26 February 1668. This evening came a letter from Captain Allen, formerly Clerk of the Ropeyard at Chatham, who do give me notice that he hears an accusation likely to be exhibited against me of my receiving £50 of Maston, the Timber Merchant.*

Pepys frequently expressed admiration of Allen's daughter, Rebecca, who married a Lieutenant Jewkes. A diary entry of 1 April 1667:

*While we were talking there comes Sir Thomas Allen (Captain Allen) with two ladies, one of which was Mrs Rebecca Allen, who I knew heretofore the Clerk of the Ropeyard's daughter, poor heart! come to desire favour for her husband (Lt Jewkes) who is clapped up for sending a challenge to his captain ...*

From 1663/1690 John Owen filled this office; his warrant was renewed 8th October 1689. By an Order of October 1680 he was allowed one clerk whose pay was £24 per year. Owen received £70 per year, £10 house rent and £1 for paper money. After the Pay Revision of 1695, his pay was raised to £100 a year, the same as that of the Master Ropemaker.

The Clerk of the Ropeyard had lived for the best part of the 17th century in a house near the Chatham Parsonage let by the Yardley family. In the Map of 1771 the Clerk of the Ropeyard is shown as living at No 8 The Terrace.

In the Pay Revision at the beginning of the 19th century, the office of the Clerk of the Ropeyard was shown to be superior to that of the Master Ropemaker. The former carried the status of the Superior Officer, the latter that of Inferior Officer. The salary of the Clerk of the Ropeyard was raised to £350 per year, £100 more than that of the Master Ropemaker. The salary of his clerk was raised from £40 to £200 per year.

Many of those who had held the office of Clerk of the Ropeyard were promoted to the post of Clerk of the Survey at one of the Royal Yards. Pierce Edgecumbe, Clerk of the Ropeyard from 1809, for instance, was appointed to this post at Chatham in 1819. In 1822, the office of Clerk of the Ropeyard was discontinued.

Excellent illustrated accounts of the Chatham Ropery are given by J G Coad in 'Post Mediaeval Archaeology,' Volume 3, 1969, and in 'Mariner's Mirror,' May 1982.

### Master Ropemakers

1628/1643	William Lane	1822	George Moxon
1649/1662	Robert Pulman	In office in 1829	F W R Sadler
1662/1691	Robert Sliter	1837/1859	James Burton
1698/1708	Benjamin Long		Foreman of Ropemakers
1708/1741	George Guy	1838	J Akers & G Passby
1741/1745	William Guy <sup>1</sup>	1859/1862	John Thomas Taylor
1745/1753	Richard Wood	1862/1870	Joseph Parsons

<sup>1</sup> Transferred to Plymouth as Master Ropemaker

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Master Ropemakers continued

1753/1769	William Guy	1873	Mr Steele, Foreman of
1769/1794	James White		Ropery
1794/1798	Benjamin Jennings	1885/1887	Henry Cooper, Foreman of
1798/1822	Watson Fenwick <sup>1</sup>		Ropery

In 1809 Robert Mark, Foreman of Ropemakers at Chatham, went to be Master Ropemaker Woolwich, formerly superannuated 11/1111809.

### Clerks of the Ropeyard

1628/1643	John Waller		
1652/1660	Major John Brown		
c.1660	John Allen		
1663/1690	John Owen		
1690/1714	Henry Cole		
1714/1715	Thomas Rogers	To Storekeeper, Portsmouth	
1715/1719	Edward Gerrard	From Clerk of Survey, Kinsale	
1719/1729	Bryan Bentham	To Clerk of Checque, Sheerness	
1729/1730	John Sargent	To Clerk of Survey, Deptford	
1730/1739	Andrew Phillips	To Clerk of Checque, Chatham	
1739	Newland Rice	In office in 1745	
c. 1756	William Campbell	Clerk of Checque, Chatham	
1768/1788	Frederick Forrest	Died at Edinburgh 1788	
1788	Hewling Luson	Clerk of Survey, Sheerness	
1788/1792	George Gainer	Clerk of Survey, Sheerness	
1792/1798	John Burton <sup>2</sup>	Ex-Storekeeper of Victualling to Clerk of Survey, Chatham	
1798/1801	Thomas Burnett	Ex-Purser of <i>Centurion</i> , to Clerk of Survey, Woolwich	
1801/1806	John W Lloyd	To Clerk of Survey, Deptford	
1806/1809	Wm Wilkins Scott		
1809/1812	Pierce Edgecumbe	(Of Good Testimony) to Clerk of Survey Woolwich, and in 1819 to Clerk of Survey Chatham	
1812	Thomas Mears Haite	Ex-Clerk of Survey, Plymouth	
1822	Post discontinued		

1 Watson Fenwick was responsible for improvement to rope manufacture between 1798 and 1803. He was recommended for a dockyard house in 1803, an earlier concession for the Master Ropemaker which must have been lost.

2 John Burton, his altar tomb is just outside St Margaret's Church, Rochester and bears the inscription: 'John Burton, Clerk of the Survey in His Majesty's Dockyard, Chatham who departed this life the 8th of May 1806, aged 61 years'

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Lead Mills

According to Wright's Topography (1938) there was:

*. . . a large building appropriated to the grinding of paint, and the smelting and rolling of lead by means of a steam engine.*

The Lead Mills mentioned above, erected in 1818, were east of the Ropery and south of Main Gate. The Lead and Paint Mills building was designed by Holl and built by contractors. The building is of fireproof construction with York stone floors supported on cast iron columns and joists and with iron doors and iron-framed windows. The southern end of the building had a lead furnace, a casting area, and a double rolling mill powered by a beam engine. There were also facilities for boiling oil for use in paint making. The northern half of the building had a series of paint mills for grinding pigment and preparing paint driven by the beam engine. On the floor above were adjustable iron frames on which canvas was stretched before being painted. The Lead Store built at the southern end of the mills was in 1883 converted into the School for Minor Trades' Apprentices.

In 1860 over 1,000 tons of lead and paint were produced. The mills were closed in 1870; there had been complaints that the fumes had caused discomfort at the Melville Hospital on the opposite side of the road. They were reopened but finally closed in 1883 together with the Iron Mills. The lead required by the Navy was then obtained by contract. In Wright's Topography of 1838, the Master of the Lead Mills was given as John Weeks; in 1820 the salary for the post was £150 per year.

## Building Slips

A report on Chatham Yard dated 2nd May 1805 mentioned the usage of the building slips.

Slip No	<b>Impregnable</b>	2nd-rate	98-guns	22 Feb 1802
Slip No 2	Not occupied			
Slip No 3	<b>Revenge</b>	3rd-rate	76 guns	6 August 1800
Slip No 4	Not occupied			
Slip No 5	Not occupied			
Slip No 6	Not occupied			

Slips Nos 1 and 2, capable of receiving 1st and 2nd rates

Slips Nos 3, 4, 5, & 6 capable of receiving 3rd rates

## List of Ships built between 1754 and 1815 at Chatham<sup>1</sup>

Date	Name	Rate	Guns	Tonnage
1756	Namur	2nd rate	90	1814 bm
1756	Union	2nd rate	90	1781 bm
1757	Actaeon	6th rate	28	595 bm
1757	Hussar	6th rate	28	586 bm
1757	Burford	3rdrate	70	1424 bm
1758	Lenox	3rdrate	74	1579 bm
1759	Valiant	3rd rate	74	1799 bm

1 1756-1763 Seven Years' War 1775-1783 War of American Independence  
1793-1801 Revolutionary War 1803-1815 Napoleonic War

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of Ships built between 175 and 1815 at Chatham *continued*

Date	Name	Rate	Guns	Tonnage
1759	Sandwich	2nd rate	90	1869 bm
1760	Ballona	3rd rate	74	1615 bm
1761	Ocean	2nd rate	90	1833 bm
1762	Pearl	5th rate	32	683 bm
1763	Ramillies	3rd rate	74	1619 bm
1763	Ferret	Cutter	6	83 bm
1765	Victory	1st rate	100	2142 bm
1766	Aurora	5th rate	32	679 bm
1766	London	2nd rate	90	1894 bm
1768	Raisonnable	3rd rate	64	1386 bm
1768	Barfleur	2nd rate	90	1947 bm
1769	Salisbury	4th rate	50	1051 bm
1771	Kingfisher	Sloop	14	302 bm
1771	Lighter	Lighter		130 bm
1772	Prince George	2nd rate	90	1955 bm
1774	Roebuck	5th rate	44	886 bm
1775	Stirling Castle	3rd rate	64	1374 bm
1776	Camilla	6th rate	20	433bm
1776	Ariadne	6th rate	20	430 bm
1776	Pegasus	Sloop	14	300 bm
1777	Formidable	2nd rate	90	1945 bm
1778	Alfred	3rd rate	74	1638 bm
1778	Nymph	Sloop	14	300 bm
1779	Montague	3rd rate	74	1638 bm
1780	Leander	4th rate	52	1044bm
1780	Amphion	5th rate	32	680 bm
1781	Dolphin	5th rate	44	880 bm
1782	Diadem	3rd rate	64	1376 bm
1782	Atlas	2nd rate	90	1956 bm
1785	Mooring Lighter 1			120 bm
1785	Mooring Lighter 2			120 bm
1788	Royal George	1st rate	100	2286 bm
1790	Leviathan	3rd rate	74	1707 bm
1790	Queen Charlotte	1st rate	100	2286 bm
1791	Rattlesnake	Sloop	16	326 bm
1791	Goodwill	Lighter		115 bm
1794	Unicorn	5th rate	32	791 bm
1794	Stag	5th rate	32	792 bm
1795	Ville de Paris	1st rate	110	2351 bm
1796	Medway	DY vessel		116 bm
1796	Tamar	5th rate	38	999 bm
1796	Clyde	5th rate	38	1002 bm
1798	Temeraire	2nd rate	98	2121 bm
1799	Active	5th rate	38	1058 bm

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of Ships built between 1754 and 1815 at Chatham *continued*

Date	Name	Rate	Guns	Tonnage
1800	Leda	5th rate	38	1071 bm
1805	Revenge	3rd rate	74	1954 bm
1805	Thames	5th rate	32	662 bm
1806	Meleager	5th rate	36	875 bm
1807	Warspite	3rd rate	76	1890 bm
1808	Merope	Brig Sloop	10	252 bm
1808	Iphigenia	5th rate	36	870 bm
1809	Muros	Brig Sloop	14	252 bm
1810	Impregnable	2nd rate	98	2406 bm
1811	Orlando	5th rate	36	876 bm
1812	Tenedos	5th rate	38	1083 bm
1812	Briton	5th rate	38	1080 bm
1813	Baccus	Brig Sloop	18	384 bm
1813	Chatham	Sheer hulk		1691 bm
1813	Lively	5th rate	38	1080 bm
1814	Mud Boat 1			58 bm
1814	Mud Boat 2			58 bm
1814	Sheerness Boat			54 bm
1815	Defence	3rd rate	74	1754 bm
1815	Hercules	3rd rate	74	1750 bm
1815	Howe	1st rate	120	2619 bm

Frames for **Psyche** and **Prompt**, 5th rates 32-guns, and **Colibri** and **Goshawk**, Brig Sloops, 18 guns, made in Chatham Dockyard and sent to Canada early in 1814 for re-erection on the Lakes. Ordered 21 July 1814 to sell at Quebec as not possible to get to Lakes.

A series of Establishments were issued between 1667 and 1745 in which the dimensions of each class of warship was laid down. These show the increase in size of more than thirty per cent of ships carrying the same number of guns over a period of some 70 years.

Towards the end of the 18th century the smaller three-deckers were replaced by much longer ships carrying their guns on two decks. The 74-gun ship, a two-decker, formed the bulk of the ships-of-the-line by 1800. Again a new class of frigate was introduced which carried her 40 guns on one deck and a long quarterdeck.

1693	Sussex	3rd rate	80	1203 bm	157 x 41 <sup>1</sup> / <sub>2</sub> feet
1805	Revenge	3rd rate	74	1954 bm	183 x 50 feet

### Suggested improvements to the Yard in the early 19th century

At the beginning of the nineteenth century there were a number of schemes mooted by Bentham to improve the Royal Dockyards: some of them are mentioned in the Chapter on Sheerness Dockyard.

At Chatham there were problems, already mentioned with the shoaling of the River Medway. In 1807 Admiralty was informed that the river was silting so badly in Chatham Reach that the larger ships would not be able to use Chatham Yard despite heavy expenditure on dredging. John Rennie, the Engineer of Rochester Bridge, investigated the problem and he decided that the shoaling was created by the restriction on the flow of

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

water under the 14th century Rochester Bridge, due to its huge starlings. In 1818 the Navy Board expressed the opinion that unless the bridge was removed, the Dockyard at Chatham would be rendered useless. It was suggested that if the Bridge Wardens promoted a Parliamentary Bill for a new Bridge and the destruction of the old one, Admiralty might offer financial assistance. By 1819 plans for a new bridge were ready but there were Treasury objections to the spending of large sums of money in the depression following the Napoleonic Wars and the project was abandoned.

John Rennie, as Engineer of Rochester Bridge, built in 1818 a large centre arch of 72 feet span, widened the roadway and provided the elegant balustrade which can now be seen along the Esplanade at Rochester. (Rennie died in 1821 and was succeeded as Bridge Engineer by Telford.) The bridge was removed in 1857 when the Royal Engineers blew up the last portions of the structure.

In 1810 Bentham communicated the general outline of his plan for the improvement of Chatham Dockyard to members of the Navy Board but he considered Chatham as only secondary to Sheerness and he was prepared to wait till the works at the latter port were formulated. The abolition of his office in 1812 precluded his making further official proposals. His proposed scheme was in some ways similar to that later expounded by Rennie and involved straightening the course of the Medway from its mouth to Rochester Bridge and providing two channels from Sheerness Harbour to Chatham Dockyard and to the Port of Rochester. A basin was to be provided contiguous to the Dockyard, Marine Barracks and Ordnance Wharf, capable of holding 50 or 60 ships of the line.

Rennie reported in 1814 his investigation of the problem of Chatham Yard and its solution. He pointed out that the depth of water in the river was greater than in times past, as shown by surveys taken a century before. Incidentally, there is at the foot of the wall in front of the Dockyard Terrace a stone inscribed 'Datum Stone, Rennie, 1820.' He gave his findings on the depth of water in front of the docks at Chatham.

*At the 1st or southernmost dock there is only 17 feet 4 inches at springs and 13 feet 10 inches at neaps; at the 2nd, 18 feet 3 inches and 14 feet 9 inches; at the 3rd, 17 feet 9 inches and 14 feet 3 inches; on the 4th, 17 feet 11 inches and 14 feet 5 inches. In none of these docks is sufficient water for first and second-rates at the highest spring tides and when docked these are heaved up on blocks from 2<sup>1</sup>/<sub>2</sub> feet to 3<sup>1</sup>/<sub>2</sub> feet high and at neaps no ships of the line can be docked at Chatham.*

The arrangements in the Yard were criticised. Timber was stacked in places where there was no room for it and at different heights. The principal part of spars were kept in a mud pen fenced off from the Medway which with the floating bridge erected by the Board of Ordnance at Upnor Castle obstructed the flow of current and caused accumulation of mud; a process which was assisted by the jetty at the Dockyard.

Rennie proposed cutting a new channel for the river from a little below Rochester Bridge to a point just above the floating bridge at Upnor Castle and another from Upnor, south of St Mary's Creek to join the head of Gillingham Reach at Gillingham Fort. He pointed out that large ships could reach the head of Gillingham Reach but that the difficulties of navigation occurred in Sovereign Reach, Cookham Reach, Bridge Reach, etc where the river was crooked and narrow and in some places shallow. Dams were to be made, one from the NE corner of Rochester Marshes to the Frindsbury side between the two shipyards and the other across the north end of the Dockyard and above the Ordnance floating bridge. The old river between these dams was to be converted into a wet dock of 150 acres, leaving a space between the proposed new cut and the present channel of the river on the Frindsbury side of nearly the same extent which was to be purchased and taken into the Dockyard. The dock was to be deepened to take the largest ship.



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At that time the extent of Chatham Yard was about 80 acres on which there were 4 dry docks, 4 slips for ships of the line and 3 for lesser vessels. Rennie proposed that the slips be converted into dry docks.

If the inhabitants of Chatham are to have access to their wharves, a lock may be made at the upper end of the Wet Dock for this purpose alone.

The estimated cost of £685,000 was to be partly offset by the savings on moorings in the Medway, equal to a capital cost of £200,000; the expense of watching vessels at moorings, a further £300,000; and the sale of the Yard at Deptford. The scheme was never adopted.

Dredging continued and in the period 1818 to 1823, £23,000 was spent on the removal of shoals. In 1836, a Mr Ranger, using a dredging vessel (Mud Engine vessel) raised silt in the river in front of the docks at a charge of 91tz d a ton. In 1837 it was ordered that the Moorings Nos 1 & 2 in Bridge Reach be removed and an old frigate or ships be placed on the grounds for the purpose of setting the tides with greater impulse towards the docks.<sup>1</sup>

Bentham was responsible for the development of the bucket-ladder steam dredger about 1803. One was constructed for use in the Thames at Woolwich; it was capable of working at 21 feet and raising 60 tons of shingle or 90 tons of mud per hour. This was used in the Medway as well as the Thames and remained in service until after 1823, when another vessel that could dredge up to 28 feet was hired.

The Thames & Medway Canal joining Strood and Gravesend, was opened in 1824. It had a short life of some twenty years before it was converted into a railway track. Admiralty claimed that the mud in this canal was being cleared out in a manner prejudicial to the navigation of the River Medway and that a shoal was being formed in Limehouse Reach.

Any construction involving the river had to receive Admiralty approval. Thus the pier at Chatham, erected by Mr Best, a local brewer, was authorised by Admiralty Order of 20th October 1843 according to the plans and stipulations specified.

*(i) That the approach to the present causeway or hard be not interrupted nor the causeway altered without a substitute,*

*(ii) That the clear space between the piles be not less than 20 feet,*

*(iii) That the licence to erect the pier is not to obstruct or prevent any general improvement by embanking or otherwise for the benefit of the dockyard or the navigation of the river,*

*(iv) That the pier is to be opened and free at all times to Officers and all persons in Her Majesty's employ and for HM boats and others to and from the Dockyard.*

Mr Best was subject to a payment or acknowledgement yearly of 1s. This pier was purchased by Chatham Local Board of Health in 1863; a new pier was constructed in 1885.

At the beginning of the 20th century Admiralty expressed concern about the effect of clay diggings on the saltings of the River Medway for cement and brick making. They claimed that tides were less than formerly, that more silting was taking place at the entrance to Chatham Dockyard and that the scour of the tides, reduced by the flooding of the water over large excavated areas, had been insufficient to keep the naval berths clear. As a result

<sup>1</sup> See Hulks on the Medway, chapter 18

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of a court action in 1914 against S T Brice, Admiralty obtained tighter control over clay digging<sup>1</sup>.

(Eastwood's were digging clay from Millfordhope Marsh until 1965)

### Main Offices

The Naval Estimates dated 17th September, 1810 for the ensuing year included the following items for Chatham Dockyard:

*To complete the building of the new Office for Officers.<sup>2</sup>*

*To take down and build a new Painters' Shop.*

*To complete apron and fit gates of the First Dock.*

*To strip and repair roof of Sail Loft.*

*To strip and repair the roof of the present-use Storehouse.*

The first item refers to the Admiral's or Main Office which was designed by Edward Hall and built by Yard craftsmen. John Newman described the Building:

*North of the Admiral's house the yellow brick Main Offices, 1813, with pedimented centre and bowed ends.*

The Admiral had his office in this block; the Commissioner's original office is used as a Board Room.<sup>3</sup>

Over the Main Offices are Royal Arms dated between 1814 and 1837. Two figures designated mermaids, quarter badges from an 18th century yacht, stand on either side of the private entrance to the Admiral's Office. On the lintel above is the Admiral's badge and above this is the Coat of Arms of the Borough of Chatham carrying the dates: 1692, 1759, 1805, and 1912. 1692 and 1759 are the dates of significant battles in which **HMS Chatham** took part; 1805 denotes the yacht **Chatham** which bore Nelson's body from the Nore to Greenwich; 1912 was for the commissioning of the **Chatham** that had been launched the previous year.<sup>4</sup> Higher still is a carving consisting of a male bust surrounded by flags and cannon.

1 During the action the defendants did not deny that between 1898 and 1908 they had removed 283,000 tons from an area of 15 to 17 acres on Bishops Marsh; 557,000 tons from an area of 34 to 37 acres at West Hoo Creek between 1881 and 1907; 1,356,000 tons between 1881 and 1911 from East Hoo Creek

2 Considering the size and complexity of the Yard the number of offices in use up to the early years of the 19th century was very small.

3 The original office is shown on the Maps of 1844 and 1858 as the Measurer's Office.

4 The Borough of Chatham presented a bronze ship's bell, with a silver crown on 13th January 1913 to the Chatham. This bell was held in the custody of the Mayor of Chatham when there was no ship carrying the name of Chatham in the Royal Navy.

A 22-inch oval silver salver and an engraving of the Battle of Le Hogue framed in fumed oak, was also presented by the Borough. Mrs A A Randall presented a silver cup and plinth on the 6th December 1912 in commemoration of the laying of the keel plate of Chatham. A silver cigarette and cigar box was presented by the Marchioness of Camden in November 1911.

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Timber in the 19th century

Mention has been made of the treatment of timber in the 18th century including the provision of seasoning sheds. During the Napoleonic Wars vast quantities of timber were required for shipbuilding and repair. By 1810 it was estimated that 12,000 tons of Russian oak was being landed annually at Chatham Yard. The problems of the handling and conversion of such quantities was investigated by Samuel Bentham, Inspector General of Navy Works, who introduced measures in connection with the conversion and preservation of timber.

Bentham gave evidence in 1798 to a Committee on finance criticising the management of the timber departments in the Royal Yards. He was particularly concerned with the bad conversion of timber, the use of high-priced timber when less costly pieces would be appropriate, and the indiscriminate use of timber of a size and quality rarely to be obtained, though essential for the construction of large ships.

In 1801 with Lord St Vincent's approval, Bentham secured the appointment of Timber Masters<sup>1</sup> in each Yard to handle all questions concerned with the receipt of timber, its conversion and storage. As a measure of the importance of this officer his salary in 1808 was £500 per year; his Assistant was paid £200 per year. (The salary of the Assistant Master Shipwright was £400 per year.)

The holders of this office at Chatham were:

Mr Plucknett	1801/8
William Stone	1808 (in office) to 1810
William Hunt	1810
Samuel Jones	1810/1824
Stephen Dadd	1824/1829 (in office)

The post of Timber Master was abolished about 1830 and Dadd was appointed Timber and Store Receiver.<sup>2</sup>

In place of the Timber Master and lower paid officer, the Timber Inspector was appointed, whose salary in 1847 was £400 per year; this Officer was selected from the Foremen of Shipwrights. J Sheffield held this office in 1850.

Responsible to the Inspector for the conversion of timber were Timber Convertors. This was an ancient office. By Navy Board Order of 31st December 1771, Timber Convertors in the Yards who had hitherto been borne on Shipwright's pay were to be put on the same footing as Quartermen, paid 2s 6d a day and allowed one servant each. One such officer was allowed for Chatham Yard. By the Regulations of 1808, Timber Convertors were to be allowed a salary of £160 or £180 at the discretion of his officers subject to the approval of the Commissioner. In Wright's Topography of 1838, 3 Convertors of Timber are named: G Clother, John Orton and S Fullager. In the Estimates of 1848, two Convertors are mentioned with salaries of £180 and £160 per year.

A number of shipwrights assisted the Timber Inspector and Storekeeper in preparing timber for survey, conversion and writing duties; they were paid between 4s 6d and 5s a day.

John Williams, Timber Inspector with a salary of £400 per year, gave evidence in the Dockyard Enquiry of 1858. He said he was 62 and had two assistants paid £160 and £120 a year respectively. Williams was superannuated at £400 per year in 1865. The post of Timber Inspector was abolished in 1869.

1 Usually appointed from the ranks of AMS

2 See Naval Stores, chapter 11

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## Sawyers

Until the sawmills were constructed at Chatham about 1812, all the timber had to be hand sawn. When the mills were operating it was hoped that about two-thirds of the timber would be mechanically sawn but initially there were problems with the beam engine of the mills and most of the timber had to be sawn by hand. As late as 1859 there were over 50 pairs of sawyers in Chatham Yard. With the change from wood to iron for shipbuilding the importance of timber conversion decreased.

The sawyers worked in pairs, one in the pit, the pitman, and one above, the topman in charge of operations. The cutting stroke was downwards and the pitman had a hard and unpleasant job. Later the pits were covered to give some protection to the sawyers.

The sawyers were recruited from the Yard labourers working with them. The labourer might be casually employed as a pit sawyer in the event of absence of one of the sawyers. When a vacancy occurred the labourer might be given employment as a hired sawyer. In time he might qualify for establishment; top sawyers were selected from established men. Sawyers working on piece work might earn between 19s and 28s a week when the labourers earned 13s. (In 1859 there 22 pairs established, 33 pairs hired and 41 labourers.)

## The Sawmills

A great quantity of timber had to be dragged round Chatham Yard with horse teams and one estimate of the cost of this operation alone was £4,000 per year. This timber had to be sawn by hand. The operation of sawing lent itself readily to mechanisation; Marc Isambard Brunei had invented power driven machinery for processing timber. Gentham therefore enlisted the services of Brunei who had already designed and installed frame- saws and mechanical handling in the sawmill of Woolwich Royal Arsenal.

In January 1812, Brunei received an official request from Admiralty for plans embracing log-handling and sawmilling plant for Chatham Yard. Brunei engaged two assistants, Matthew Bacon <sup>1</sup> and an excurate, Mr Ellacombe, to supervise the construction of the plant.

John Newman described the building:

*Saw mills, a composite building of apparently one period, built by Marc Brunel in 1813/14. Stock brick, originally partly on colonnades. Internally constructed with iron columns and beams supporting a stone slab floor, an early example of iron framing in Southern England.*

In more detail: the building designed by Brunei comprised a pitched-roof sawing hall with two open sides, supported by columns and flanked by wings. In the sawing hall were cast-iron saw frames containing reciprocating saws powered by belts from a drive- shaft running the length of the basement. This shaft was driven by a beam engine in the western wing which also housed two boilers. The eastern wing carried on its roof a large cast iron tank with sloping sides and an open top. This part was used as a millwright's shop where the saws were sharpened and for woodworking. Oar making was carried on in the sawmills, a machine cut the oar in shape with a square loom; the oar was then transferred to a lathe for rounding the loom.

The sawmills stand on the higher ground added to the NE side of the Yard about 1802. A new Dockyard wall was built to the east of the 1719 wall enclosing sufficient ground for the new timber complex.

<sup>1</sup> Matthew Bacon. Master of Sawmills and Superintendent of Machinery 8 February 1816.

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An account of the mills is given by Samuel Lewis, author of 'Topographical Dictionary of England' (1831). The machinery, according to this account was driven by a 30 hp beam steam engine. In the sawing room 90 feet square were 8 vertical saw frames, each capable of carrying one to thirty saws, and 2 circular saw benches to cut plank to the required width, with capstans and windlasses for moving the logs. The saws were driven at 80 strokes per minute; the blades could be tensioned by screws and the frames were given an oscillatory motion. The cutting stroke occurred in descent and before ascending the blades were moved backwards allowing them to rise with greatly reduced friction.

Just to the north of the water tank wing, an oval masonry-lined shaft, measuring 92 feet by 72, was driven downwards some 60 feet into the chalk. From its base a tunnel was dug towards the south Mast Pond. The tunnel was driven 400 feet and then became a cutting or canal for about 150 feet before reaching the Mast Pond. The tunnel, brick-lined, of section similar to a normal railway tunnel about 14 feet wide and approximately 21 feet high is still in existence.<sup>2</sup>

The completed cutting and tunnel formed a waterway through which logs could be floated from the Medway to the base of the shaft in front of the sawmills. Within the shaft was a kind of cradle suspended by chains which passed over two pulleys. The timber was floated on to this cradle. At the other end of the chains was an iron vessel, which filled with water from the roof top tank counterpoised the cradle and timber, and raised them to the surface. An 860 feet long overhead railway supported by transverse brick walls ran northwards down an incline to the timber sheds. The timber was lifted from the cradle by a travelling crane powered from the mill engine by a rope or chain, and taken to timber berths on either side of the railway.

For conversion the timber was brought back up to the mills and put on a flat car. The car was winched along one of five sidings up a gentle slope to the floor in front of the chosen saw frame. Baulks of timber up to 60 feet long could be sawn up. After conversion the planks, once again on the flat car, were lifted by the travelling crane and taken to the timber shed at the northern end of the Yard.

There were in 1970 still standing several of the transverse walls which supported the rope railway with the square iron bars which secured the rails to longitudinal battens. The rails had the same gauge as that favoured by Brunel's son for the Great Western Railway.

Besides driving the saws and attendant machinery, the steam engine pumped water from under the mills into the roof tank to supply the counterpoise, powered the travelling crane and winched the tramway cars into the sawmill. The engine at the sawmills also supplied the pressure for the water in pipes laid in different parts of the Yard and fitted with fire cocks.

The erection of the machinery was done by the Royal Engineers whose library now contains some interesting sketches of the layout.

It was said that when the saws were running the high pitched note could be heard in the Town and over the river. However Dickens wrote:

*But for a whisper in the air suggestive of sawdust and shavings, the oar-making and the saws of many movements might be miles away. Down below here, is the great reservoir of water where timber is steeped in various temperatures, as a part of its seasoning process. Above it, on a tramroad supported by pillars, is a Chinese Enchanter's Car, which fishes the logs up, when sufficiently steeped, and rolls*

1 An engine keeper had been recruited in 1814 but the engine was apparently of insufficient power to drive the saws. The engine had to be rebuilt in 1828 to increase its power

2 It was used in the 1960's by the Civil Defence Organisation

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*smoothly away with them to stack them. When I was a child (the Yard being then familiar to me) I used to think that I should like to play at Chinese Enchanter, and to have that apparatus placed at my disposal for the purpose by a beneficent country.'*

Chatham Dockyard' Uncommercial Traveller

After acknowledging Ellacombe's exemplary service he was discharged by the Navy Board for reasons of economy. Brunei was furious and wrote to Ellacombe:

*May you, my good friend, be as great an ornament to the Church as you have been in that most arduous career in which you leave your very sincere friend, with one of his lights out.*

Bacon carried on and remained in charge as Master of the Sawmills for many years. His salary as Master was £250 per year and his appointment was dated from 2nd December 1815. In 1833, Marc Brunei and Sophie, his wife, visited Bacon at Chatham Mills and found all was well. In Wright's Topography of 1838, Bacon is described as the Master Millwright. The engineer at the Sawmills, a millwright, was paid 7s a day in 1847.

The Sawmills were damaged by fire in 1854 but were repaired and continued to function until after World War I.

After the First World War sawmilling was transferred to St Mary's Island; the Mills are just north of No 9 Dock. (These sawmills were used during the First World War for the conversion of timber for the aircraft industry and were then known as the Aviation Saw Mills.) There were 12 open-ended sheds in two equal and parallel groups separated by the Sawmills. Each shed was 198 feet long with a span of 60 feet. To the north of these sheds were the drying kilns..

After the closure of Brunei's Sawmills in 1929 the Millwrights' Shop was used for a variety of purposes; in the 1940's it was used as a training centre for electrical fitter apprentices, and in the 1960's as storage for the Finance Manager. The Sawing Hall became a store; parts of the saw frames were taken out in 1970 bearing the inscription: 'J McDowall and Sons, Johnstone.'

The old boiler house was converted into use as a laundry. As early as 1876 sawdust had been used as a fuel in the mills, and the same fuel was later used for heating the boilers of the laundry. The old sawpits near the sawmills were filled in during 1925

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Cost of a 74-gun ship in the Royal Yards on the 1st January 1803

Amount	Rate	Value
2350 Loads rough oak timber (75 feet)	£ 5. 12. 0	£13,160. 0. 0
150 Loads rough oak timber (40 feet)	4. 9. 6	571. 0. 0
50 Loads elm keel, etc	3. 13. 6	183.15. 0
160 Loads knee timber	8. 15. 0	1,400. 0. 0
310 Loads thickstuff	11. 10. 0	3,565. 0. 0
140 Loads 4 in English oak plank	10. 10. 0	1,470. 0. 0
85 Loads 3 in English oak plank	9. 10. 0	807.10. 0
75 Loads 4 in Dantzic oak plank	22. 0. 0	1,650. 0. 0
20 Loads 4 in elm plank	4. 1. 6	81.10. 0
30 Loads 3 in Dantzic oak plank	22. 10. 0	660. 0. 0
40 Loads Dantzic fir timber	5. 15. 0	230. 0. 0
250 3 in Prussia deals (40 feet) each	1. 12. 0	400. 0. 0
120 2 1/2 in Prussia deals (36 feet) each	1. 10. 0	180. 0. 0
200 2 in Prussia deals (30 feet) each	1. 3. 2	231.13. 4
3000 11 1/2 feet Norway deals	2.11 1/2	443.15. 0
66 tons forged iron, per ton	42. 0. 0	2,772. 0. 0
24 Barrels of pitch, per cwt	12. 9	48. 9. 0
8 Barrels of tar, 264 galls, per gall	9 1/2	10. 9. 0
16 cwt of rosin, per cwt	1. 0. 0	16. 0. 0
7 cwt of tallow, per cwt	2. 13. 6	18. 14. 6
15 tons of oakum, per cwt	1. 8. 0	420 .0. 0
5 cwts of spun yam, per cwt	1. 8. 0	7. 0. 0
120 gallons of oil, per gallon	3. 5	20. 10. 0
Shipwrights' labour, per ton	3. 0. 0	5,118. 0. 0
Shipwrights, stages, capstans, launching, per ton	4. 0	341. 4. 0
Ironmonger for nails, locks, etc per ton	5. 0	426.10. 0
Plumber for lead and labour, per ton	2. 0	184.16. 4
Blockmaker, materials and labour, per ton	5 1/2	39. 1. 11
Bricklayer, per ton	6 1/2	46. 4. 1
Sawyers' Labour, per ton	8. 10	753. 9. 8
Caulkers' Labour, per ton	4. 10	412 .5. 8
Joiners' Labour, per ton	6. 0	511.16. 0
Glazier for glass and labour, per ton	1. 6	127.19. 0
Painter for paint and labour, per ton	1. 8	142. 3. 4
Carver, per ton	1. 4 1/2	117. 5. 9
Total Cost:		£36,668. 6. 7.

*Out of a cost of £36,000 approximately the timber cost alone was £25,000.*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Docks and Slips in the early part of the 19th century

In 1771, there were four dry docks and four slips; 50 years later there were five docks and six slips. The four old docks which had served the Yard from the 17th century had required continuous attention and should have been rebuilt as was the case at Portsmouth and Plymouth. Chatham Yard seems to have been neglected presumably because it was not a Fleet base. At least one dock was timber lined until the 19th century. The two northern slips, Nos 5 & 6 were small and were only suitable for small ships.

In 1816, work had begun on a new dry dock between Nos 2 & 3 Docks. This was completed by 1820 and up to 1822, a sum of £144,000 had been spent on the dock and a new river wall. The docks were re-numbered, the old No 3 Dock becoming No 4, and the old No 4 becoming No 5 Dock. In 1830, No 5 Dock was converted into No 3 Slip.

A Pump House for the pumps of the dry docks was erected in the period 1816/22; the building carried a plaque dated 1827. The Pump House was designed by Holl while Boulton & Watt supplied the beam engine and pump. Steam driven pumps then replaced gravity-drainage of the dry docks.

Above the pumps was the Millwright's Shop. As late as 19.50 there was an old Boulton & Watt beam engine with a brass tally on which was engraved 1810. This engine was initially supplied with steam at 10 lbf/in<sup>2</sup>. Electrically driven pumps were used in the 20th century. The Dock Engine House was later re-named No 2 Pumping Station; and it is known today as South Pumping Station.

### The Building slips

Warships sometimes remained on the slips for many years when their timbers were affected by the weather. To protect the timbers of ships building, Bentham introduced the covering of slips.

John Newman describes the covered slips which are standing today as follows:

*The next important buildings are the SLIPS (now Boat Stores). Until 1966 there were two timber slip sheds. The S one of 1813 was burnt down in that year, which leaves only No 3 SLIP, dating from as late as 1837. Massive close-set posts, in two rows, meeting in a U at the landward end, support the steep roof with its vast eaves, on raking struts. In 1845/17 SLIPS 4, 5 & 6 were constructed and roofed with a cast iron structure, by Messrs Baker. They make a fascinating contrast with the timber slip shed, of so few years earlier, especially as none has walls, so that each opens into the next without any visual impediment. The iron framing is strikingly slender, even frail; upright columns, with curved braces bridging alternate wide and narrow spans, and subsidiary straight braces. It is an important landmark in constructional history; but one notices that the braces spring from vestigial Tuscan capitals, a hint of architectural grammar, such as the timber shed does not bother with. SLIP No 7, immediately beyond, marks another advance in technique. This was designed in 1852 by Col G T Greene. Built in 1853/5, it is much higher than the others, again with a gabled roof, but constructed without any curved members at all. In fact the uprights and horizontal girders throughout are of standard I section. Nave and aisles construction, just as in the timber shed, but far higher, lighter, and bridging a far wider span. Well handled glazing of the end wall. Greene's idiom, which was to find its most splendid expression at Sheerness, is already fully developed here.*



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

No 2 Slip carried a notice:

*No 2 Slip (erected 1813)*

*The Lighted Cover of This Slip was*

*Introduced by an Inspector General of Naval Works, General*

*Bentham an ex-Chatham Shipwright Apprentice,*

*The Cover was erected to preserve the Shipbuilding Timber  
and Durability of Ships under Construction.*

No 2 Slip had been filled in and used as a store from about 1880 (Storehouse no 53). The wooden covering was burnt down on Tuesday morning, 12th July, 1966; the incoming Admiral Superintendent, Rear-Admiral Parker was taking over from Vice-Admiral Hogg at the time. The area occupied by the slip is now used as a landing ground for helicopters.

In 1815, Robert Seppings, the Surveyor of the Navy ordered No 1 Slip in which the **Trafalgar** was building and No 1 Dock in which the **Eagle** was repairing to be roofed. He was writing in 1817 that he was unhappy with the progress in erecting permanent roofing and ordered Chatham Officers to erect temporary roofing over Slips and Docks.

No 3 Slip was roofed over in 1838. The timber roof, some 300 feet long with an overall width of 146 feet, has a span of 62 feet over the slip. The structure is carried on 52 wood pillars set on iron bases. The covers of wood with glazed lights sufficient for daylight working added to the comfort of the men working under them and prevented stoppages of work due to rain and snow. After trials with slates and tarred paper, copper was found to be the best roofing material.

By the 1840's Nos 1, 2, & 3 and old No 4 Slips and Nos 1 & 2 Docks had been roofed over. The other docks were uncovered so that a masted ship could be docked in an emergency.

A study of the 1821 and 1859 Maps shows the large land reclamation scheme undertaken at the northern end of the Yard. The line of the Dock wall north of No 4 Dock was moved out and this reclaimed land had four new slips built, Nos 4, 5, 6, & 7.

The need for new building slips was recognised by the Admiralty, but the money needed was the problem. Vast sums had been spent rebuilding Sheerness Yard and the Cabinet were demanding economies. Early in 1843 the Board of Admiralty toured Chatham Yard but despite the efforts of the Civil Lord, H W Lowry Corry, improvements including the reconstruction of three slips were postponed.

In 1845 the alteration of the line of the dock wall and the construction of three of the slips mentioned above was started. In the Estimates of 1845/6 for Chatham appeared £102,000 for reforming the building slips; already voted £15,000, expended £135. In the year 1845/6, £45,000 was allotted for payment and the estimate for completing the construction was £42,000. In the Estimates of 1847/8 appeared £36,000 for the roofs for Nos 4, 5 and 6 slips; the following year, £15,000. Nothing was voted for this work in 1849/50.

To reduce the fire risk it was decided to use metal slip roofs in the Royal Yards and these were first constructed at Portsmouth (1844). These are some of the earliest examples of metal frames to span large areas.

The slips roofed with galvanised corrugated iron, then recently invented, were capable of accommodating first-rate warships. A larger slip, No 7, designed by Colonel Greene <sup>1</sup> was built about 1855. The contractors were Messrs Grissel

<sup>1</sup> See Civil Engineering, chapter 8

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

According to 'Chatham News' of 27th December 1862:

*Two covered slips of the most recent construction by Grissel & Co are unoccupied  
.. No 1 Dock covered and roofed over to serve as a fitting shop for Achilles.*

To construct No 7 Slip it was necessary to replace the cutting from the River Medway to the South Mast Pond by a tunnel at the north end of the pond. No 7 Slip then occupied a large area of ground west of this Mast Pond.

The cover of No 7 Slip is similar to many modern metal-framed buildings, and is an aisled structure with a span of 82 feet across the slip.

Some of the cast iron I section beams bear the name of the Rochester Ironfounders, Aveling & Porter. Thomas Aveling built the works at Rochester in 1850 and was joined by R T Porter in 1862, when the firm was renamed Aveling & Porter.

### The Smithery

Before the 18th century ironwork was performed by outside contractors who had their forges in the Yard. On the Yard Map of 1698 there are shown three forges; a locksmith's forge at the corner of the Pay Field, an anchor forge at the river's edge east of the Ropery, and the Great Smiths' Forge between the old and new single docks.

In 1585, George Johnson and sundry blacksmiths were paid £170 5s 10d for making the Great Chain at Upnor.<sup>1</sup>

Hollond in his 'Second Discourse of the Navy' gives information about smiths' work for the Navy during the Interregnum. The weight of anchors, possibly several tons, necessitated their manufacture in the Yard. He mentions, besides the anchorsmith, the nail smith. Nails were rated by weight; twopenny nails weighed 2 lbs a thousand; fourpenny nails, 40 lbs a thousand. Petty iron work was classified for payment: Ordinary work, 30 or 32s a cwt, extraordinary work, 37s 4d or 40s a cwt. The Storekeeper's clerk kept account of all work delivered from the forges. Classification led to dishonest practices on the part of Yard officials and the smiths; it was possible for the smith to be paid the higher rate for lower rate work for a financial consideration.

On 13th July 1649, the Navy Commissioners received an offer from John Smith:

*to serve in all iron work above a tenpenny nail, with the carriage, etc, except grummage  
and staples, casements, locks and hinges, all of Spanish iron at the rate of 34s a cwt.*

One of the contract conditions was the privilege of a forge in the State's Yard.

As early as 1657, the State's mark was put on anchors, but nails, etc could not be marked and were the subject of petty depredateions.<sup>2</sup> ('Turn out your pockets, they're searching at the gates' and the road was littered)

After the Restoration the Ruffheads and the Loaders were the principal contractors for smiths' work. They never secured prompt payment for the work done but they all appeared to be men of wealth.

On 27th August 1666, John Ruffhead, Anchorsmith, complained to Pepys that he had delivered ironwork to the value of £6,000 during the previous year and had only received £800. Ruffhead made the chain at Gillingham which was broken by the Dutch during their attack in June 1667. On 1st May 1671 he was asking the Navy Board to help him

<sup>1</sup> See Defences of Chatham, chapter 20

<sup>2</sup> See Internal Security, chapter 15

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

raise money that he might be able to carry on his business and pay his men:

*... most of whom had left to seek their bread where they can find money, since I am out of purse near £4,000.*

After the death of John Ruffhead, his widow managed the business and, in turn, was followed by Benjamin Ruffhead, designated Anchorsmith of Chatham Dock. In 1684, Ruffhead petitioned for 'the house his predecessors had to live in.' He was churchwarden of St Mary's Church, Chatham, and gave to the church an alms dish dated 1534/5, weighing 17 oz, inscribed 'The gift of Mr Benjamin Ruffhead Churchwarden of the Parish of Chatham in Kent. August 24, 1694.'

The Loaders of Deptford supplied anchors to the Navy. John Evelyn wrote:

*One Loader an Anker Smith grew so rich as to build an house in the streete with gardens, orangeries, canals and other magnificences on a lease. His father was of the same trade an Anabaptist.*

The son of this prosperous smith, Isaac Loader, was Anchorsmith of Deptford following his father Henry Loader in 1681. He was sheriff of the county and subscribed £901 towards the rebuilding of Deptford Church. Details of this benefaction are recorded on a tablet dated 1701 in the north aisle of St Nicholas, Deptford. A daughter of Isaac Loader married Captain Pelham Hughes, Commissioner of the Navy at Portsmouth Yard. Their son, in turn, became the Commissioner at Portsmouth where he entertained George II with great magnificence and was gazetted baronet in 1773.

Most of the smiths' work was the forging of anchors.<sup>1</sup> Iron mooring chains were introduced by White in 1634 and were laid down at Chatham, Deptford and Woolwich for ships to ride at anchor, two to a chain. Further experiments with mooring chains were carried out in 1658. In 1688 Isaac Loader was proposing to construct a chain across the Medway to serve the purposes of moorings and defence. A letter dated 4th April 1702 from the Navy Board stated:

*Mr Loader, the Anchorsmith, having been with the Navy Board and discoursed them concerning double heading the bolts of ye chain moorings at Chatham and acquainting them that he believes the whole charge of doing it will not amount to over £1 00, and he will make no advantage to himself by it ... require you to keep a particular account of the works as they are performed by him.*

On the 5th June 1702 the Navy Board was asking for the officers' opinions on the value of Loader's work.

In 1670 Anthony Deane proposed to use iron standards and knees, instead of wooden ones for ship construction. The Royal James was so fitted but was lost in action within a year of her completion and nothing more is heard of the internal use of iron in ships until the 18th century.

The contractors could exert pressure on the Navy in order to get better terms during the time of war. In a communication dated 15th May 1691 the Navy Board wrote:

*... bringing our standing tradesmen to new contracts, of whom, two smiths, namely Suffield of Portsmouth and Ruffhead of Chatham, had warned us of their purpose of desisting at a certain day from the serving the Navy any longer if we would not advance them 2s a cwt on their iron, upon account of the new impost laid upon that commodity, in the midst of our work fitting out the Fleet ...*

<sup>1</sup> Details of others who supplied iron work to the Yard are given in chapter 19 on Contractors.

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Possibly because of such threats and also because of complaints of delays in the delivery of items by the contractors it was argued that smiths' work should be done in the Yards by Dockyardmen. Earlier, Commissioner St Lo of Chatham had complained of the quality of several anchors made for the Navy by *Mr Loader who hath for many years been under contract with you for performing the said work.* The Lord High Admiral ordered the Navy Board in a letter dated 14th June 1704:

*...to report to me ...whether it may not be more safe and advantageous to HM service that there be particular anchormen appointed to each of HM Yards or at least the principal ones.*

Typically, the Navy Board's reply was vague:

*... as for the proposal of employing some smiths, or a smith at every Yard for the making of anchors, we do not know but it may be more for the Service, in case experienced men in the trade can be had to undertake the same at reasonable rates.*

In 1722 it was ordered that iron work at Deptford, Woolwich and Chatham was to be wrought up under a Master Smith selected from persons fitly qualified. Thomas Dudley, the first Master Smith at Chatham, was appointed in 1723. It was ruled that no one was to be a Master Smith (after the first appointment) who had not been a Foreman of the First and Principal Forge in any Yard for three years. (The Master Smith was a subordinate officer of the Master Shipwright.)<sup>1</sup>

Thomas Hammond, Master Smith at Portsmouth, followed Dudley at Chatham in 1746 and held the post until 1763 when he was superannuated. His warrant had been renewed on the accession of George III in 1761. Hammond had a house built in Prospect Row, Old Brompton and paid £55 for his plot of land, 55 feet by 100 feet, together with 4s 7d yearly quit rent. As the land was very uneven, he was allowed £10 out of the purchase price for levelling. The house was later divided into two dwellings, one of which is No 3 Prospect Row.

Following Hammond, James Kincaid (Kincade) held the post from 1763 to 1798. A Navy Board Order of 9th January, 1767 stated:

*Mr Kincade, Master Smith at Chatham, by order of 21st November last made 20 fathoms of large mooring chains by way of experiment with links welded in the middle of one side instead of at sudden return of end as former practice and is considered stronger and safer and not more expensive. This method is to be worked to in future. Mr Cowley and Mr Atwick, contractors for large mooring chains, to do the same.*

Kincaid's wages were 42 pence per working day; after the Pay Revision of 1808, the status of the Master Smith was raised to that of a salaried officer paid quarterly; his new salary was £260 per year. He was to be assisted by the Foreman of Smiths paid £200 per year. To define the authority of the Foreman of Smiths those who were then called Foreman were in future to be denominated 'Fireman,' i.e., the first men at each forge.

Details of the rates of pay for 'Fireman' are given on the next page.

<sup>1</sup> Details of the wages and hours of working of the smiths are given in the section on Dockyardmen, chapter 3.

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	<i>Summer/day</i>	<i>Winter/day</i>	<i>Extra/hour</i>
<i>Fireman superintending men employed by the day</i>	<i>6s</i>	<i>4s 10d</i>	<i>7d</i>
<i>Fireman superintending men employed by Task or Job</i>	<i>8s</i>	<i>6s 5d</i>	<i>10d</i>
<i>Fireman superintending anchor work by the day</i>	<i>7s</i>	<i>5s 7d</i>	<i>8d</i>
<i>Fireman superintending anchor work by Task or Job</i>	<i>9s</i>	<i>7s 3d</i>	<i>11d</i>

The Master Smith and the foreman both lost the privilege of having apprentices. By the Regulations of 1808 the Master Smith, the foreman of Smiths and Firemen were allowed three pints of strong beer per day when employed upon anchors above 20 cwt, and half pint for every hour of extra time.

George Cotsell, Master Smith of Chatham, appointed in 1846, wrote 'A Treatise on Ships' Anchors, 1856.' He gave evidence at the Dockyard Enquiry of 1858; he stated that he was 51, and that his salary was £250 per year. There were 50 smiths at the forges; 10 men to the steam hammer; 5 fitters and viceman, 52 hammermen,<sup>1</sup> and 14 apprentices.

He stated his objection to the practice of bringing the cask of beer to the Smithery about noon; he would prefer the men to buy their own. Cotsell spent his time in the service between the Portsmouth and Chatham Yards; he held the office of High Constable in Gillingham.

### **Bond of the Foreman of Blacksmiths, William Tyler, dated 1822**

Know all Men by these Presents, that I William Tyler, Foreman of Blacksmiths of his Majesty's Dock Yard at Chatham am held and firmly bound unto our Sovereign Lord George the Fourth, by the Grace of God, of the United Kingdom of Great Britain and Ireland, King, Defender of the Faith, in the Sum of Six Hundred Pounds of good and lawful Money of Great Britain, to be paid to our said Sovereign Lord the King, His Heirs and Successors; for which Payment well and truly to be made, I bind myself firmly by these Presents. Sealed with my Seal. Dated this Tenth day of October in the Third Year of the Reign of our said Lord the King, and in the Year of our Lord One Thousand Eight Hundred and Twenty two. The conditions of this Obligation is such, that if the above bounden William Tyler do and shall faithfully, honestly, and diligently, to the best and utmost of his skill and Knowledge, execute and perform the Office of Foreman of Blacksmiths which he has been appointed in his Majesty's Dock Yard at Chatham and shall strictly and faithfully comply with all such Instructions and Orders, as shall from Time to Time be given to him, by the Principal Officers and Commissioners of His Majesty's Navy, or by any Officer superior to him in his Line of Duty, and shall not, either directly or indirectly, accept, take or receive from any Owner of a Ship or Vessel, Merchant ...

<sup>1</sup> Hammermen were recruited from labourers employed in the Smithery.

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By 1870 the salaries of the Master Smith and Foremen of Smiths were:

Master Smith, £1.50 x £10 to £2.50; Foremen of Smiths (2) £120 x £10 to £150

From 1882 till the end of the century the salary of the Master Smith was £300 per year.

The title of Master Smith was in use in Chatham in 1906. However, with the decline of shipbuilding in the Yard after the first decade of the 20th century, the importance of the Smithery began to wane. Finally the Smithery was supervised by one Foreman assisted by his Inspectors. In 1974 there began the transfer of Smithery workers to the Boiler Shop.

The hammermen were paid 3s 9d a day. When the authorities had difficulties in recruiting skilled labour there were opportunities for the hammermen to be promoted to Firemen. Cotsell complained that he could not get good forgemen at 8s a day and so was compelled to recommend labourers to take over as assistant furnacemen.

The author's wife's grandfather, George Barter, entered the service at Woolwich Yard as a hired second class hammerman in 1862 and was established in 1864. On the closure of the Woolwich Yard he was transferred to Chatham Yard and 'promoted' to 3s 9d a day in 1871. He was established as a first class hammerman in 1876 and as a 4th class smith in 1879. He was superannuated in 1882. Here we have an example of the upgrading from skilled labourer to craft status. He was a very intelligent man and could read and write.

On the page of the 'Names of Men' the record book of the Master Smith Chatham Smitheries, where the above information was recorded (now at the National Maritime Museum) mention is made of the men 'transferred from the Iron Ship'<sup>1</sup>, c 1863 to the Smithery.

During the Second World War there was a dilution of smiths' status by the temporary upgrading of hammermen. However, after the War there was reversion of the dilutees to their lower grade owing to Union opposition.

### Master Smiths

1723	Thomas Dudley	First Appointment of Master Smith. Died
1746	Thomas Hammond	Ex-Master Smith, Plymouth
1763	James Kincaid	From Woolwich
1798	Richard Edwards	Superannuated
1809	John Cheshire <sup>2</sup>	Promoted from Foreman
1823	Richard Stonehouse	
1846	George Cotsell	1863 appointed to Portsmouth
1863	Thomas George	
1872	Mr Warren	Appointed Admiralty Overseer
1872	Mr Rockett	Foreman of Smiths at Devonport, appointed Acting Master Smith at Chatham, vice Warren
1882	Henry Warren	Died 1896, aged 63
1893/4	Mr Brown	

<sup>1</sup> Presumably the Achilles launched 1863

<sup>2</sup> Tombstone in Gillingham Churchyard. Mr John Cheshire, Master Smith of His Majesty's Yard, Chatham, died 1825.

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## The Smithery Buildings

On the 1771 Map of the Yard the Smithery dated 1735 is sited between the old Nos 2 & 3 Docks. The Smithery was enlarged in 1753 but it still could not cope with the increasing quantity of iron work required in warship construction such as ships' knees. Proposals were made for a new dry dock between the old Nos 2 & 3 Docks and in preparation the old Smithery was demolished. A new building, the present No 1 Smithery, was built about 1808 to the east of the old Smithery.

The new Smithery designed by Holl and built by Dockyard labour, was formed of three ranges of buildings round an open courtyard. The western end had two small offices, one on each side of the courtyard gates, occupied by the Master and Foreman of Smiths.

Samuel Lewis in his 'Topographical Dictionary of England' (1831) stated that the Smiths' shop contained 40 forges. Most of the anchors required were forged in the Yard and were made from pieces of iron welded together. Scrap iron was often used for this purpose. Faggots of up to 12 inches square and 6 inches thick were heated to white heat in coal-fired furnaces. When ready they were removed from the furnace and welded into a solid mass using hand sledge hammers or heavy tilt hammers. As the faggots were made up, two were welded together, a third added, followed by a fourth, the shank of the anchor being shaped as the process proceeded. The anchors of the Victory weighed about 84 cwts and required about 100 faggots. An average gang would probably head and weld up to 15 faggots in a 12 hour day. Smiths engaged on anchor work drew extra pay.<sup>1</sup>

The Smiths' work became of increasing importance with the extended use of iron in shipbuilding; the pound of the Smithery was roofed over about 1861 to form a steam hammer shop. Nasmyth's steam hammer was introduced into the Yard c.1840. Steam was ultimately replaced by compressed air for the operation of the hammers. (According to the plaque outside the building, the Smithery was built in 1836 and extended in 1848; according to the Yard Services' Record Book the building was erected in 1841 and extended in 1861- these may refer to extensions and alterations.)

### No 2 Smithery

In 1883 the Metal Mills to the west of the Smithery were closed and the building converted into No 2 Smithery. The original Smithery was then known as No 1 Smithery.

'Chatham News' of 13th February 1886 reported that instructions had been given for the erection of the new Nasmyth's steam hammer in the large Smithery. In 1891 Admiralty authorised an expenditure of £800 for a new roof for this Smithery.

In June 1900 a new galvanising shop was opened for the Smithery.

In No 2 Smithery were the Angle furnaces. In these the angle irons for the frames of ships were heated before bending on the angle frame bending slab. Details of the bending were obtained from the adjacent scribe board supervised by an officer from the Drawing Office. These furnaces were about 50 feet long to accommodate the angle bars and the frames had to be bent in one heat since it was difficult, if not impossible, to put them back into the furnace after bending.

The smiths often referred to No 1 Smithery as the 'solid shop' and to No 2 Smithery as the 'angle iron shop.'

In the latter days of the smithery the frames of the "O" class submarines were bent cold on the slab using hydraulic jacks. The frames were made in two halves which were welded and annealed in the Boiler shop.

The smithery was bombed in the Second World War. Two bombs fell on the NE corner

<sup>1</sup> See chapter 3 on Dockyardmen

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

of No 1 Smithery in August 1940 at about 4:00 pm. The following men were killed: Fred Arney, Chargeman; New, Yard Boy; Bill Grant, Hammerman; Archie Barber, Smith; and a lorry driver. Six were injured.

No 2 Smithery was dismantled in 1981 and some of the items of the plant were taken into No 1 Smithery. These included the big double-acting steam hammer whose anvil weighed 46 tons.<sup>1</sup>

### Metal Mills and Foundry

Bentham had proposed the development of metal mills for the recycling of old copper sheathing for the hulls of ships; a Metal Master recruited from private industry was appointed in 1803. Furnaces for the melting of old copper and for refining the metal together with rolling machinery were prepared at Portsmouth Yard by 1805. Furnaces were prepared at other Yards to melt the old copper into pigs for transport to Portsmouth. The work was transferred to Chatham c.1847.

The Metal Rolling Mills were erected in 1847 to the west of the Smithery buildings. In these Mills copper sheets were manufactured. Copper sheets and bolts sent from old ships to Chatham from other Yards and cake copper with large quantities of impurities were melted down in a furnace which held about 5 tons of metal. The cast copper was rolled into sheets which were finally annealed. Copper bolts were made from moulds. The copper sheets were used mainly for sheathing the bottoms of ships. As well as copper, Muntz metal sheets and bolts were also produced. The composition of this metal was originally 62% copper and 38% zinc, but later tin was introduced. (Copper sheathing had been introduced during the administration of the Earl of Sandwich, 1771/1782.)

Scrap iron was also dealt with in these Mills. This was de-rusted, heated in the furnace and forged into single blooms by a small steam hammer. Larger blooms were up to 8 cwt. The iron was then rolled into bars and sheets.

About 1847 the Metal Mills produced 700 tons of sheet copper, 400 tons of bolt copper and 800 tons of re-manufactured iron per year.

Mark Moyle, conductor of the Metal Mills, gave evidence to the Committee on the economy of the Dockyard of 1858. He was then 50 and had a salary of £300 together with an allowance of £50 for a house. He had joined Chatham in February 1853 and had previously been in outside industry.

In 1866 E Rowland was the Acting Conductor of the Metal Mills following Mark Moyle, In 1877 the Conductor was R James who lived in the Dockyard.

There were 72 metal workers in three separate gangs, two by day and one by night. There were Refiners, (four to eight), Furnacemen, Rollers, Assistant Rollers, Shearers, one to each gang, Brass Founders, Assistant Brass Founders, Roll Turners, Blacksmiths, Assistant Blacksmiths, and three Labourers for fetching coal. The gangs were supervised by a Superior Class Leading Man, with a Leading Man for each gang.

The Day gangs worked from 6 am to 4 pm except on Saturdays, and then till 10 am. The Night gang worked from 7 pm to 6 am on four nights, the fifth night they came in at 8 pm and left at 6 am. The Mills were closed from 10 am on Saturday until 6 am on Monday morning for manufacture; repairs were carried out in this period.

The men at the copper and iron Mills worked Day; those in the copper and brass Foundries worked Task and Job; there was no Scheme of Prices for the ironwork.

There were two engines; 30 inch cylinder and 6 feet stroke, producing together 70 hp. In September 1866 a steam boiler which supplied power to the Metal Mills exploded; two

<sup>1</sup> Much of this information was supplied by Mr Grey, Inspector.



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men were killed and 50 injured. The latter were taken to Melville Hospital. There was a public outcry when Admiralty offered the widow of one of the men killed a pension of £7. 10s a year.

There as a steam hammer for converting scrap in the Yard and two pairs of rolls for copper and two for iron. With the commencement of the production of armour for the protection of wood vessels and of iron shipbuilding in the 1860's there was a great demand for iron plates. Ships' plates were rolled cold in some of the machine shops of the Constructive Department, particularly No 5 Armourplate was delivered formed.

In 1873 the rates of day pay in the Metal Mills were:

Writers: 5s 9d to 7s 9d;  
Leading Men: 1st class, 7s 9d; 2nd class, 7s 3d.  
Workmen: 1st class, 6s 3d; 2nd class, 5s 9d; 3rd class, 4s 9d; 4th class 4s;  
5th class, 3s 6d; 6th class, 3s 3d.

In 1883 the Metal Mills were closed and about 100 men lost their jobs.

The Metal Foundry was transferred to its present position near Pembroke Gate in 1887. According to 'Chatham News' this foundry was built 1887/8 by Messrs Nayler & Sons at a cost of £15,000 and had an area of 240 feet by 150 feet. The building contained an iron foundry with four cupolas capable of melting 40 tons of iron, hydraulic cranes tested up to 100 tons, and a brass foundry with four reverberatory furnaces holding 10 tons of molten brass, together with a long series of pot furnaces for melting in crucibles of from 40 to 300 lbs each. It was originally intended to make steel castings but these were supplied to the Yard so cheaply by contractors that the idea was abandoned.

(The Yard Services' Manager's Book gave the date of the brass, iron and aluminium foundry as 1901)

The coppersmith's shop to the south of the foundry was built by L Seager about the same time as the foundry. Messrs Nayler built the Central Offices in 1882.

After 1969 it was intended to transfer the foundry work at Chatham gradually to Portsmouth.

### The Joiners' Shop

On the 1698 Map of the Yard the Joiners' Shop is shown just south of No 1 Dock. On Lempriere's Map dated 1719, it is shown as near the smiths' forge between the old Nos 2 & 3 Dock.

Before the new No 3 Dock was built about 1820, the Joiners' Shop and the Smithery were moved away from the river. The Joiners' Shop was south of the Smithery and is shown on the 1821 Map. This shop was burnt down during the fire of 11th February 1845. The fire was first seen in the Joiners' Pound and very soon it extended on one side to the Joiners' Shop and on the other to the Treenail House over which was the Apprentices' School. The Joiners' Shop and all its contents including the chests of tools of the workmen were destroyed; The total loss was estimated at £20,000; the tool chests and contents were valued at £25 each.

The Upper Joiners' Shop (Joiners' Shop No 1) was built in 1846 on the site of the Treenail House. To the east of this shop is the former House Carpenters' Shop, a brick building built at the north end of The Terrace about 1742. This Shop and its Pound was later used as the Joiners' Store.

Joiners' Shop No 2, built at the time of the Dockyard Extension, was in the 1940's over a workshed just east of No 8 Dock.

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### Master Joiner

In the Account, Chatham Extraordinary, Christmas Quarter 1622, appears the entry:

*Joyners, Thos Bostock, 72 days at 2s a day, £7 4s and 2s 6d lodging allowance; and five others at 18d a day.*

In the same year Bostock was paid £19 7s 2d including £4 11s 6d for making a lanthorn for the **Merbonor**.

In 1631, Thos Bostock, Master Joyner, received £126 13s for work done on HM ships with HM materials, surveyed and rated by the Master Shipwrights at Chatham, Goddard and Boate, and the Assistant, Apslyn.

One of John Hollond's<sup>1</sup> criticisms was that the Master Joyner was allowed 2s a day without check and in addition he was allowed £20 reward for his extraordinary care and vigilance over the work at Chatham. During this time he might be on contract work at Woolwich where most of his time would be spent.

Peter Pett, the Commissioner at Chatham, wrote to Robert Cotmore, Secretary to the Admiralty Committee, on 3rd October 1651:

*Wm Bostock, Mr Joyner here has some relationship to me, but such miscarriage in drinking I request his forman have that employment.*

However Bostock retained his office until 1669 when an Order dated 6th February 1668/9 was issued:

*Wm Bostock to be Mr Joyner Chatham vice his father Mr Bostock discharged for misdemeanour.*

Wm Bostock appears on the list of Yard Officers appointed by warrant in 1686 with a salary of £32 13s a year.

A warrant for Charles Pepys to be Master Joyner at Chatham was issued in 1689, a cousin of Samuel Pepys, he is mentioned in Pepys' diary.

*24th May 1664. This day I hear that my uncle Fenner is dead .. 25th May 1664. This afternoon came Tom and Charles Pepys by my sending for, and received of £40 in part towards their £70 legacy of my uncle's*

After the Pay Revision of 1695, the Master Joiner was paid 2s 6d a working day, i.e., £39 2s 6d a year. He did at one time live in the Yard<sup>2</sup> and in the Estimates for Chatham of 1697, an allowance of house rent of £10 is mentioned.

In the church of St Peter & Paul, Shorne, the Bradley memorial carries notice of Henry Smith, Master Joiner at Chatham, died 24th December 1779, aged 69. Smith who was appointed in 1755 was probably engaged on work on the **Victory**, during its building between 1759 and 1765. His warrant was renewed on the accession of George III in 1761.

In 1808, a Foreman of Joiners was appointed at each Yard to assist the Master Joiner. Under him there was a Leading Man to every 25 men. Their salaries are given on the next page.

<sup>1</sup> John Holland was the Surveyor of the Navy from 1649-52.

<sup>2</sup> When William Bostock died, the House of the Master Joiner was passed to the Master Attendant

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Master Joiner	£250 p.a.
Foreman of Joiners	£150 p.a.
Cabin Keeper	£ 70 p.a.

	Summer (day)	Winter (day)	Extra Hour
Leading Man superintending men on Day work	5s	4s	6d
Leading Man superintending men on Task and Job work	6s	4s 10d	7d

The Master Joiner and the Foreman when put on salary lost the advantage of apprentices.

The office of Master Joiner was abolished in 1822. For a time the joiners, members of the Master Shipwright's Department, were directly controlled by an Inspector, the supervision of the shop as a whole being the responsibility of a Foreman of the Yard.

In the Dockyard Enquiry of 1858, William Hartfield, Inspector of Joiners gave evidence. He was 60 and had a salary of £125 per year. There were 72 established and 7 hired joiners, 6 Leading Men and 1 Inspector. It was the policy to maintain a relatively high proportion of established men in the specialist trades - all the coppersmiths at that time were established.

After 1870 the Foreman of Joiners supervised the work of the Joiners. His salary, £120- £180 was raised in 1873 to £150 - £200, in 1894, to £180 - £240.

### List of Master Joiners

1622	Thomas Bostock	
1651	William Bostock	Discharged
1669	William Bostock <sup>1</sup>	Son of the above
1688	Charles Pepys	
1701	Henry Ward	
1714	Josiah Pilgrim	Ex-Sheerness
1724	John Symons	
1726	John West	Deceased
1755	Henry West	
1780	John Parsons	
1785	John Thompson	Deceased
1814/23	Joseph Burgiss	Post Reduced (Foreman of Joiners)

Over the Years there have been changes in the joiner's method of working. He now uses machinery extensively and, in addition to wood, he employs materials such as aluminium, but the end product has remained fairly constant. In the ships he provides wooden and aluminium doors and frames, linoleum, carpets, curtains and furniture.

Joiner apprentices are trained to use woodworking machinery, and to carry out upholstery, polishing, wheelwrighting, and the manufacture of aluminium and light steel furniture.<sup>2</sup>

<sup>1</sup> Memorial in St Mary's Church, Chatham

<sup>2</sup> See 'Periscope' October 25 1967

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of ships built at Chatham Yard during the period 1815 to 1860

Date	Name	Rate	Guns	Tonnage	Remarks
1816	Diamond	5th rate	38	1076 bm	
1816	Minotaur	3rd rate	74	1726	
1817	Starling	Cutter	10	151	
1818	Bustard	Brig sloop	10	327	
1818	MudBoat3			58	
1818	MudBoat4			58	
1819	Blanche	5th rate	46	1074	
1819	Brisk	Brig sloop	10	257	
1820	Trafalgar	1st rate	106	2404	7 years on stocks No 1 slip
1820	Barge			100	
1820	Tank Schooner			107	
1821	Barge			100	
1821	Latona	5th rate	46	1071	
1822	Basilisk	Cutter	6	161	
1822	Diana	5th rate	46	1083	
1822	Rattlesnake	6th rate	28	503	See Hulks
1822	Weazle	Brig sloop	10	217	
1822	Procis	Brig sloop	10	236	
1823	Prince Regent	1st rate	120	2613	8 years on stocks. Undocked as screw 78, 2672 bm 1861
1823	Thames	5th rate	46	1088	
1823	Rainbow	6th rate	28	503	
1824	Unicorn	5th rate	46	1084	
1824	Hearty	Brig sloop	10	228	Packet brig
1824	Aetna	Bomb	6	375	
1825	Barge			108	
1825	Barge			43	
1825	Crocodile	6th rate	28	500	
1825	Formidable	2nd rate	84	2269	Frames captured at Genoa 1814
1825	Mermaid	5th rate	46	1085	
1825	Harpy	Brig sloop	10	232	
1825	Lapwing	Packet Brig	6	228	
1826	Acorn	Sloop	18	455	
1826	Espoir	Brig sloop	10	233	
1826	Powerful	2nd rate	84	2296	
1826	Calypso	Brig sloop	10	233	Packet Brig
1826	Mercury	5th rate	46	1084	
1826	Fairy	Brig sloop	10	233	
1826	Sulphur	Bomb	10	233	Packet Brig
1827	Royal George	1st rate	120	2616	Undocked as screw ship 1853
1827	Africaine	5th rate	46	1173	
1827	Childers	Brig sloop	16	385	
1828	Cruizer	Brig sloop	18	385	
1828	Dove	Dockyard lighter		135	
1829	Penelope*	5th rate	46	1091	

\*Laid down at Portsmouth and frames transferred to Chatham. Lengthened at Chatham in 1843 from 152ft on lower deck to 215ft 2in to hold paddle machinery. Seaward engine. When completed she was a paddle frigate, 1616 bm

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of ships built at Chatham Yard during the period 1815 to 1860 continued

Date	Name	Rate	Guns	Tonnage	Remarks
1829	Algerine	Brig sloop	10	236	
1829	Eurotus	5th rate	46	1170	Undocked in 1856 as a screw frigate
1830	Jackdaw	Cutter	4	108	
1830	Lark	Survey Cutter	2	109	
1830	Thalia	5th rate	46	1082	
1831	Hornet	Schooner	6	181	
1831	Seagull	Schooner	6	279	
1831	Delight	Brig sloop	10	231	
1832	Phoenix	Wooden paddle	6	809	Maudslay engines. First steam sloop vessel built at Chatham.
1832	Castor	5th rate	36	1293	
1832	Monarch	2nd rate	84	2255	
1832	Griffon	Brig sloop	10	236	
1832	Conway	6th rate	26	652	
1832	Forester	Brig sloop	10	229	
1832	Scout	Sloop	18	488	
1832	Rover	Sloop	18	590	
1833	Mud Barge <sup>8</sup>			79	
1833	Mud Barge <sup>9</sup>			79	
1833	Gulnare	Wood Paddle gun vessel	3	351	Boulton & Watt engines
1833	Waterloo	1st rate	120	2694	In 1859 undocked as screwship. Ravenhill & Salkeld engines. In 1876 renamed Warspite and used as a Marine Society Training Ship. Burnt in the Thames 1918
1833	Rochester	Dockyard craft		154	
1834	Blazer	Wood paddle sloop		527	Miller engines
1835	Spider	Schooner	6	183	Packet ship in 1847
1835	Devon	Dockyard lighter			
1835	Wanderer	Brig sloop	16	428	
1836	Wolverine	Brig sloop	16	428	
1836	Bat	Dockyard store carrier		75	
1836	Mooring lighter			168	
1836	Mooring lighter			169	
1837	Widgeon	Wood paddle packet		164	Seaward engines
1837	Dasher	Wood paddle packet		260	Seaward engines
1837	Mercury	Cutter Tender		70	
1837	Tank vessel			119	
1838	Hydra	Wood paddle sloop	6	818	Boulton & Watt engines
1838	Aid	Dockyard lighter		154	
1839	Fantome	Brig sloop	16	483	
1839	Alecto	Wood paddle sloop		796	Seaward engines
1839	Hecate	-do-	6	817	Scott & Sinclair engines
1839	Hecla	-do-	6	817	Scott & Sinclair engines

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of ships built at Chatham Yard during the period 1815 to 1860 continued

Date	Name	Rate	Guns	Tonnage	Remarks
1840 1858	London	2nd rate	92	2598	Undocked at Devonport  as a screw ship 2687 bm
1840	Maeander	5th rate	44	1221	
1840	Polyphemus	Wood paddle sloop	5	801	Seaward engines
1841	Growler	Wood paddle sloop		1059	Seaward engines
1841	Ardent	Wood paddle sloop		801	Seaward engines
1842	Goliath	2nd rate	80	2596	Undocked as screw ship in 1857.*
1842	Virago	Wood paddle sloop		1059	Launched on same tide as Goliath
1842	Cumberland	3rd rate	70	2214	
1842	Bee	Wood screw and paddle		42	Built for instruction of naval officers at RN College Portsmouth
1844	Retribution	Wood paddle frigate	10	1641	Maudslay Sons & Field engines
1844	Mutine	Brig	12	428	
1844	Janus	Wood paddle sloop		763	
1844	Espiegle	Brig	12	443	
1845	Raleigh	4th rate	50	1939	
1845	Active	5th rate	36	1627	
1845	Calypso	6th rate	20	731	
1845	Bulldog	Wood paddle sloop	6	1124	Rennie engines
1846	Teazer	Wood screw tender		296	First screw vessel built at Chatham
1847	Heron	Brig sloop	16	482	
1847	Elk	Brig sloop	16	482	
1847	Arab	Brig sloop	16	481	
1848	Mars	2nd rate	80	2576	9 years on the stocks. Undocked 1855 as a screw ship
1848	Vivid	Wood paddle Packet		352	Penn engines
1849	Tiger	Wood paddle sloop	16	1221	
1849	Elfin	Paddle Yacht		98	Rennie engines. Tender to Victoria & Albert
1851	Despatch	Brig	12	483	
1852	Kangaroo	Brig	12	483	
1853	Euryalus	Wood screw frigate	50	2371	
1853	Cressy	Screw 3rd rate	80	2539	Maudsley Sons & Field engines
1853	Majestic	Screw 2nd rate	80	2589	12 years on stocks
1854	Orion Screw	2nd rate	91	3281	Penn engines
1855	Chesapeake	Wood screw frigate	50	2377	
1856	Aetna	Wood screw floating battery		1588	
1856	Cadmus	Wood screw corvette		1466	

\* In 1870 loaned to Managers of Forest Gate District School as a training ship for boys from the District and Workhouse Schools. Burnt December 22 1875- 405 on board, 18 lost their lives. Painting of the disaster by Lance Calkin.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of ships built at Chatham Yard during the period 1815 to 1860 continued

Date	Name	Rate	Guns	Tonnage	Remarks
1856	Severn <sup>1</sup>	4th rate	50	1986	Undocked 1860 as screw frigate
1857	Racoon	Wood screw corvette	22	1467	Ravenhill & Salkeld engines
1857	Renown	Screw 2nd rate	91	3319	Penn engines
1858	Hero	Screw 2nd rate	91	3148	
1858	Mersey	Wood screw frigate	40	3733	336ft between perpendiculars; length never exceeded by any wooden ship
1859	Hood	Screw 2nd rate	91	3308	
1859	Charybdis	Wood screw corvette	21	1506	
1859	Irresistible	Screw 2nd rate	81	2589	
1860	Atlas	Screw 2nd rate	91	3318	
1860	Orpheus	Wood screw corvette	21	1706	

The engines were supplied by firms such as Boulton & Watt, Miller of Ratcliff, Seaward of Millwall, Scott & Sinclair of Glasgow, Maudslay & Field and Penn of Greenwich.

### Mail Packet Ships

In the ship list there are a number of vessels marked as mail packet ships. From 1823 naval vessels, together with privately owned vessels, carried the overseas mail. It was considered that a 10-gun brig would not be an easy prey to privateers in the event of war. By 1835, 37 Admiralty packets, of which 30 were sailing vessels, and seven were steam driven, were employed on this work.

It should be noted that when Admiralty were first approached in 1828 by the Colonial Office to provide a steamer to carry mail between Malta and the Ionian Islands, Lord Melville, the First Lord of the Admiralty, replied that he regretted the inability of My Lords Commissioners to comply with the request as they felt it their bounden duty, upon national and professional grounds, to discourage to the utmost of their ability, the employment of steam vessels, as they considered that the introduction of steam was calculated to strike a fatal blow to the naval supremacy of the Empire. However, by 1830, paddle steamers were being added to the Fleet.

From 1837 to 1860, the whole of the Mail Packet Service was placed under the management of the Admiralty. Captain (later Admiral) Parry was appointed Controller of Steam Machinery and Packet Department. The volume of mail grew with increase of emigration and trade, and the Admiralty carried on the service by contracts to Cunard and P & O and other companies. In 1838 the Captain Superintendent at Chatham was asked to recruit additional sailmakers to provide sails for the six mail steam packets at Dover.

The terms of the mail contracts were criticised by the Canning Committee on Packets Contract of 1853. Clauses in the Admiralty contracts insisted that the mail packets should be structurally capable of carrying guns and that a Naval agent should be carried on mail vessels. The subsidies of this postal service became a serious charge on the public revenue and in 1860 the Post Office took over the Overseas Mail Service. Up to 1854 the mails for the Continent had been conveyed by Admiralty Packets going from Dover to Calais, and to Ostend. In that year the contract was given to English, French and Belgian Royal Mail Companies.

<sup>1</sup> Last sailing warship built at Chatham

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Steam Ships

In the second quarter of the 19th century a number of wooden paddle ships were built at Chatham Yard. The first was the **Phoenix**, designed by Sir Robert Seppings, launched in 1832, and in the following year the **Gulnare**, later rebuilt and renamed **Gleaner**, designed by Sir William Symonds was launched. In the period 1839/40, five wooden paddle ships were built at Chatham.

The change from paddle to screw propulsion was given an impulse by a test which took place in 1845 and showed the superiority of the **Rattler**, a screw sloop built at Sheerness, over the **Alecto**, a paddle sloop built at Chatham. In 1848 the Admiralty did not possess a screw-propelled line-of-battle ship: by 1859, 37 such vessels were screw-propelled. Twin screws were introduced into the Navy in 1863 (watertight compartments and double bottoms are associated with this period).

The transition from sail to steam was in full flush by the middle of the 19th century and the energies of the Yards were directed to the conversion of sailing three-deckers to screw two-deckers, and the lengthening of sailing frigates to accommodate machinery to drive paddles or a screw propeller. The **Penelope**, a 46-gun frigate, launched in 1829 was, in 1843, cut in two at Chatham Yard and lengthened by roughly 65 feet and fitted with Seaward's Gorgon engine of 650 hp driving paddles; she could stow 500 tons of coal.

The Chatham Committee of Naval Architects appointed by the Earl of Haddington in April 1842, assembled at Chatham Yard for the purpose of furnishing a series of designs for ships-of-war . . . The Committee of Messrs Read, Chatfield and Creuse, Assistant Master Shipwrights, who had completed the course at the Portsmouth School of Naval Architecture, issued a number of reports, the second referring to the **Cressy**, and the third report to the **Espiegle**. The **Cressy**, a two-decked ship, was laid down in 1846. Whilst still on the stocks it was decided to convert her to screw propulsion and after the necessary alterations she was launched as a screw ship in 1853.<sup>1</sup> The **Espiegle**, a 12- gun brig, was retained as a sailing vessel. The **Mutine**, the sister ship of the **Espiegle** was built to the design of the Master Shipwright of Chatham, J Fincham.

The building slips at Chatham were covered and in many cases the ships remained on the stocks for years. The **Mars** was nine years on the stocks and launched in 1848. She was docked and adapted for screw propulsion and finally completed in 1856. The **Edgar**, a two-decker, was laid down at Chatham in 1849. Before completion she was renamed the **Hood** and lengthened on the stocks; the stern being cut off and launched. The ship was lengthened and boilers and engines installed. The stern was dragged ashore and re- attached to the end of the ship. She was launched as a screw second-rate of 91 guns in 1859.

During the Crimean War, (1854/6) a need arose for ships capable of attacking land batteries. Such floating batteries were developed by the French, and Admiralty took up their idea. Chatham Yard's contribution to this programme was the **Aetna**, a wood screw floating battery, launched in 1856.

The political activities in France provided a spur for the improvement of naval defences. In 1851 Louis Napoleon established himself as Life President by a military coup d'etat and in the following year became Emperor. In 1859 the French built **La Gloire**, a wooden ship protected above the water line by iron armour. The Liberals, in office from 1855 to 1866 (except for a short period March 1858 to June 1859) were not disposed to spend freely on defence. They were hesitant about the change to the armoured ship. Undoubtedly a great deal of time and money had been wasted on the conversion of wooden ships. However the **Warrior**, with an iron hull and a belt of armour was launched in December 1860 and completed in October 1861.

<sup>1</sup> Launched by Miss Percy, a daughter of Vice-Admiral the Hon Josceline Percy, C-in-C the Nore



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Extension of Chatham Yard in the second half of the 19th century

The area of the Dockyard had been increased gradually from 61 acres in 1720 to 95 acres in 1848. The extension had mainly occurred by the enclosure of land by the new east wall of the Yard in 1802 and by a series of shifts of the northern boundary of the Yard. The Map of the Yard of 1858 shows the northern limit of the Yard as the road leading to Princes Bridge where a public ferry ran to Upnor. (The area of the Extension works to be described was 404 acres.)

There was a need for the provision of larger slips and docks in the Yard for the larger vessels being built. A study of the ship list (1815/60) shows that eleven ships launched at Chatham between 1853 and 1860 had a tonnage exceeding that of the **Victory**.

Larger slips had been constructed during the period 1845/1855. No 2 Dock was rebuilt and left uncovered in the period 1855/8. This dock was made into a stone dock by Messrs J & C Rigby using Cornish granite. The contractors cut the main spring of the district during the excavation for the new dock and the wells of Brompton were seriously affected. The Naval authorities came to the rescue and at noon every day a stand pipe was fixed in the roadway near to the government reservoir at the top of Barrack Hill and the local inhabitants obtained their water from it. One result of this was the formation of the Brompton & Gillingham Water Company which was registered on the 9th December 1856 with capital of £7,500.

Nos 3 & 4 Docks were improved in 1858 and in 1862 the entrance to No 3 Dock was widened by Messrs Foord of Rochester.

Woolwich and Deptford Yards were out of favour and were to be closed within a decade. Sheerness Yard was in an exposed position and rather than attempt to expand it, the authorities considered it preferable to enlarge Chatham Yard and to provide basins where ships in reserve or waiting for refit could lie in safety. Chatham had been a shipbuilding Yard since Sandwich's day and now the function of the Yard was to be extended to the refitting and repairing as well as the building, of warships of all rates.

As early as 1663 consideration had been given to the provision of a wet Basin at Chatham using St Mary's Creek but the cost, as well as the difficulties of the site prevented any further action. A graving dock which opens to a tidal river suffers from the disadvantage that the depth of water over its sill varies with the state of the tide. The larger ships could only enter and leave the dock at spring tides which occur at fortnightly intervals. On the other hand a graving dock opening on to a wet basin closed by a gate or caisson could be opened or closed at any time.

In preparation for the provision of wet basins and for a further extension of the Yard northwards 285 acres of marsh land on St Mary's Island were purchased in 1854. Convicts from St Mary's Convict Prison were employed in extending the Dockyard river wall in the direction of St Mary's Creek and later provided protection for the northern and western sides of St Mary's Island by an embankment faced with stone and carried well above the level of the highest spring tides.

In 'Chatham News' of 10th November 1860 appeared the following legal notice:

*Notice of application to Parliament for powers for the Commissioners of Admiralty to stop up St Mary's Creek and to embank part of the River Medway; to abolish the Road leading from Brompton to Prince's Bridge Landing Place and also the Ferry over the Medway there; to discontinue the use of the Landing Place called Gillingham Bridge and the Parish Wharf thereto; to purchase land; to amend Acts, Charters, etc.*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In 1861 an Act 24 & 25 Victoria Cap 41 enabled Admiralty to carry out the proposals for the enlargement of Chatham Dockyard.

St Mary's Creek (Swinborough Creek) was ultimately converted into three basins of the Extension Scheme. The Act permitted compensation to the Mayor, Aldermen and Company of Free Dredgers of the City of Rochester for the destruction of their fishery. The Act also sanctioned the abolition of the ferry and the landing place at Prince's Bridge. The path to the ferry through the Dockyard was closed after the 1st of May 1884 as a result of the completion of the Extension Works; the ferrymen were given a gratuity of £10 each. The Act also sanctioned the removal of the landing place at Gillingham Bridge and the acquisition of the wharf and land belonging to Gillingham Parish and the road approaching thereto. Admiralty compensated Gillingham Parish by constructing a public wharf on the east side of the proposed boundary wall of the Yard with an inclined road or draw dock for the loading and unloading of trading vessels. J H Ball & Co of Strood contracted to build the wharf within two years of the date of contract, January 1867. Owing to difficulties with the foundations, the wharf was not handed over to Gillingham until 1872.

Mention has been made of the use of convict labour. St Mary's Convict Prison, built on the site of the present HMS Pembroke, was opened in 1856 and it was intended to employ the inmates on the Dockyard Extension Scheme. There were about 1700 prisoners and an official staff of 232, including 117 armed warders, etc. A section of the Yard, including a workshop, was provided for the convict labour force in what was later the Works Department Pound, just inside Pembroke Gate. When the Extension Work was completed the prisoners were moved to other prisons, party by party. Some were transferred to Dover in 1885 for the Harbour Work and finally, in March 1893, the remainder were transferred to the Convict Prison at Borstal where they were employed in constructing some of the Forts of the Medway Towns.

The proposals for the Extension Scheme initially were modest. In the Navy Estimates of 1856/7 there was an item of £160,000 for certain work for the Extension and Improvement of Chatham Dockyard, chiefly by convict labour. It was proposed to build a basin with two graving docks leading out of it at a cost of £100,000 and to add a new Mast house and mast slip at a cost of £60,000. In subsequent years instalments of this sum were granted, and as mentioned earlier the Dockyard river wall was extended northwards.

However, in the Estimates of 1861/2 a new scheme on a more extensive scale, designed by Colonel G T Greene, then Director of Engineering and Architectural Works to Admiralty, was submitted to Parliament. This scheme included a repairing basin with four docks, together with two other basins, one for Factory purposes where engine and machine work could be carried out and the other for fitting out ships. To facilitate the passage of ships up the Medway to Chatham Yard it was proposed to dredge the river to a depth of 27 feet at half tide; the navigable channel to be 600 feet wide. The estimated expenditure on the scheme was of the order of £900,000 using convict labour to the greatest possible extent. In 1889, £20,000 was allotted for dredging the Medway to allow the heaviest ironclads to pass up and down at any state of the tide.

The scheme was approved by a Select Committee of the House of Commons; the Committee declared that the extension was a matter of necessity, mainly from the continued and rapid increase in the dimensions of our ships.

*While so lately in the year 1830 the largest ships did not exceed 245 feet in length, they have now reached 380 feet in length, and the construction of a ship of 400 feet was in immediate contemplation; the width likewise increased and the draught of water had extended to 27 feet, causing a complete change in the whole system for*

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

*which our Dockyards were originally Constructed .. in the event of a North Sea war, Chatham was the arsenal upon which most reliance would be placed. The site of the proposed extension was far removed from being shelled by hostile ships of war and was protected by the fortifications which formed part of the national defence system.*

In answer to the French challenge, Admiralty ordered the first ironclad, the **Warrior**, in May 1859. She had a draught of 26 feet and the largest dock in Chatham Yard, No 2, completed in 1858, had 23 feet 9 inches over its sill at High Water Spring tide. There was one dock at Portsmouth capable of taking this ship.

It was not until after 1864 when Sir Andrew Clarke, RE, was appointed Director of Engineering & Architectural Works to the Admiralty, that the design of the Extension was settled. Sir Andrew was responsible for the design and Colonel C Pasley, RE, Superintending Civil Engineer, and Mr E A Bernays, Civil Engineer appointed to Chatham in 1862, superintended the work carried out by convict labour and later by both convicts and men employed by Mr Gabrielli, the Contractor. Sir Andrew Clarke was appointed Governor of the Straits Settlements in 1873 and Colonel Pasley succeeded him as Director: Mr Bernays was then appointed Superintending Civil Engineer of Chatham and held this office until 1886.

Experience soon showed that it was necessary to abate considerably the anticipated economy arising from the use of convict labour. As many as 1700 convicts were engaged in the early stages of the Extension but as it progressed the number was reduced and on the average about 1,000 were constantly employed. Ultimately it was found necessary to regard convict labour as an occupation for the prisoners, rather than a means of reducing the labour cost of the project.

Bricks for the work were made on St Mary's Island. The area of the brickfield was 22<sup>1</sup>/<sub>2</sub> acres and the conversion of the wet marsh to the levelled and drained brick field started in June 1865; the first brick was made in March 1866. The bulk of the bricks, composed of two parts of clay dug on the spot, two parts of blue gault clay from Burham and one part of sand from Aylesford, together with engine ashes from the Yard, were made by convict labour. Two of the six brick-making machines were driven by 20 hp fixed engines constructed by Aveling & Porter of Rochester. By 1867, about 15,000 bricks were being made a year.

St Mary's Creek, though of considerable width and depth, was nearly dry at low water of spring tides. The levelling of the Extension Work was commenced at the west and where the Repairing Basin was to be sited. A large hillock which the Royal Engineers wanted shifting was moved by locomotives and trolleys to the site. Earth and rubble was also brought from London by barges and lighters, as many as 20 craft a day. Some of the rubble came from the Tower of London and from the Northumberland Avenue Hotel then under construction. Initially about 10% of the labour force were free men, the remainder were convicts employed on the levelling and excavating operations.

During the construction of No 5 & 6 Docks, a design for a new type of turret ship with larger beam and much fuller dimensions below the water line came out and the docks had to be modified. Progress was so slow that eventually it was decided to complete the Repairing Basin, the two dock entrances, the whole of Nos 7 & 8 Docks, with the Engine House for pumping out the docks by contract. The contractor appointed was Mr Gabrielli; Mr Golla, CE, was his engineer.

This change of plan caused a rise in the cost of the project. An idea of this is given from a Parliamentary Return of 1871 for Chatham Dockyard shown below:

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

	<b>Expenditure to Dec 1870</b>		<b>Required to complete</b>	
	<i>Under Contract</i>	<i>By convict &amp; hired labour</i>	<i>Contract</i>	<i>Convict</i>
Repairing Basin & dry docks 1 & 2 and engine house	£439,200		£36,000	
Dock3&4	16,000		£96,000 *	
River Wall & Embankment, dams, boundary walls and road		£207,000		
Caissons & dock pumping machinery	28,913		51,000	
Public wharf at Gillingham	92,000		16,000	
Brickmaking & Brickmaking plant		77,000		£10,000
Factory Basin		67,000		18,000
Fitting out Basin, locks & caissons		15,000		302,000
Miscellaneous Workshops, Buildings		206,327		
Mast Slip Gridiron & Dredging Dredging Channel				45,000
		Total £1.148.440		Total £610.000

\* £36,000 for purchase of granite

In the Estimates 1873/4 it was stated that the Extension Works were to cost £1,700,000 and that £1,487,000 had been spent. For the current year £75,000 was asked for: £15,000 for contract work and £30,000 for convict labour.

The Repairing Basin at the Upnor end together with two of the four dry docks, Nos 5 & 6 opening into it, was opened on the 21st June 1871 in the presence of Mr Goschen, First Lord of the Admiralty. On the opening day, the **Invincible**, an iron screw ship of 6010 tons, was docked in No 5 Dock; the **Audacious**, a ship of the same class, was docked in No 6 Dock on the 18th January 1872. No 7 Dock was opened in October 1872, and No 8 Dock in the spring of 1873.

There was an entrance at the Upnor end of the Repairing Basin normally closed by a caisson, together with a passage from the river containing a boat camber, now occupied by No 9 Dock, for vessels of light draught.

The Factory Basin (No 2) was opened on the 13th December 1871. The original design for the Extension Works included the construction on the south side of this Basin of a large range of buildings covering an area of 1,000 feet by 500 feet for the construction and repair of boilers, steam engines and machinery. However, no provision was made by Parliament for this part of the project. As an economy measure three buildings and a quantity of machinery from Woolwich Yard, closed in 1869, were shipped to Chatham Yard. At the head of No 5 & 6 Docks was erected in 1874 one of these buildings with an iron frame and corrugated iron cladding, the Factory. (There have been a number of additions to this building since that date.) In 1876 another such building was erected at the head of Nos 7 & 8 Docks, the Boilershop. The third structure, originally built at Woolwich as a roof over a ship-building slip (1844/5) was erected in 1880 on the east side of No 8 Dock, No 8 Machine Shop. (See details on next page)

# DEVELOPMENT OF H.M. DOCKYARD CHATHAM

## Details of buildings shipped from Woolwich Yard

### DOCK HEAD ROAD (south side) From (EW) Factory

Machine Shed. Circa 1865 with plaque 'Erected 1874.' The original building was cast and first erected at Woolwich and removed to Chatham in 1874. Cast iron frame with corrugated iron cladding. Bracketted gutter to corrugated iron roof. Very deep wooden framed strip windows running round at level below eaves. Aisles cut back from centre to east, leaving centre to project. Large C20 up and over doors at East and West ends.

*Interior:* Cast iron frame with braces to aisles. Composite iron roof with rod bracing. Short seven bay extension to the west. This building has been extended in stages to the South and now incorporated an 8-bay framed structure to its South with a composite iron roof with rod braces, decorative brackets and ends to the principals. This is also of special interest.

### DOCK HEAD ROAD (south side) Boilershop

Boilershop. Circa 1865, with plaque on frame internally, reading 'Erected 1876.' Iron framed and clad in corrugated iron, some of large radius. Very wide jacked corrugated iron roof with blocked louvers, moulded gutters and 4-side clock cupola topped octagonal ogee-domed bell turret at western end of ridge. Top lit with irregular scattering of small wooden framed windows in sides. Sides masked by low C20 lean-to brick extensions.

*Interior:* 11 bays with cast iron piers. Composite iron roof frame with bracing and rod trusses. Arcading at west end and on sides towards roof level. Roof trusses to aisles of one giant tear-drop type from casting each. This building was originally built at Woolwich but was moved and re-erected at Chatham in 1876. It was later extended by 3 bays to the west.

### DOCK HEAD ROAD (north side) No 8 Machine Shop

Machine Shop. Circa 1845, re-erected 1880, according to external plaque. Originally built at Woolwich as a roof over a ship-building slip probably in 1844-S. It is thus among the first of the iron slip roofs- and may well be the earliest. Iron framed and clad in large radius corrugated iron with some brick below. Bracketted gutter to very wide corrugated iron gambrel roof with seven blocked square-headed dormer type louvers down each side. Large central windows to north and south, that to south divided into 2 horizontally, flanked by shallower side windows. Entrances to north and south with larger sliding boarded doors. *Interior:* 15 bays, cast iron piers joined by pierced arcading almost at roof level. Iron frame roof with central roof lights and bracing from roof to piers. Aisles with iron framed roofs and bracing. Later 3 bay extension to north with simple gabled roof.

### OFF DOCK HEAD ROAD Combined Ship Trade Office PP69 to rear of No 8 Machine Shop

Machine shed with office block at north end, now also offices on 1st floor. Dated 1880. Cast iron frame, infilled with brick on ground floor and clad with large radius corrugated iron on first floor. Wooden eaves cornice, with brackets from frame supporting gutter, to corrugated iron roof. Wooden framed strip windows in upper parts of walls of both floors 2-storey gabled half glazed doors. *Interior:* Timber roof with Queen struts and principals that reach only up to the Queen struts.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In 1877, a clock 120 feet above the ground, was erected over the Boilershop. The clock with four dials, 8 feet in diameter, was erected by Messrs Moore of Clerkenwell, London, at a cost of £550.

During the time of the construction of the Fitting Out Basin, an enormous dam was constructed, 1400 feet long, enclosing an area of more than 20 acres. Earth was tipped from each end of the dam until the embankment was about 7 feet above high water at spring tides. This had to be removed when the work constructed under its shelter was concluded.

The 'Southern Gazette' dated 28th November 1882 stated:

### *Chatham Dockyard Extension*

*The Fitting Out Basin at Chatham Dockyard Extension, which will contain about 45 superficial acres of water, is so far completed that the tide was permitted to flow into it on Friday when the iron caissons were floated into position, after which the water was pumped out again to allow the completion of the work. The basin is the last of a chain of three which will contain 130 superficial acres of water and which combined with other facilities to make the naval arsenal at Chatham one of the finest in the world. The works commenced under Major General Pasley, RE, but their completion is being superintended by Mr E A Bernays, SCE, who has been allowed to remain in the government service after the usual time so that he may see the vast undertaking finished.*

In the Navy Estimates of 1882 it was noted that the total expenditure on the Extension Works from their commencement until 31st March 1881 was £1,958,000 and that £28,000 had been spent in the financial year 1881/2. It was then estimated that the outlay to finish the work in the year 1882/3 would be £9,000; the total expenditure, £1,995,000.

By 1885, the Extension Works were virtually completed; there had been an expenditure of three million pounds over a period of 20 years from the date of the first contract with Mr Gabrielli in July 1866. The opening ceremony took place on 26th September 1885 in the presence of the Controller of the Navy, the Admiral Superintendent of the Yard, Major General Mond, Mr E A Bernays, SCE and the principal officers of the Yard.

In the south lock of the Extension Works, the **Monarch**, an iron screw ship of 8,320 tons, launched at Chatham in 1868 lay ready. When the tide reached 31 feet, the Chief Constructor gave the signal for the caisson to be drawn to allow the vessel to pass into the river. Two tugs towed her out into the fairway.

The Repairing Basin which had a mean length of 1,270 feet and width of 700 feet with an area of 20112 acres, was intended for the reception of vessels newly launched or stripped for repair after paying off, and was provided with four graving docks for the repair of ships of the largest size. The docks were designed originally to be of the same section, but while the two western docks were in course of construction it was decided to modify the section of the third and fourth docks. Later No 5 Dock was lengthened to accommodate cruisers of the **Diadem** class, 435 feet. This work was completed in September 1898.

The Factory Basin which had a mean length of 1,245 feet, a width of 700 feet and an area of 20 acres, was intended for the reception of vessels while their engines and machinery were being fitted and placed on board, or were in the course of removal.

The Fitting Out Basin which had a mean length of 1,730 feet and a width, for the greater part of its length, of 700 feet and an area of  $27\frac{3}{4}$  acres, was intended as its name denotes for ships under preparation for service.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

The Basins were all 700 feet wide so that any vessel could be turned in them. The walls of the Basins were 40 feet high and 21 feet thick at the base; the three Basins had a depth of water of about 31 feet. In each Basin two large mooring buoys were secured to two strong chains let into very heavy blocks of concrete, sunk into the ground below the bottom of the basins. These buoys were mainly used for warping vessels through the basins. (The bottom of each Basin was the natural bed of the creek.)

As mentioned earlier, the Repairing Basin could be entered from the Medway at Upnor. This entrance was designed to be used by newly built vessels without guns and engines on board. A spare caisson was provided of special construction to sink with great rapidity in case of emergency. There was always the risk of water flowing out of the Repairing Basin and causing the large vessels to take the ground. This entrance was closed about 1930. At the other end of the Basin was an opening into the Factory Basin which could be closed by a caisson. Another caisson closed the opening between the Factory and the Fitting Out Basin. The latter opened out into the river at Gillingham, an entrance termed 'Bull Nose' from the form of the projection of the pierhead between the locks. There were two entrances to the Fitting Out Basin, by locks closed at both ends by sliding caissons, and of sufficient length to receive between the caissons the largest vessels in the Navy.

The caissons of the locks were opened in the following manner. By means of chains worked by hydraulic power, the caisson was hauled down a runway with a slope of  $1\frac{1}{2}$  degrees into the caisson chamber under the road. The front part of the road covering this chamber was raised by hydraulic rams to allow the movement of the caisson. The process of replacing the caisson was the reverse of this. The mechanism for moving the caisson consisted of two hydraulic engines which were connected to two sprocket wheels, one on each side, over which a continuous chain ran. These chains were 480 feet long and each link 9 inches long. The chains were attached to each side of the caisson by means of a steel block and at one end ran over two free sprocket wheels, one on each side which were fixed to the caisson chamber walls.

The other floating caissons<sup>1</sup> for No 5, 6, 7 & 8 Docks and for the entrances between the Basins were built in 1870. Both the locks were intended to be available as graving docks, means being provided for pumping them out. This facility allowed an examination of the hull of a ship either entering or leaving the basin.

On the pier between the two locks was the Boiler House, having an immense chimney shaft, towering some 130 feet, and the Engine House containing the machinery for emptying the locks and working the hydraulic machinery connected with the capstans, etc. The pumps for the hydraulic power were originally driven by steam from five boilers in the adjoining Boiler House. This machinery was supplied by Messrs J G Rennie of London and Messrs Tanner, Walker & Co of Leeds. The chimney shaft was partially felled in the period 1942/3; it was regarded as a conspicuous landmark for enemy aircraft in the Second World War. The chimney, however, remained in use until 1960 when electricity replaced steam as the motive power for driving the hydraulic machinery.

On the west side of the Extension Works was the Pumping Station built in 1873 for emptying the docks on the south side of the Repairing Basin. This was a flat topped, red brick building with a square section chimney at the north end (now truncated). It had Italian style arched colonnades walled up in places. Inside were reciprocating steam engines for driving the pumps (the pumps are nowadays electrically driven). The pumps were sited over a deep brick lined wet well, the latter communicating with subterranean culvert passages to the dry docks. It has been stated that the pumps could deliver 1200 tons of water per hour. Its counterpart built in 1902 was on the opposite side of the Basin to drain No 9 Dock built at the turn of the century.

<sup>1</sup> Sunk by admitting water; floated by expelling water with compressed air from hoses on shore.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

On the south side of the entrance locks was built a tidal dock for the discharge of colliers. This dock is 50 feet wide and 320 feet long to accommodate the largest collier entering the Port of London. Adjacent to this dock was the coal store for sea-borne as well as land- borne coal. The area of the old Yard was 95 acres; that of the Extension Works 404 acres giving Chatham Yard an area of approximately 500 acres. The areas of the Royal Yards about 1960 were:

Chatham	504acres
Rosyth	330acres
Devonport	319 acres
Portsmouth	294acres

Provision was made in the Basins for sheers and cranes to be placed in the most convenient position for working. The sheers erected at the centre of the south wall of the Repairing (No 1) Basin were supplied by Messrs Day & Summers of Southampton in 1871. The front legs were 142 feet, the back legs 175 feet, and the sheers were tested with a load of 100 tons; the normal working capacity was 75 tons. They were demolished in February 1951.

Those on the south side of the Factory (No 2) Basin came from Woolwich Yard and were erected in 1875. The lift was about 80 tons. They were demolished by the Royal Engineers in August 1926.

The sheers on the north side of No 1 Basin were erected in 1904 and their lift was 130 tons. The sheers consisted of two front legs, 160 feet long, and 50 feet apart at ground level. The legs had a diameter of 5 feet 3 inches in the centre and 3 feet at the end; each front leg weighed 40 tons. The rear leg was 6 feet in diameter at the centre, 3 feet at the ends, and weighed 54 tons. Each leg had internal strengthening discs approximately 12 feet apart; each disc had a manhole to permit of an internal survey throughout the length. The lower ends of the front legs fitted into cast steel sockets and were held in position by steel pins. The overhang of the sheer legs was altered by a screw and traveller, operated by steam and later compressed air. In 'Periscope' of 20th December 1967, it stated that the sheer legs collapsed on the 13th December 1904. They were demolished in September 1945.

The disadvantage of the sheers was their lack of mobility; one way out of this difficulty was to employ floating sheers, sheers mounted on a dumb lighter. Crane lighter No 6 was in action in the 1960's. The sheers were of German origin built in 1902, and taken as reparations at the end of the First World War. The original lifting capacity was 150 tons but this was down rated by 1966 to 70 tons.

The sheers were ultimately replaced by cranes such as the 120 ton crane near No 9 Dock. Another powerful lifting device was the Goliath crane, dated 1913, on the old Gun Ground north of the Fitting Out (No 3) Basin. This was originally rated as 150 ton capacity but was later reduced to 75 tons.

### Wells in the Dockyard

During the construction of the Extension Works an artesian well was sunk in the Yard to the south of the Factory Basin. In 1868, Thomas Tilley, a well known well sinker of Walbrook, London, commenced sinking this well. A shaft was dug 67 feet deep; the lowest section of depth 18 feet was 9 feet in diameter; the next of depth 17 feet was 11 feet in diameter; and the upper portion of 12 feet 6 inches diameter was carried to the surface. The well was lined with brick work and cast iron cylinders. A borehole of 18 ins in diameter was carried down to a depth of 129 feet. At this point the bore was reduced to 9 inches and carried down to a depth of 301 feet from the surface. An ample supply of water of poor quality was found.



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

Messrs Dockra & Son of London were subsequently commissioned in 1878 to continue the work and at a depth of 903 feet below the surface a good supply of soft water was found. The pipe entering the water bearing strata was only four inches in external diameter. Water flowed out at the rate of 115,000 gallons a day and of temperature 65F and reached a height of 19 feet above the ground line. The boring revealed the geological disposition in this part of the Yard; alluvial and loamy gravel 12 feet; chalk, 684.5 feet; gault, 191.5 feet. Water was found in the lower greensand below the gault clay.

In order to obtain a larger supply of water, another boring was made in 1880 some thirty feet away from the first well. Pumps had to be inserted in the boring and the water pumped from a depth of 122 feet below its rest level; the yield was only 300,000 gallons a day. The boring was for experimental purposes carried down to a depth of 965 feet into the Oxford clay. According to 'Chatham News' of 9th January 1892, this boring had been continued to check whether coal measures existed in this region. Commercial interests were beginning to exploit the Kentish coal measures.

There was a well about 45 feet depth at the Saw Mills and another south of the Joiners' Shop (1860). In September 1872, a breakdown of the pumping machinery caused the residents and men working in the Yard to be deprived of drinking water. Supplies were then brought in from the mains of the Chatham Waterworks Company. The Estimates, 1872/3, included a charge of £500 for water, presumably drinking.

Water for the Dockyard, other than drinking water, is now supplied from wells in the Yard, one of which is near Pembroke Gate and another at the rear of St George's Church, HMS Pembroke. The water was pumped up to and stored in reservoirs: Couvre Port Reservoir and Spur Battery Reservoir holding 24,900 tons and a smaller covered reservoir in front of Prospect Row, Brompton, holding 2,180 tons. The water from these reservoirs was gravity fed back into the Yard. The first two reservoirs were built in the moat at Fort Amherst after 1888. The last reservoir, shown on a Map of Melville Hospital dated 1832, was removed in 1966 and the site converted into a recreation ground.

The two wells sunk in 1878 and 1880 mentioned above no longer function and the Well House is now used by Yard Services as a fitting shop.

### Transport in the Dockyard

Before the days of the steam engine, transport of goods in the Yard was effected by horses and labourers. The teams of horses were supplied by the Teamer of the Yard.<sup>1</sup> The use of a team of horses in drawing timber about the Yard is mentioned in Pepys diary.<sup>2</sup> There is mention of the charges of a Teamer in the Chatham Extraordinary Account, Christmas Quarter 1622.

*Richard New of Strood for the hire of four horses and a man for drawing timber from the cranes and to and from the sawpits, by the space of 53 days at 4s a day, £10 12s*

The Teamer held his appointment by warrant. In 1698, Sir Edward Gregory, the Commissioner, sent a petition to the Navy Board on behalf of William Elfee, the Teamer of HM Yard at Chatham, to be permitted to resign his employment to Mr Trott.<sup>3</sup> Elfee had consumption. When the new docks were built in 1685/6 a part of the Teamer's ground held by lease from the Crown was taken and Admiralty had to pay rent to the Teamer. In the Estimates for Chatham 1697, appears:

*Mr Elfey, rent of Dock field and piece of ground taken into New Dock, £7*

This rent however was made payable to Mr Trott instead of Mr Elfey.

1 See 1698 Map of Yard

2 See Dockyardmen, chapter 3

3 1698 Thomas Trott appointed Teamer at Chatham

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In 1774 the charge for four horses and a man, payable to Edward Philipors, was 6s 6d a day. In 1869, teams for the Yard were provided by Mr C Walker who occupied Horsted Farm. The Estimates of the hire of teams for 1869/70 was £1,352; for 1873/4, £1,030.

'Chatham News' of 12th March 1887 reported that George Walker of Brompton and Gravesend was appointed for the supply of horses and drivers for HM Dockyard for the next three years. Curtis of Chatham was the last of the teamers and many dockyardmen will remember the stables at the bottom of Westcourt Street. These were demolished in 1927 during the widening of Dock Road near Main Gate. The site today is occupied by a commercial petrol filling station.

Horses were used in the Yard up to 1966 to pull the water carts and oil drums round the Yard; modern dumper trucks hastened their departure. In the end there were three horses on this work, the oldest, Mary was due to be slaughtered but an appeal in the Dockyard and HMS Pembroke raised £180; £60 to buy Mary, and £120 to keep her in retirement at a RSPCA rest home on the Isle of Wight. The other two horses, Punch and Glossy, went back to their contractor.

For the horse-drawn carts, there were parallel granite slabs for the wheels with cobbles between them for the horses' hooves. Specimens of this type of road way could be seen in the Yard in the 1960's. As early as 1837, a narrow gauge tramway was in use and the wagons were moved by horses or men. Horses, of course, were ridden in the Yard; there is a mounting block near Medway House.

Traction engines were used in the 1860's and later. In 1866, a traction engine belonging to Aveling & Porter was engaged in conveying armour plates from Chatham Station to the Dockyard. These plates were from six to nine inches thick, four feet wide and 18 feet long. A steam traction engine built by this firm was in use in the Yard for haulage work in the same year.

When the Dockyard Extension commenced in the 1860's it was proposed to connect the Yard with the existing main line railway; this scheme was approved by Parliament in 1873. The Dockyard Branch Railway, opened in 1876, joined the Gillingham end of the Yard with the London, Chatham & Dover Railway near New Brompton Station. A broad gauge railway was built to connect the Extension Works with other parts of the Yard. The branch railway was especially useful for the conveyance of stores from outside contractors to the Dockyard whilst important visitors, naval officers and men could go direct to the main line without passing through the towns.

Earlier in 1870, an eighteen inch gauge tramway was laid in the Yard. Initially, short sections of the rails and track were cast integral and laid in the roadway. Parts of the Smithery were floored with these sections after this system fell into disuse. When the broad gauge track was laid, a third rail was used in conjunction with the normal rails to provide a narrow 18 inch gauge. Specimens of the narrow gauge track were to be seen in the Yard and in the former Gun Wharf. By 1871 there was a tramway from the lower end of the Yard to Anchor Wharf; in 1873 a bridge was opened between Gun Wharf and the Dockyard over New Stairs and rails were laid so that guns could be transported to and from ships in the Dockyard Basin from Gun Wharf.

The narrow gauge goods traffic was hauled by engines with such picturesque names as Sunbeam, Thistle, Shamrock, Rocket, etc of 18 tons. The passenger train usually consisted of an enclosed officers' carriage and an open workmen's carriage with back to back seats. The engines used to haul the passenger trains included Cartoon, Fidget and Busy Bee. The Admiral Superintendent had an ornate carriage which was usually kept in No 2 Slip and was always drawn by Fidget, a locomotive with a large brass funnel. As well as a driver a boy was carried to operate the points when required. The various railway signs in the Dockyard such as 'Whistle and go slow' provoked ribald comment from sailors and visitors.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

An Order from the Admiral Superintendent dated 1st October 1897 headed 'Annual Visit of their Lordships to Chatham' gives the reader an insight into pre-official car days:

*... two engines and carriages are to be ready to convey their Lordships about the Yard and steam is to be raised in my Barge in case they may wish to visit the Upnor Naval Ordnance Establishment.*

*Signed: H J Andoe, Admiral Superintendent*

George Dicker in his work, 'A Short History of Devonport Royal Dockyard' states that each train at Devonport consisted of an open truck for the conveyance of materials and tool boxes; three box-cars converted to passenger use by the installation of wooden seats around the interior and the addition of windows, and two slightly more elaborate box-cars compartmented for the use of the higher grade of employees; The lesser of the two had three compartments with a minimum of upholstery and bearing on the doors: Chargemen & Recorders, Petty Officers and Chief Petty Officers. The last and grandest car had three compartments and more upholstery with doors bearing the legend: Subordinate Officers, Superior and Commissioned Officers and most sacrosanct of all Principal Dockyard Officers. This last was the only one lit having a lighting system powered by a battery under the seat.

The passenger trains in Chatham Yard ran to a timetable, the first train leaving Main Office at 7 am and thereafter every half hour going to various points in the lower end of the Yard. The passenger trains were replaced by single decker buses about 1933 and lorries were used to carry goods traffic in the Yard, but hand drawn trucks using the narrow gauge were still employed to carry stores and garbage.

A new railway line was laid in the Yard in 1904. Some idea of the use of the branch line is given by the following table of weights of stores (tons) brought in and taken out by rail.

	In	Out		In	Out
1891	7,420	2,032	1938	16,849	5,549
1900	20,375	2,414	1942	76,523	46,689
1913	15,432	3,590	1960	27,871	7,985
1918	87,954	55,779			

Ajax, the last steam loco to work on the 17 miles of tracks inside Chatham Yard has been preserved. This shunting engine which could pull a load of 365 tons was delivered to the Yard in 1941. Others such as V E Day, Invicta, Victory and Singapore were disposed of, some to railway enthusiasts. Modern diesels continued to serve the Yard, all with Castle names, Allington, Leeds, etc. Some of the steady work such as the hauling of coal from Bull Nose to the Power Station and to the Smithery disappeared when coal was superseded by electricity.

During the Second World War one loco covered with 2<sup>1</sup>/<sub>2</sub> plate was used to pull A/A guns round the dockyard for defence against low flying aircraft.

After the 1st January 1919, the Naval Stores Department assumed responsibility for delivering stores demanded from the professional departments and for collecting all stores to be returned. Demands had to be deposited by the professional departments at one of the Present Use Stores by 3 pm daily or 10 am on Saturdays. The Chargeman of Providers had to arrange delivery, choosing the most efficient form of transport from motor lorries, railways trucks, both broad and narrow gauge, and drays. (The Naval Store Provider Service)

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In modern times the requirement of Machine Accounting and Stock Control restricted customers' own store collection to the Retail and Ready Use Stores except in emergency.

The purpose of the Retail Stores was to supply small quantities in general afloat use to the workmen. There were five Retail Stores holding about a month's stock.

No 1 Store	No 8 Dock
No 2 Store	No 9 Dock
No 3 Store	S W corner of No 3 Basin
No 4 Store	Opposite No 7 Slip
No 5 Store	S W corner of No 2 Basin

The purpose of the Ready Use Stores was to supply items in general use in the workshops. There were at least 15 such stores carrying about three weeks' stock.

Mast & Boat House*	Boiler Shop
Riggers	Pattern Makers
Mould Loft	Nos 1 & 2 Electrical Shop*
Welders	Machinery Maintenance & Repair
No 8 Machine Shop*	Radio Centre*
Plumbers & Coppersmiths	Telephone Repair Party
Painters	Motor Transport Repair Depot
Factory*	

The stores marked\* were administered by SNSO, the remainder by the Production Departments.

### Alterations of Slips and Docks at the turn of the century

During the building programme of the last decades of the 19th century there had been alterations made to the slips and docks in the Yard. 'Chatham News' of 19th December 1881 reported that the Navy Estimates included £250 for the closing of the entrance to No 1 Dock. This dock was filled in in 1887. It was reported on 20th June 1889 that No 1 Slip which had been used as a store was considered unsafe. The roof was removed and the slip filled in by 1892.

No 2 Dock was enlarged in 1907 and No 4 Dock was lengthened in 1906 from 254 feet to 331 feet. By 1898 No 5 Dock was lengthened to accommodate cruisers of Diadem class. No 2 Slip had been used as a store since 1880 and it was filled in 1892. Nos 3 & 4 Slips were converted into Boat Stores in 1904. No 5 Slip accommodated No 2 Machine Shop. No 6 Slip had a dam entrance; part of this slip was used as No 3 Machine Shop. The 1943 Map shows No 6 Slip was floored over and used as a screeve board for No 7 Slip as well as accommodating No 3 Machine Shop. No 7 Slip also had a dam entrance; it was lengthened in 1901. In some cases the forepart of a ship on the slip was across the roadway. The width of the slipway at the river had to be increased to allow large beamed vessels, 75 feet and over, to pass on launching.

For the building of larger ships, No 8 Slip was built in the period 1898/1900. This slip with its open entrance was lengthened in 1926 for the building of the cruiser, Kent (The extension was removed in 1959) No 8 Slip was used for the construction of the cruisers:

**Chatham**, 5,400 tons, launched in 1911; **Lowestoft**, 5,440 tons, and **Arethusa**, 3,500 tons, in 1913; **Calliope**, 3,750 tons, in 1914; **Conquest**, 3,750 tons, in 1915; **Hawkins**, 9,750 tons, in 1917; **Kent**, 9,850 tons, in 1926; **Arethusa**, 5,220 tons, in 1934, and **Euryalus**, 5,450 tons, in 1939.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

No 9 Dock on the north side of No 1 Basin, 50 feet long with 33 feet of water over the sill, was completed in 1904.

Mention has been made of the soaring Naval estimates after 1889. There were public protests in 1904 and Fisher put into effect the economies mentioned in the section on Dockyardmen. He criticised the spending of huge sums of money on Chatham and particularly attacked the proposal to spend a quarter of a million pounds on dredging the Medway for the depth was inadequate for a damaged Dreadnought to be taken to Chatham at any state of the tide.

By 1914 the only docks of the East Coast large enough to accommodate a Dreadnought were No 9 Dock at Chatham for which there were approach difficulties, and the Medway Floating Dock at Sheerness. The latter, 680 feet x 113 feet x 36 feet, capable of docking a vessel of 32,000 tons, was moored in Salt Pan Reach.<sup>1</sup> It is said that when the Floating Dock was moved to Rosyth after the sinking of the Bulwark, a number of bodies of unfortunate seamen were found to be trapped underneath.

At the outbreak of the First World War, Chatham had one dock to take a modern cruiser, another to take a small cruiser and the remaining three nothing larger than a destroyer. Rosyth Yard, opened in 1903, was to become the rival of Chatham Yard.

### Details for 1933

	<i>Length</i>		<i>Height over sill at H W spring tide</i>		<i>Width at entrance</i>	
DockNo2	404ft	3 in	23ft 9 in		63ft 7 in	
DockNo3	336ft	5in	23ft 7 in		63ft 2 in.	
DockNo4	331ft	2in	20ft 9 in		62ft 2 in	
Dock No5	491ft	5in	32ft 9 in		80ft	
DockNo6	416ft	10 in	32ft 9 in		80ft	
DockNo7	428ft	8in	33ft 3 in		82ft 8 in	
DockNo8	428ft	8in	33ft 3 in		82ft	
DockNo9	650ft		33ft 5 in		84ft	
Slip No 7	509ft				77ft 6 in	
Slip No 8	616ft	7in			92ft	
North Lock	477ft	6in	34ft 10 in	33ft	3 in	94ft 6 in
South Lock	79ft	6in	33ft 4in	33ft	5 in	84ft 6 in

(Length of dock given at sill or block level)

Chart datum, 16.58 ft above north lock sill.

Rise at MHWS at Queen's Stairs	18.4 ft
Rise at MHWN at Queen's Stairs	15.1 ft

Caissons to Locks at Chatham were built 1884

Caissons to No 9 Dock 1901

Caissons to Nos 5, 6, 7 & 8 Docks and from 1/2, 2/2 Basins 1870

Caissons to No 2 Dock 1860

Caissons to No 3 Dock 1866

Caissons to No 4 Dock 1867

<sup>1</sup> See Sheerness Yard, chapter 24

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

In November 1860 the docks and slips of the Yard were occupied as follows:

No 1 Slip	<b>Rattlesnake</b>	wood screw corvette 20, 2431 bm was launched in July 1861
No 2 Slip	<b>Reindeer</b>	wood screw sloop 6, 953 bm was launched in March 1866. Her building was cancelled in 1865 and later re-started; she was broken up in 1876
No 3 Slip	<b>Undaunted</b>	wood screw frigate, 3039 bm was launched in January 1861
No 4 Slip	<b>Belvidera</b>	wood screw frigate, was laid down in 1860, cancelled in 1864 and broken up
No 5 Slip	<b>Bulwark</b>	screw 2nd-rate 81,3716 bm was laid down in March 1859. Her building was suspended in 1861 and her engines put into the <b>Royal Oak</b> ; she was broken up in 1873.
No 6 Slip	<b>Myrmidon</b>	wood screw gun vessel, 697 bm was launched in June 1867
No 7 Slip	<b>Royal Oak</b>	(See after the building of <b>Achilles</b> )
No 3 Dock	<b>Arethusa</b>	4th-rate 50, 2132 bm launched at Pembroke Dock in 1849. In August 1861 she was undocked at Chatham as a screw frigate. <sup>1</sup>
No 4 Dock	<b>Bombay</b>	2nd-rate 84, 2279 bm was built in Bombay in 1828 and undocked in May 1861 as a screw ship.

### Introduction of Iron Shipbuilding into Chatham Yard

The above were all wooden ships, but in 1861 the first iron ship, the **Achilles**, to be built in a Royal Dockyard was laid down in the Yard. Others, including the **Warrior**, had been built in private yards.

The Times' correspondent wrote:

*The order for building the **Achilles**, together with the sheer draught and drawings, arrive at Chatham in April 1861. It was not, however, until the September following that the first iron plate for the vessel was laid in No 2 Dock, the interval between having been taken up in preparing and fixing the enormous machines required for bending, slotting and otherwise preparing the armour plates and other portions of the ironwork for a ship of the dimensions of the **Achilles**, not a single machine for iron shipbuilding being at that time in the Dockyard.*

**Achilles** was not floated out of the dock until December 1863. The building of the ship was handicapped by the necessary Yard reorganisation and labour difficulties; the latter have been dealt with in the section on Dockyardmen. **Achilles** was laid off in the Mould Loft over the Mast House.

The 'Illustrated London News' of 10th January 1863 contained an illustration entitled:

*The new iron-clad Fleet; bending of armour plates by hydraulic pressure at Chatham Dockyard .being the immense slabs of iron varying from 3 ins to 4<sup>1</sup>/<sub>2</sub> ins in thickness being converted into any form of curve by the hydraulic ram as though they were paper.<sup>2</sup>*

On the 23rd December 1863, the **Achilles** was floated out with armour in position.. The armour belt ranged in thickness from 4<sup>1</sup>/<sub>2</sub> inches to 2<sup>1</sup>/<sub>2</sub> inches, the teak backing was

1 See Hulks on the Medway, chapter 18

2 An account of her building is given by Charles Dickens in 'Chatham Dockyard' in The Uncommercial Traveller

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

from 10 to 18 inches thick and the plating was five eighths inch thick. She drew 20 feet forward and 20 feet 3 inches aft. On the 22d the tide at Chatham had been one of the highest for years and had everything been arranged for it, she might have been launched at noon that day. That night, however, several hundred workmen began to make the usual preparations, but it was found that the caisson at the entrance to the dock could not be removed without great difficulty and that the exit of the ship would also be impeded by the projecting ends of the dock itself which it would be necessary to cut away. At midnight the tide was again high and the **Achilles** floated but could not be moved out because the removal of the obstacles had not been completed. She was therefore allowed to settle down. During the night the wind changed from north to south and kept back the tide so that she could not be floated out the following afternoon though everything was ready. All the men employed on her were ordered to stay the night. At 11 pm she was found to be afloat and the order was given to haul her out of the dock.

Five steamers took her in tow and the capstan was manned at the same time. She was pulled into the stream but the tide caught her broadside and forced her on to a sandbank where she grounded. The Master Rigger, Mr Degee, was relieved of his post by the Captain Superintendent as a result of this grounding. The **Achilles** had been in dock so long that a bank of sand and mud had accumulated and because of the impossibility of removing the caisson with the ship in dock, this bank had gone on increasing. **Achilles** was pulled off and taken to her moorings alongside the Sheer Hulk. She was taken from Chatham to Gillingham Reach by five steamers on 24th December 1863.

**Achilles** although fitted with Penn Trunk engines and a non-hoisting screw was completed as a four-master and carried 44,000 square feet of sail exclusive of stunsails, the largest area ever spread in a warship.

In his book 'British Battleships' Doctor Oscar Parkes states:

*Foreign observers referred to her construction in the highest terms, inasmuch as 'during the first ten months afloat not a wine glass of water had leaked into her hull- a thing unprecedented in the history of shipbuilding'*

**Royal Oak** had originally been laid down in 1860 as a conventional two-decker but as she was still in frame it was decided in May 1861 to convert her into a wooden broadside- ironclad with all her guns on one deck. This involved removing the upper deck and lengthening the ship by 21 feet while still on No 1 Slip. She was divided amidships and the halves separated by pulling the lower half 20 feet down the slip. Five frames were built into the gap. As the original upper deck was removed she was given a new flush deck covered with half inch iron, covered by four inches of oak. She was armour plated from stem to stem; the thickness of the belt varied from 4 1/2 inches to 3 inches and beneath was the hull of 28 inches oak, increased below the armour belt to 32 inches. She was powered by Maudslay horizontal reciprocating engines and carried sail on three masts. She was launched in September 1862 and sold in 1885.

For the preparation of the armour plates for the **Royal Oak**, Messrs Foord and Son of Rochester built a machine shop in 1862 next to No 7 Slip - No 4 Machine Shop in later times. In 1869 'Chatham News' reported that a factory was being built between Slips Nos 6 & 7- No 3 Machine Shop, and that iron pavements formed of Seely's pigs of iron ballast from sailing ships were to be introduced into the Yard. The same paper of 30th August 1890 noted that an order had been given that 400 tons of these pigs were to be lifted from Chatham for melting. In 1866, a new angle iron shed was built between Nos 2 & 3 Docks. The Dockyard Museum, now dispersed, was later built above and dates from 1902. At this time the Mast House to the north of No 7 Slip was demolished. (See 1859 Map)

In 1864 the position of the wooden ships on the stocks was being considered by Admiralty. The hulls of some of these were far from completion, the men having been

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turned over to iron ship construction. The slips and docks at Chatham were occupied (in 1864) as follows:

No 2 Slip	<b>Reindeer</b>	see list of 1860
No 3 Slip	<b>Menai</b>	wood screw corvette, 1857 bm, laid down in 1861, cancelled 1865
and		her frames used for <i>Blanche</i> - see below
No 4 Slip	<b>Belvidera</b>	see list of November 1860
No 5 Slip	<b>Bulwark</b>	see list of November 1860
No 6 Slip	<b>Myrmidon</b>	see list of November 1860
No 7 Slip	<b>Lord Warden</b>	see below
No 2 Dock	<b>Bellerophon</b>	see below

**Lord Warden**, laid down on No 7 Slip in December 1863 and launched in March 1865, was an iron-clad frigate with a ram bow, 4080 bm. She was reputed to be the heaviest wooden ship built for the Navy. Her hull was a sandwich of wood and iron, wood being used because with the introduction of iron shipbuilding it was concluded that the stores of timbers were in excess of requirements. She carried armour plate 5112 to 412 inches thick from stem to stern. Her launching was performed by Lady Ernestine Edgcumbe.

**Bellerophon**, a battleship, 4270 bm, was laid down in No 2 Dock in December 1863 and floated out in April 1865. She was built on the bracket-frame system with a complete double bottom; iron and steel were used in her construction. She carried a belt of armour 6 to 4½ inches thick. She had a ram bow; as the parts of the hull under the armour belt were unprotected, the ram was introduced to destroy opponents by striking them under the armour belt.

**Blanche**, a wooden screw sloop, 1268 bm, was launched in September 1867 from No 3 Slip by Miss Dickens, the daughter of the novelist. On the same tide, **Beacon**, a composite screw gun vessel, 465 bm, had earlier been launched by Miss Stewart, the daughter of the Captain Superintendent. In a composite ship, the frames, beams and pillars were of iron and the hull was planked with wood over which, below the water-line, the vessel was sheathed with copper. The keel, stem and stern were of wood. By the last quarter of the 19th century, various anti-fouling preparations had been developed which, applied to the hull in the form of paint, gave some protection to the bottom of an iron ship; composite shipbuilding died out.

In 1866, steam travelling cranes were installed at the sides of No 2 Dock for the purpose of dealing with the thick armour plates; the cranes were supplied by Taylor & Sons of Liverpool, the iron slabs by Messrs Cammell and Co of Sheffield.

**Hercules**, an iron battleship, 5243 bm, laid down in No 2 Dock in February 1866, illustrates the increase in the thickness of the protective plating of warships. She had 9 inch armour over the central battery tapering to 6 inches at the bow and stern. The 9 inch armour had 10 inch teak backing and the total thickness of iron and teak was 11½ inches and 40 inches respectively. The lower masts of the **Hercules** with identity plates were later used as derrick stumps on No 8 Slip at Chatham; these were removed in 1959.

This was the era of the controversy of the turret versus broadside armaments for sea-going armoured ships. Captain Coles, the advocate of the turret ship, was responsible for **Captain**, a turret ship built at Lairds. The Admiralty design staff under Reed, Chief Constructor (1863-70) produced their design for **Monarch**, a sea-going turret ship, 8320 bm. The **Monarch** was laid down at Chatham in June 1866 in No 3 Dock which was lengthened by coffer dam. The dam gave trouble initially, for it collapsed filling the dock with mud. **Monarch** was floated out in May 1868 and fulfilled the intention of her designers; on the other hand, **Captain** sank on the night of 6/7th September off Cape Finisterre.



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In February 1868, following the floating out of **Hercules, Sultan**, a battleship 5234 bm was laid down in No 2 Dock. She was named after Sultan Azizieh of Turkey who was visiting England. Her armour plate varied from 9 to 6 inches with a backing of teak about 12 inches. She was floated out in May 1870 and was christened by Musurus Pasha, a daughter of the Turkish Ambassador. The Yard, with its 4,000 employees, was extremely busy -in 1869 both Woolwich and Deptford Yards were closed.

'Chatham News' reported:

*It is expected that **Sultan**, an iron armour plated ship, now in the stream opposite the Dockyard, will shortly leave Chatham for Portsmouth to be completed, there being more work to be done on her than was at first contemplated. To advance this sufficiently to make the voyage round, a large force of men is now busily at work on her, and about 600 hands work overtime until 9 o'clock at night.*

After **Sultan** had been floated out of No 2 Dock, **Rupert**, a turret ship especially designed for ramming was laid down in June 1870. When completed she had a tonnage of 5,440 tons. She was floated out in March 1872 and was christened by Lady Damley of Cobham Hall, Kent.

Ships built by private shipbuilders were sometimes completed or altered in the Yard. **Cerberus**, a turret ship for harbour defence was built by Palmers of Jarrow. The colony of Victoria, Australia, approached the Imperial Government for assistance in defence. **Cerberus** was selected as a harbour defence vessel for Victoria and taken to Chatham in 1869 for raising the sides and adding masts and sails to husband the coal on the way to Australia. The work was carried out in No 4 Dock; she was floated out in May 1870.

On the 9th of March 1871, **Woodlark**, wood screw gun vessel of 805 tons, was launched from No 4 Slip; she was one of the last wooden vessels to be built for the Navy. Two iron screw gunboats of the **Ant** class, **Snake** and **Scourge** were launched on the 25th March from No 6 Slip. The former was christened by Miss Clatworthy, the daughter of the Accountant; the latter by Miss Churchward, the daughter of the Cashier.

In the same month, **Glatton** a monitor with a single turret, 4,910 tons designed for coastal defence was floated out of No 3 Dock. The turret plates were 14 inches thick and she had the lowest freeboard of any ship in the Navy. She spent most of her thirty years of life in Portsmouth Harbour.

Before the Extension Works were completed it was necessary to build a floating bridge of old mortar boats which had been built in the Crimean War to reach water of sufficient depth to fit out the larger ships, **Hercules, Sultan** and **Monarch**, etc for sea. At the end of the bridge was **Thunder** and later, in 1873, **Thunderbolt**<sup>1</sup> The bridge caused some silting up of the river and there were complaints from Rochester as Conservators of the Medway. The bridge was shortened 1874/5; after 1885, the Basins became available for fitting out.

Mrs Chamberlain, wife of the Captain Superintendent, launched **Raleigh**, an iron screw frigate, from No 7 Slip in March 1873. She was sheathed with wood and her hull coppered. Her figurehead was a bust of Sir Walter Raleigh and on her stem were the crest and coat of arms of Sir Walter. During her completion the crew of **Raleigh** were on board the **Forte**, a receiving ship. The crew was employed rigging **Raleigh** as under new regulations, the crew did this work instead of the Dockyard riggers. The superintendence of the fitting out was carried out by Captain (later Admiral) Tryon who carried the responsibility of the tragic collision between **Victoria** and **Camperdown** in 1893.

At this period, Chatham was much more involved in shipbuilding than the other Royal Yards; in 1873, two battleships were laid down at Chatham: **Alexandra** and **Temeraire**.

<sup>1</sup> See Hulks on the Medway, chapter 18

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After the launch of **Raleigh**, the **Alexandra**, a central battery ship, was laid down on No 7 Slip. She carried her guns on two decks; the maximum thickness of her armour was 12 inches with a backing of 12 inches of teak. When completed, her tonnage was 9,490, and she was the heaviest ship to that date to be launched at Chatham from a slip. She was named after the Princess of Wales who performed the launching ceremony on the 7th April 1875 in the presence of the Prince of Wales, the Duke and Duchess of Edinburgh, the Duke of Cambridge, the Duke and Duchess of Teck, the entire Board of Admiralty, the majority of the Cabinet and over one hundred MP's. Special trains brought the dignitaries from London to Chatham and horse-drawn carriages took the guests through a gate specially cut in the Dockyard Wall, Alexandra Gate. **Alexandra** was the first iron-clad to be launched by a member of the Royal Family and the first time since the Reformation, a religious ceremony was conducted, in this case by the Archbishop of Canterbury.<sup>1</sup>

On the 18th August 1873, **Temeraire**, whose tonnage when completed was 8,540, was laid down in No 2 dock. She was the first barbette ship<sup>2</sup> and was brig-rigged to give her barbette guns a wide axial fire. She carried 25,000 square feet of sail and is reputed to be the largest brig ever built and certainly had the longest yards ever carried in a British ship. She was the last of the battleships built at Chatham to combine sail with steam power in a warship. Electrical power was provided by generators supplied by Messrs Wyld of Manchester.

'Chatham News' reported on 9th May 1876:

*This vessel (Temeraire), having had her bottom covered with Doctor Sim's anti-fouling composition, was today floated out of dock in readiness to be commissioned.*

In 1876, nine ships were repaired at Chatham, one fitted out, and six broken up. In May of that year the battleship **Agamemnon** was laid on No 7 Slip. The maximum thickness of her armour was 18 inches. She was launched in September 1879; the ceremony was marred by the death of one man and the injuring of five others. The 8,500 ton ship started to move from the slip earlier than was expected. A boat carrying nine workmen was crossing the mouth of the slipway when the ship unexpectedly launched itself into the river and smashed into the boat.

There was some support for Barnaby, the Chief Constructor, who had great faith in the ram as a weapon of offence, and **Polyphemus**, a torpedo-ram ship was laid down on No 5 slip in September 1878 and launched in June 1881. The launching ceremony was performed by Mrs G O Trevelyan, wife of the Secretary of the Admiralty. The engine had

1 On 16th February 1875 Edward Reed, MP, ex-Chief Constructor, asked the First Lord of the Admiralty if it were true that the Board of Admiralty had ordered the observance of a religious ceremony comprising the reading of a prayer at the launching of HM Ships and if so, whether those cases in which the launches took place in tidal waters and rivers, and harbours with strong currents, the Dockyard officers and private contractors had been or were to be relieved from all responsibility for any accident or disaster that might arise from the suspension during the ceremony of the important and often critical mechanical operations involved in the launching of heavy ships.

Mr Ward answered that such a service recommended by the Archbishop of Canterbury had been ordered by the Admiralty to be used at the launching of ships.

The launching ceremony was not performed by a lady until 1811 when the Prince Regent introduced, as a compliment, the naming of ships by ladies. Previous to that the launching ceremony was always performed by men.

The bottle used at the ceremony had to be secured. A certain lady missed her aim with the bottle when launching a ship. It struck and injured a spectator who sued Admiralty for damages.

2 In this type, the gun is turned but the shield is fixed; in the turret type, both gun and shield are turned together.

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been fitted prior to launching by Humphrys, Tennant & Dykes. An account of this extraordinary vessel was given in 'Periscope' in May 1978.

In April 1879 the battleship **Conqueror** was laid down in No 2 Dock. She was launched in September 1881. In the year that **Conqueror** and **Polyphemus** were launched, ten ships were repaired and fitted out at Chatham. In the previous year, eleven ships were repaired and **Dotterel** and **Constance** were launched.

After 1860, mild steel began to be used for shipbuilding but this material, mainly Bessemer steel, was regarded with some suspicion. Private shipbuilders used it for small vessels, masts and yards, but it was not until 1875 that mild steel was used in the building of the second-class cruisers, **Iris** and **Mercury**. The transition is shown in the following ships: the **Inflexible**, 320 x 75 feet launched in 1876 was an iron, armoured turret ship of 11,900 tons; the **Trafalgar** 345 x 73 feet, launched in 1887, was a steel, armoured turret ship. According to the Navy List of 1884 the **Constance** of the **Calliope** class, launched at Chatham in 1880, and the **Calypso** of the **Calliope** class, launched at Chatham in 1883, both screw corvettes or light cruisers were of iron and steel and cased with wood. **Calypso** was launched by Mrs Watson, wife of the Admiral Superintendent.

The galvanising of mild steel plates to prevent corrosion of the plating coming into contact with bilge water was started in the last decade of the century.<sup>1</sup>

During Barnaby's term of office as Chief Constructor (1872-1885) there were many designs of warships produced and a considerable amount of experimental construction had taken place at Chatham.<sup>2</sup> Naval construction up to 1881 was based on samples such as **Agamemnon** and **Polyphemus**. In 1882, some standardisation began to take place when the battleships of the Admiral class were laid down. **Rodney**, one of five ironclads of this class was laid down in February 1882 on No 7 Slip.

In January 1884, **Warspite**, an armoured cruiser was floated out of No 2 Dock. The christening ceremony was performed by Lady Kerr, the wife of Captain Lord Kerr, in command of the Medway Steam Reserve. She was the last armoured ship to be designed with a square rig; her sailing qualities were so poor that this was soon removed.

In October 1884, **Rodney** was launched from No 7 Slip. The ceremony was performed by the Duchess of Edinburgh who came, accompanied by the Duke, from Eastwell Park, Ashford, to a gaily decorated Chatham. They were received at Chatham Station by Major-General Monk, commanding the District, and the High Constable of Chatham, Mr W Phillips. The latter secured a promise of the ten guineas subscription to the Waghorn Memorial Fund. According to the 'South Eastern Gazette' the band of the Royal Marines under Herr Kappey played 'Rule Britannia' and other airs. After the launch the Duke and Duchess took luncheon in a specially erected marquee at the rear of Admiral Watson's official residence in the Yard.

There was another activity in the Yard apart from the building and repairing of ships. The 'Chatham & Rochester News' of 25th June 1881 had an account of breaking up of old ships in the Yard:

*Old ships*

*Orders have been received at Chatham for the following vessels, belonging to the Medway Steam Reserve, to be broken up, being of no further use:*

<i>Barracouta</i>	<i>paddle wheel sloop</i>	<i>1,680 tons</i>	<i>881 hp</i>
<i>Basilisk</i>	<i>paddle wheel sloop</i>	<i>1,690 tons</i>	<i>1033 hp</i>
<i>Argus</i>	<i>5 gun paddle wheel sloop</i>	<i>1,660 tons</i>	<i>764hp</i>

1 See Smithery, page 89.

2 The term of office of Sir William White, successor to Barnaby, was characterised by the construction of ships in classes.

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<i>Scylla</i>		<i>screw corvette</i>	2,187 tons	1376 hp
<i>Nymphe</i>	9 gun	<i>screw sloop</i>	1,574 tons	2172 hp
<i>Camellia</i>	9 gun	<i>screw sloop</i>	1,365 tons	702 hp
<i>Rosario</i>	9 gun	<i>screw sloop</i>	913 tons	436 hp

*After the vessels have been broken up the material will be sold by public auction. A number of workmen are to be specially entered to execute the work of demolition.*

The period 1873/1883 had been called the Dark Ages of the Navy. There appears to have been a neglect both of the number of ships and their effectiveness. In the ten years following the laying down of **Alexandra** and **Temeraire** there was a policy of naval economy. Disraeli, in office from 1874/1880, as well as Gladstone, was committed to this policy and although the cost of individual ships was constantly rising, estimates were kept at about £11,000,000.

The Gladstone Administration which took office in 1880 was forced to increase the Navy Estimates owing to public pressure, due partly to W T Stead of the 'Pall Mall Gazette' who launched a newspaper campaign stressing the deficiencies of the Royal Navy. The Northbrook programme of 1884 allowed over £3,000,000 to be devoted to new construction during the ensuing five years. There was trouble in Egypt and the Sudan; Khartoum fell on 26th January 1885. Whilst our forces were engaged in Africa, Russia began to threaten us in Afghanistan and the Indian border. (In 1885 there were 1500 hands at Chatham Yard above the normal establishment and many were working overtime to finish **Warspite** and **Rodney**.)

**Hydra**, a monitor purchased at the time of the Crimean War was transferred from harbour duties at Sheerness to the first division of the Medway Steam Reserve, and seven vessels of this reserve were ordered to be got ready for commission.<sup>1</sup> Income Tax was raised to 8d in the £ and additional duties were levied on spirits and beer.

In March 1885, **Mersey**, a second-class cruiser 2 was launched from No 6 Slip at Chatham. The christening ceremony was performed by Lady Cooper Key, wife of Admiral Sir Astley Cooper Key. In October of the same year, **Hero**, a turret ship was floated out of No 2 Dock. She was christened by Princess Leiningen, the wife of the Commander-in-Chief of the Nore. **Hero** became famous when John Player & Sons, cigarette manufacturers, used the picture of the head of a sailor bearing a cap with the name 'Hero.' On either side of the head inside a lifebelt were, on the left, HMS **Britannia**, 120-gun ship of the line, and on the right HMS **Hero**.

There had been many criticisms of the building of warships in the Royal Yards. The first was the inordinate time which elapsed between the laying down and completion of a ship. This is shown in the following table:

	Laid down	Launched	Completed
<b>Agamemnon</b>	May 1876	September 1879	March 1883
<b>Conqueror</b>	April 1879	September 1881	March 1886
<b>Warspite</b>	October 1881	January 1884	June 1888
<b>Rodney</b>	February 1882	October 1884	June 1888
<b>Hero</b>	April 1884	October 1885.	May 1888

<sup>1</sup> See Hulks in the Medway, chapter 182 Before 1890, Admiralty had substituted the term 'cruiser' for the old title of frigates and corvettes. The classification was:

First Class	5,600- 9,000 tons
Second Class	2,500 - 4,300 tons
Third Class	1,580- 1,830 tons

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Lord Randolph Churchill had drawn attention to the exorbitant cost of building ships in the Royal Yards. This was due partly to the administrative costs of these Yards. There were a large number of charges which had no direct bearing on the building of a ship; Dockyard Schools, buoyage, docking and maintenance of hulls etc.<sup>1</sup> There were many who advocated the larger use of private yards for the building of warships, and their number was growing.

A change in attitude to Naval expenditure occurred in Lord Salisbury's Ministry, 1886/1892. The 'Two Power Standard' adopted on and off by this country since the 18th century was re-introduced in 1889.

*The Establishment should be on such a scale that it should be at least equal to the naval strength of any two countries.*<sup>2</sup>

To implement this, the Naval Defence Act of 1889 was passed authorising the construction of seventy ships in five years. Of those seventy ships, thirty two were to be built by contract and thirty eight allotted to the Royal Yards. Of course the Naval Estimates soared and between 1889 and 1904 they had trebled.

Sir William White, DNC, had proposed that the leading battleships of each class could be laid down in a Royal Yard where the details of design could be developed by the Dockyard staffs in conference with naval officers. The contract-built ships could thus be built more rapidly when alterations and extras were minimised.

Contract-built ships such as the **Benbow** constructed by the Thames Iron Shipbuilding Company in 1888, were brought to Chatham Yard to be fitted out ready for sea: the ships were then placed in the First Division of the Reserve pending their being commissioned.

The 1889 programme and later ones marked an era of battleship construction for Chatham Yard. **Hood**, the last turret battleship of the Navy, was laid down in August 1889 and floated out of No 7 Dock in July 1891. Her belt of armour varied in thickness from 18 to 14 inches. **Barfleur**, a smaller battleship intended for the China Station, was launched from No '1 Slip in August 1892. She was sheathed and coppered for foreign service.

A number of Torpedo Gunboats were constructed under the Act during the period 1889/1893: **Sheldrake**, **Skipjack**, **Seagull**, **Salamander** and **Dryad**. The construction of Destroyers was taken over by private firms; Sir William White opposed the building of this type of ship in the Royal Yards.

The second-class cruisers, **Forte** built on No 6 Slip and launched in 1893, and **Minerva** built in No 2 Dock and floated out in 1895, were the first ships to be fitted with Chatham-built engines.

Earl Spencer, First Lord in Gladstone's Ministry, who took office in August 1892, supported a vast shipbuilding programme extending from 1893 to 1898. This was due mainly to the expansion of the German Navy. Emperor Wilhelm II had not been on the throne long before he declared:

*Our future lies on the water . . . I will not rest until I have brought my Navy to the same height at which my Army stands.*

There was opposition to the Naval Estimates and Gladstone resigned. Sir William Harcourt provided some of the excessive expenditure by the readjustment of death duties.

1 For instance the troopships were run for the sole benefit of the Army and these ran only during the trooping season. The Navy was required to keep officers and men standing by throughout the Year.

2 The standard was reduced to the one Power standard in 1921.

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Spencer's programme included seven **Majestic** class battleships, and three of this class, **Magnificent**, **Victorious** and **Illustrious** were launched at Chatham Yard between December 1894 and September 1896. The first was built in No 7 Dock, the second on No 7 Slip and the third in No 6 Dock. There was great rivalry between Chatham and Portsmouth over the building of the **Majestic** at Portsmouth, floated out 31st January 1895, and the **Magnificent** floated out at Chatham on the 19th December 1894. Lord Charles Beresford, Captain of the Dockyard Reserve at Chatham, wrote:

*During 1893/4 the Magnificent was being built at Chatham in rivalry of Portsmouth which was building the Majestic. It was becoming a close thing when the Magnificent received from the manufacturer a lot of armour plate which might have gone to the Majestic and which enabled us to gain a lead.*

The famous **Vindictive**, a second-class cruiser was built in No 2 Dock and floated out in December 1897.

An anti-submarine operation was planned in 1917 to block both Ostend and Zeebrugge. At Chatham five old cruisers were converted to block ships and additional armament provided for the **Vindictive**<sup>e</sup> whose role was to create a diversion and to land marines and seamen on the Mole of Zeebrugge. Two submarines were also prepared with explosives for destroying the link between the mainland and the Mole. Practice for the attack was carried out on a replica of the Mole built in a quarry near Aylesford, Kent. The attack was made on St George's Day, 23rd April 1918<sup>2</sup> but was only successful in partially blocking Zeebrugge. In May, the **Vindictive**, patched up after the raid was fitted as a block ship with another old cruiser and a further attempt was made to block Ostend, unfortunately, again without success.

The preponderance of new construction over repair work at Chatham Yard is shown by this table of the 1897/8 Estimates for Chatham Yard given in 'Chatham News' of 10th April 1897.

New construction	Labour	£284,060	Materials	£300,460
Large repairs	Labour	36,000	Materials	17,000
Repairs, Alterations and additions	Labour	42,000	Materials	22,000
Miscellaneous Dock-yard Schemes	Labour	68,320	Materials	12,870
1897/8 Total	Labour	455,380	Materials	364,330
(1896/7 Total	Labour	505,720	Materials	563,850)

Following the **Majestic** class, the **Canopus** class of battleships were ordered in the 1896/7 Estimates, six were to be built in the Royal Yards and private shipyards. Chatham built one of this class, **Goliath**, which was laid down on No 7 Slip in January 1897 and launched in March 1898. She had a launching weight of 6,000 tons and was said to be the heaviest ship ever launched at Chatham. She had 2,197 men working on her at one time. The steel work was held up by strikes at Sir William Armstrong's Whitworth Works in 1897. She was sunk in the Dardanelles in May 1915.

In the 1897 programme three battleships of the **Formidable** class were proposed. The **Irresistible** was laid down on No 7 Slip in April 1898 and launched in December of the same year. It was stated that she hung for about three minutes after the dog shores were dropped. The ship was christened by Princess Christian who arrived in the Dockyard by

1 See Captain of the Dockyard, chapter 9

2 King George Visited Chatham Yard 23rd May

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

train with her husband and daughter. They lunched with Admiral Andoe and left the Yard by train for London. **Irresistible** was lost in the Dardanelles campaign.

The 1898 Estimates provided for three battleships of the London class, **Venerable** of this class was laid down on No 7 Slip in January 1899 and launched in November 1899 by Mrs J Chamberlain.

The completion of both **Irresistible** and **Venerable** was delayed by the liquidation, in 1899/1900 of Maudslay Son & Field who had their machinery in hand. There had been a strike, followed by a lock-out in the Engineering trade from July 1897 to February 1898. Dockyard fitters each subscribed 4s to 5s a week for the Sustenation Fund for Engineering Industry strikers. This was a bad time for industrial relations; there were no naval manoeuvres in 1898 owing to the South Wales coal strike. Some private shipbuilders endeavoured to break the strikes. Alfred Yarrow chartered a liner and moored her off Blackwell Point as a safe hostel for 'black labour.' A consequence of this strike was the move of his yard from Poplar to Scotstoun on the Clyde.

Besides the strikes there were difficulties at this time with the substitution of Krupp for Harvey armour,<sup>1</sup> and the selection of the type of boiler most suited for warships. **Irresistible** was not completed until February 1902, and **Venerable**, November 1902.

Six **Duncan** class battleships were ordered and **Albemarle** was laid down on No 7 Slip in January 1900. She was launched in March 1901 by Lady Kennedy, wife of the C-in-C the Nore.

In the Estimates for 1900 provision was made for two additional London class battleships. **Prince of Wales** was laid down on No 7 Slip in March 1901 and was launched by the Princess of Wales, accompanied by the Prince in March 1902. She laid the keel of the **Devonshire** on the same day.<sup>2</sup>

The Yard was closed for the day, the men being given a half day and they worked the other half day in their dinner hours. There was one tragedy; an artillery-man firing the Royal Salute on the Prince's arrival at Chatham had his hands blown off at Spur Battery, Fort Amherst.

The last battleship to be built at Chatham was one of the **King Edward VII** class. **Africa** was laid down in January 1904 on No 8 Slip, the first ship to be built on the new slip. She was launched in May 1905 by the Marchioness of Londonderry.

The 1904/5 Estimates provided for three **Minotaur** class armoured cruisers. **Shannon** was laid down on a lengthened No 7 Slip in January 1905 and launched in September 1906. The forward section extended beyond the slip covering and over the roadway.<sup>3</sup> A special train carrying the guests arrived at the Yard just after noon and drew up at an improvised station almost under the prow of the ship. The launching ceremony was performed by the Countess of Carrington, wife of the President of the Board of Agriculture.

The problem facing Chatham Yard was the increasing size of the larger ships of the Fleet. By 1914 the only dock in the Royal Yards on the East Coast large enough to accommodate a **Dreadnought** were No 9 Dock at Chatham and the floating dock at Sheerness. There had been five graving docks at Chatham which could be used for any of the ships built before 1900. In addition there was the difficulty of approach to Chatham Yard for the larger ships.

1 Six inch Krupp armour equals nine inch Harvey armour equals twelve inch compound armour equals fifteen inch armour plate

2 The Dockyard Museum with exhibits assembled by Admiral Holland, was opened by the Prince and Princess of Wales. The royal couple left the Admiral Superintendent's house at about 4pm in a special train provided by the L C & D Railway which travelled via New Brompton Station.

3 The slip had earlier been lengthened for the building of the **Irresistible**.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

There was a reluctance to improve the facilities at Chatham. John Fisher attacked a proposal for further dredging of the River Medway maintaining that a depth of 40 feet would be required for a damaged **Dreadnought** to get to Chatham Yard, far from the figure of 27feet mentioned earlier.<sup>1</sup>

The building of the larger ships was concentrated on Portsmouth, Devonport and private Yards. Thus the battleship **Lion**, 26,350 tons, 660 ft x 88<sup>1</sup>/<sub>2</sub> in was built at Devonport Yard and launched in 1910.

The future prosperity of the Dockyard was to lie in the construction of submarines. The difficulties of navigation in the Medway for the large ships presented little problem for the submarines. In addition, Admiralty wished to break the monopoly of Vickers for building such vessels.

### List of Ships built at Chatham Yard from 1861 to 1906

Name	Rate	Tonnage	Date	Engines
Undaunted	Wood screw frigate	3039bm	1861	Ravenhill
Rattlesnake	Wood screw corvette	1705bm	1861	
Royal Oak	Ironclad frigate	4056bm	1862	Maudslay Son & Field
Salamis	Wood paddle despatch vessel	835bm	1863	Ravenhill & Salkeld
Achilles	Iron screw battleship	9280 tons	1865	Penn
Lord Warden	Ironclad battleship	7842tons	1865	Maudslay
Bellerophon	Iron battleship	7551 tons	1865	Penn
Reindeer	Wood screw sloop	953bm	1866	
Myrmidon	Wood screw gun vessel	697bm	1867	
Beacon	Composite screw gun vessel	465bm	1867	
Blanche	Wood screw sloop	1268bm	1867	Ravenhill & Salkeld
Hercules	Iron battleship	8700tons	1868	Penn
Monarch	Iron screw battleship	8320 tons	1868	Humphrys Tennant &Dykes
Sultan	Iron battleship	9290 tons	1870	Penn
Woodlark	Wood screw gun vessel	663bm	1871	
Snake	Iron screw gunboat	254 tons	1871	
Scourge	Iron screw gunboat	254 tons	1871	
Glatton	Turret ship	4910 tons	1871	Laird
Kestrel	Wood screw gun vessel	462bm	1872	
Rupert	Iron turret ship	5440tons	1872	Napier
Fidget	Iron screw gunboat	254 tons	1872	
Badger	Iron screw gunboat	254tons	1872	Penn
Frolic	Wood screw gun vessel	462bm	1872	Penn
Ready	Wood screw gun vessel	462bm	1872	
Rifleman	Wood screw gun vessel	462bm	1872	
Ariel	Composite screw gunboat	436 tons	1873	
Zephyr	Composite screw gunboat	438 tons	1873	
Raleigh	Iron screw frigate	5200tons	1873	Humphrys Tennant &Dykes

<sup>1</sup> See the chapter 3 on Dockyardmen



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of Ships built at Chatham Yard from 1861 to 1906 continued

Name	Rate	Tonnage	Date	Engines
Albatross	Composite screw sloop	940 tons	1873	Humphrys Tennant & Dykes
Flying Fish	Composite screw sloop	940 tons	1873	
Alexandra	Battleship	9490 tons	1875	Humphrys Tennant & Dykes
Temeraire	Battleship	8540 tons	1876	Humphrys Tennant & Dykes
Euryalus	Iron screw corvette	4140 tons	1877	
Garnet	Composite screw corvette	2120 tons	1877	Hawthorne & Co
Cormorant	Composite screw sloop	1130 tons	1877	
Agamemnon	Battleship	8510 tons	1879	Penn
Dotterel	Composite screw sloop	1130 tons	1880	
Constance	Screw corvette	2590 tons	1880	Penn
Polyphemus	Torpedo ram	2640 tons	1881	Humphrys Tennant & Dykes
Conqueror	Battleship	6200 tons	1881	Humphrys Tennant & Dykes
Calypso	Screw corvette	2770 tons	1883	Rennie
Warspite	Armoured cruiser	8400 tons	1884	Penn
Rodney	Battleship (Admiral class)	10300 tons	1884	Humphrys Tennant & Dykes
Mersey	2nd class cruiser	4050 tons	1885	Humphrys Tennant & Dykes
Severn	2nd class cruiser	4050 tons	1885	Humphrys Tennant & Dykes
Hero	Turret ship	6200 tons	1885	Rennie
Immortalite	Armoured cruiser	5600 tons	1887	Earle
Medea	2nd class cruiser	2800 tons	1888	Humphrys Tennant & Dykes
Medusa	2nd class cruiser	2800 tons	1888	
Research	Paddle survey vessel	520 tons	1888	
Sheldrake	Torpedo gunboat	735 tons	1889	Maudslay Son & Field
Skipjack	Torpedo gunboat	735 tons	1889	Laird
Seagull	Torpedo gunboat	735 tons	1889	Maudslay Son & Field
Salamander	Torpedo gunboat	735 tons	1889	Maudslay Son & Field
Blake	1st class cruiser	9000 tons	1889	Maud
Andromache	2nd class cruiser	3400 tons	1890	Earle
Apollo	2nd class cruiser	3400 tons	1891	
Hood	Turret battleship	14150 tons	1891	Humphrys Tennant & Dykes
Hawke	1st class cruiser	7350 tons	1892	Fairfield
Barfleur	Battleship	10500 tons	1892	Greenock Foundry
Dryad	Torpedo gunboat	1070 tons	1893	Maudslay Son & Field
Forte	2nd class cruiser	4360 tons	1896	Chatham Yard
Magnificent	Battleship (Majestic class)	14900 tons	1894	Penn

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### List of Ships built at Chatham Yard from 1861 to 1906 continued

Name	Rate	Tonnage	Date	Engines
Minerva	2nd class cruiser	5600tons	1895	Chatham Yard
Victorious	Battleship (Majestic class)	14900 tons	1895	Hawthorn & Leslie
Illustrious*	Battleship (Majestic class)	14900tons	1895	Penn
Vindictive	2nd class cruiser	5800 tons	1897	Chatham Yard
Goliath	Battleship (Canopus class)	12950 tons	1898	Penn
Irresistible	Battleship(Formidable class)	15000 tons	1898	Maudslay Son & Field
Pioneer*	3rd class cruiser	2200 tons	1899	Fairfield
Venerable	Battleship (London class)	15000 tons	1899	Maudslay Son & Field
Albemarle	Battleship (Duncan class)	14000tons	1901	Penn
Prince of Wales	Battleship (London class)	15000 tons	1902	Greenock
Challenger	2nd class cruiser	5917 tons	1902	Wallsend
Devonshire	Armoured cruiser	10850tons	1904	Penn
Africa	Battleship (King Edward. VII class)	16350 tons	1905	Clydebank
Shannon	Armoured cruiser (Minotaur class)	14600tons	1906	Humphrys Tennant & Dykes

\* Philip Thompson, the 'Dockyard Poet' wrote appropriate verses for the floating out of HMS **Illustrious** in September 1896 and of the Cruiser **Pioneer** on Coronation Day 1899

### Submarine Construction during the period 1908/1945

The submarine was first mentioned in the Naval Estimates of 1901 when five of the type invented. by Mr Holland were ordered. Vickers, Son & Maxim built the first Holland submarine: **Holland 1** had one propeller driven by a petrol engine on the surface and by an electric motor when submerged.

Before Holland 1 was launched, the 'A' design was approved; she had a conning tower and periscope. A1 was sunk by SS Berwick Castle in 1904; she was raised and later refitted at Chatham in 1911.

In the 1905/6 Estimates, it was stated that there were thirteen 'A' & 'B' types, and ten more were in advanced stages of construction

Chatham was the first of the Royal Dockyards to build submarines and subsequently specialised in their building and maintenance. C 17, 18, 19, 20, 33 and 34 were all built on No 7 Slip and launched between August 1908 and June 1910. The 'C' class were small ships designed for coastal defence and powered by petrol engines. Their construction was supervised by Mr Ollis, the Manager, inventor of the Ollis's steering gear, Mr Palmer, the Constructor, and Mr Ballantyne, Foreman.

The 'D' class of 1911 were the first really practical sea-going submarines and had diesel engines, external ballast tanks and twin screws: D 7 and D 8 were built at Chatham.

The first two submarines of the 'E' class, E 1 (ex D 9) and E 2 (ex D 10), were built on No 7 Slip in 1912; four others of this class were built two at a time on this slip between 1912 and the outbreak of war in 1914.<sup>1</sup>

<sup>1</sup> Six Chatham built submarines were lost in the 1914-1918 War; C 33 and C 34. E 1. 7. 8 and 13

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

During the 1914-1918 War Mr Lillicrap became the constructor in charge of submarines; one of his five sons became the Director of Naval construction, Admiralty. Five 'G' class submarines were built in 1915 and 1916. Four 'R' class submarines were built simultaneously on No 7 Slip in 1918; they were too late for the war. They had a high underwater speed of 17 knots and were designed as anti-submarine vessels.

Two 'L' class submarines built in private yards and launched in 1919 were completed at Chatham in 1924.

During the 1914-1918 War, Monitor class submarines of 1600 tons were designed to carry a 12-inch gun. M 2 and M 3, built by Vickers in 1918 and by Armstrong in 1920, respectively, were completed at Chatham. In 1928, M2 returned to Chatham to have the 12-inch gun removed and to be fitted to carry a seaplane; she was sunk in 1932

In 1923, the X 1 was launched at Chatham, the largest submarine in the world at that time, 2780 tons. She had a surface speed of 19<sup>1</sup>/<sub>2</sub> knots and a submerged speed of 9 knots.

No 'K' class steam submarines were built at Chatham but the K 26 built by Vickers in 1919, was completed at Chatham in 1923.<sup>1</sup>

Twenty four submarines were built in the period 1926/1945; of these sixteen were sunk during the Second World War, six in the Mediterranean. **Umpire**, a submarine of the 'U' class, launched at Chatham in December 1940, was accidentally rammed and sunk by a trawler whilst proceeding to the Clyde for trials in 1941. Out of the engine room staff the only casualty was an Inspector from Chatham, Ralph Bardoe, who was with the ship for its final trials.

**HMS Oberon**(ex 0 1) was the first submarine in the Royal Navy to be given a name. There was some trouble in launching her in September 1926. She was over her launching weight, for the batteries were put in the submarine on the slip instead of at Battery Comer after the launch. It was found impossible to remove the necessary blocks in time and the actual launch took place later the same day.

### Other ships constructed during the period 1908/1945

In this period two cruisers over 9,000 tons, seven light cruisers, six sloops, an anti-submarine net layer, and a number of auxiliary vessels were constructed at Chatham. Even in times of peace there were periods of great activity. During the building of the cruiser **Kent**, launched in 1926, there was the completing of the submarine X 1, the conversion of the battleship **Ajax** to a fleet target ship, repair and alterations to the aircraft carrier, **Argus**, together with periodical refits of naval vessels.

In addition ships constructed in private yards were completed at Chatham such as the destroyers, **Shikari** and **Whitehall** completed in 1924 and the cruiser **Emerald** completed in 1926.

During the First World War, a remarkable reconstruction was effected in Chatham Yard. The bows of the destroyer **Nubian** had been wrecked in 1916 by a torpedo from a German destroyer. The destroyer **Zulu** a month later, had its stem wrecked by a mine in the Dover Straits. The stern half of the **Nubian** was joined to the bow half of the **Zulu** in 1917 and the new ship was re-named **Zubian**.

In the Second World War the sloops, **Modeste** and **Nereid** were built together on No 8 Slip and after the launching in January 1944 the slipway was prepared for the keels of two more vessels of this class: **Nonsuch** and **Nymphe**. On the cessation of hostilities these two vessels were less than half completed and their building was cancelled; the hulls

<sup>1</sup> K class submarines were steam powered and were designed for Fleet operation. (See Don Everitt, 'The K Boats.')

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

were burnt up. At the time of the building of **Modeste** and **Nereid**, besides normal refit work and war damage repairs, four other vessels were building at Chatham, i.e., six at one time. The frigate **Thorso Bay** built too late for the Second World War by Hall Russell was completed at Chatham in 1949 as **Owen**, a survey ship.

### Ships built at Chatham Yard during the period 1908/1945

Name	Rate	Date	Slip	Tonnage	Launched by
C17	Submarine	1908	No7	280 tons	
Grappler	Tug (Paddle)	1908	8	690	
c 18	Submarine	1908	8	280	
Rover	Tug	1908	8	620	
c 19	Submarine	1909	7	280	
Pilot	Tug	1909	8	615	
Atlas	Tug	1909	8	615	
C20	Submarine	1909	7	280	
YC62	Lighter	1909		185	
YC92	Lighter	1909		110	
YC93	Lighter	1909		110	
C33	Submarine	1910	8	280	
C34	Submarine	1910	8	280	
Alliance	Tug	1910	8	615	
Firm	Tug (Paddle)	1910	8	690	
D7	Submarine	1911	7	550	
D8	Submarine	1911	7	550	
Chatham	Light cruiser	1911	8	5400	
E1	Submarine	1912	7	660	
E2	Submarine	1912	7	660	
YC94	Salvage vessel	1913		790	
Lowestoft	Light cruiser	1913	8	5440	
Attendant	Oil Vessel RFA	1913	8	1935	
E7	Submarine	1913	7	660	
Arethusa	Light cruiser	1913	7	3500	
E8	Submarine	1913	7	660	
Servitor	Oil Vessel RFA	1914	8	1935	
E12	Submarine	1914	7	662	
E13	Submarine	1914	7	662	
Calliope	Light cruiser	1914	8	3750	
Conquest	Light cruiser	1915	No 7 Dock	3750	
F1	Submarine	1915	Slip 7	353	
G1	Submarine	1915	7	700	
G4	Submarine	1915	7	700	
G5	Submarine	1915	7	700	
G2	Submarine	1915	7	700	
G3	Submarine	1916	7	700	
Hawkins	Cruiser	1917	8	9750	Lady Robertson
R1	Submarine	1918	7	420	
R2	Submarine	1918	7	420	
R3	Submarine	1918	7	420	

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Ships built at Chatham Yard during the period 1908/1945 continued

Name	Rate	Date	Slip	Tonnage	Launched by
R4	Submarine	1918	7	420	
XI	Submarine	1923	7	2780	Mrs Kiddie
(Floating Dock, Section 3 launched from No 8 Slip <sup>1</sup> )					
Kent	Cruiser	1926	8	9850	Lady Stanhope
Oberon	Submarine	1926	7	1311	Mrs Beatty-Pownall
Odin	Submarine	1928	7	1475	
Parthian	Submarine	1928	7	1475	
Rainbow	Submarine	1928	7	1475	
Shoreham	Sloop	1930	No4Dock	1105	Miss E Addison
Challenger	Fishery Survey vessel	1931	No 2 Dock	1140	Miss E Addison
Rochester	Sloop	1931	No4Dock	1105	Mayoress of Rochester
Swordfish	Submarine	1931	Slip 7	640	
Sturgeon	Submarine	1932	7	640	
Guardian	Netlayer A/S	1932	No 2 Dock	860	Mayoress of Chatham
Dundee	Sloop	1932	No 4 Dock	860	
Seahorse	Submarine	1932	Slip 7	640	
Starfish	Submarine	1933	7	640	Mayoress of Gillingham
Arethusa	Light cruiser	1934	8	5220	Lady Tyrwhitt
Shark	Submarine	1934	7	670	
Snapper	Submarine	1934	7	670	
Deptford	Sloop	1935	No 4 Dock	990	Mayoress of Deptford
Grampus	Submarine M/L	1936	Slip 7	1520	
Sunfish	Submarine	1936	7	670	
Sterlet	Submarine	1937	7	670	
Seal	Submarine M/L	1938	7	1520	Lady Evans
Euryalus	Light cruiser	1939	8	5450	Marchioness of Camden
Tigris	Submarine	1939	7	1090	
Torbay	Submarine	1940	7	1090	
Umpire	Submarine	1940	7	540	
Una	Submarine	1941	7	540	
Splendid	Submarine	1942	7	715	
Sportsman	Submarine	1942	7	715	
(Floating Dock AF/D XIX launched 1942 from Slip no 8)					
(Floating Dock AF/D XXII launched 1942 from Slip no 8)					
Tradewind	Submarine	1942	7	1090	
Trenchant	Submarine	1943	7	1090	
Shalimar	Submarine	1943	7	715	
Modeste	Sloop	1944	8	1350	
Nereid	Sloop	1944	8	1350	
Moorsman & Moorspout	Boom Defence Vessels	1944	No 2 Dock	1000	
Turpin	Submarine	1944	Slip 7	1090	
Thermopylae	Submarine	1945	7	1090	

<sup>1</sup> Note in local press: 'Launch of Floating dock. Section 3, on Saturday, March 22nd. 1924 from No 8 Slip by Mrs Royds, wife of the Admiral Superintendent.'

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### The situation in Chatham Yard during the period 1920/1945

The reduction of the work force after the end of the First World War is dealt with in the section on Dockyardmen. Apart from the effect of the poor state of the economy of the country, there were other factors contributing to the reduction of expenditure in the Royal Yards. There was the rise of the Labour Party, many of whose supporters were ardent advocates of disarmament. On the international front the British Government was under obligation to limit armaments. By the Terms of the Washington Navy Treaty of 1921 no new capital ships were to be laid down until 1931 (the ten year rule), and cruisers were to be limited to 10,000 tons. Great Britain refused to accept the reduction of the number of cruisers or destroyers owing to her overseas commitments.

The Naval Estimates of 1922/3 made allowance for the discharge of 10,000 Dockyard workers. The Estimates for 1924/5 included an appropriation of 1.8 million pounds to start the construction of five 10,000 ton cruisers and two destroyers. The Treasury refused in 1925 to approve an Admiralty policy of seventy cruisers to be maintained and of a construction programme of three new cruisers a year. Under the threat of resignation of the First Lord and the First Sea Lord the Government gave way. Three cruisers were built in the Royal Yards and two in private yards; Kent was a cruiser built at Chatham and launched in 1926. In 1927, this policy of replacement was abandoned and only one ship was laid down. By the London Naval Treaty of 1930, Great Britain agreed not to exercise the right to lay down capital replacement ships until 1936 and to maintain the level of cruisers at fifty. This involved the building of three cruisers a year. A number of old battleships were scrapped; the number of capital ships was reduced to twelve battleships and three battle cruisers.

This policy of limiting the size of the naval force meant a serious loss of new construction work and of refitting work in the Royal Yards.

In 1934, Japan renounced the London Naval Treaty and thereafter there was an annual increase in the Naval Estimates.

1930	52 million £	1936	81 million £
1932	50.5 million £	1937	105 million £
1934	56 million £	1938	127 million £
1935	65 million £	1939	149 8million £

In the early 1930's experiments were carried out on **Ark Royal**, berthed on the north side of No 3 Basin, with aircraft launching catapults. **Ark Royal** was a merchant ship purchased in 1914 and converted to a seaplane carrier; she was renamed **Pegasus** in 1934. Sandbags, etc, of the same weight as a light seaplane were fired from catapults in the ship during the tests, with which Lieut C H Tinker, RN, was associated. A ramp, a specially built mound of earth and clinker near the Boat House, was used as a landing ground for the objects catapulted from the ship.

### The Second World War

At this period there were hopes that the territorial ambitions of Germany could be limited by peaceful means. As a precaution, however, the labour force of the Yards was increased and the intake of apprentices stepped up in the latter half of the 1930's.

The British Prime Minister, Neville Chamberlain, flew to Germany in 1938 to negotiate with Hitler and returned with a pledge, which a year later proved to be worthless. This period gave the country twelve months to prepare for war.

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

After the German invasion of Poland an ultimatum was issued to Hitler, the German Fuhrer, to withdraw his troops. This ultimatum expired at 11 am on 3rd September 1939 and this country was again at war.

The Dockyards were considered to be prime targets for air attacks and Air Raid Precautions were introduced including black out, fire watching, instruction in First Aid, etc.

During the 1939/45 War the number employed in Chatham Yard rose to 13,000 of whom 2,000 were women, and many dilutees were employed to provide the labour force.

During this war, 1,360 ships were taken in hand for repair, refit, modernisation or conversion, involving 804 dry dockings. In addition, eleven submarines, a cruiser, two mooring vessels, two sloops and two floating docks were built, and 64 vessels fitted out for special service.

There were out-stations used during the War; the Engineering Department had one in a disused cement factory at Wouldham where the principal activity was the testing and reconditioning of IC engines; Expense Accounts had another at Sandling, near Maidstone.

Air Raid Shelters were built both above and below ground; the telephone exchange was transferred to a deep shelter underground. AA Defences were provided in the Yard and a Home Guard battalion of Dockyard employees was formed, numbering some 2,300. Ninety two HE bombs and numerous incendiaries were dropped on the Yard, and the casualties due to these bombs were fifteen killed and 107 injured.

The most serious incident occurred just before 8 pm on 3rd December 1940 when a string of bombs was dropped across the Yard. They fell on the Rigging House, the Factory and the Loco Shop. The 'Alert' was on but the signal to 'Take Cover' had not been given. In some ways this was fortunate as one of the shelters was badly damaged, but a bomb which fell near the centre of the Factory killed eight and injured 63 others. Amongst those who suffered was the Inspector, Leslie Banks, who died of his wounds. By tragic coincidence, his brother Reginald, also an Inspector of Fitters, died later of wounds received during the Japanese attack on Hong Kong.

In 1942, the cruiser **Ajax** was straddled with bombs as she lay against the Upnor wall of No 1 Basin. Whilst she was in dry dock the light cruiser, **Arethusa** was used as an anti-aircraft battery.

In 1943 a new Electrical Shop was completed; ten years later the Radio Centre was opened.

George VI visited Chatham on the 16th April 1942.

### The post-war period

There were post-war tragedies involving submarines. An outstanding one was the sinking of the submarine **Truculent** on 12th January 1950. She was returning from the Thames Estuary, travelling on the surface, when there was a collision with a Swedish tanker, *Dvina*. Despite the submarine's sinking almost immediately, most of the crew managed to escape to the surface but were swept away on the strong ebb tide and drowned. The dead included 16 of the Dockyardmen aboard.

Another tragedy was caused by a mishap with the caisson of No 3 Dock. The submarine, **Talent** was halfway through a modernisation refit in this dock when on the 15th December 1954 the caisson floated out of its groove. Water rushed in and swept the **Talent** out of the dock to the opposite bank of the Medway. The caisson of a dock is normally kept in position during a rising tide by counteracting the increased buoyancy by

## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

leaving open the flooding holes which allow water to flow into the tidal chamber of the caisson. On this particular day, shipwrights were working inside the caisson, the flooding holes being plugged and water put into the caisson. The tide had risen higher than predicted and insufficient water had been in the caisson which became buoyant and floated out of the groove at the bottom of the entrance of the dock. Four men were killed and 33 injured.

This accident led to an examination of the caissons of the Yard and as seen from the Ship List (for the period 1945/71) a number were constructed on No 7 Slip after 1955.

After the Second World War the conversion of eight T-class submarines was carried out; this involved cutting them in half, inserting an extra section in the middle and then welding them together again. The extension allowed the provision of additional batteries and machinery. An improved control system was fitted together with vertically operated snort masts. The bows, superstructure and fins were streamlined. When the T-class conversion programme drew to an end, two A-class and a further three T-class submarines, **Talent**, **Teredo** and **Tapir** were modernised.

The last three submarines on the Ship List (for the period 1945/71) **Ojibwa**, **Onondaga** and **Okanagan** were built for the Canadian Navy. This was virtually the end of 400 years of shipbuilding at Chatham

In the 1960's questions were being raised about the difference between the cost of building ships in the Royal Yards and private yards. The Leander class frigate **Cleopatra** cost £5,300,000 to build at Devonport, and her sister ship, **Arethusa** cost £4,850,000 to build at J Samuel White's Yard at Cowes, and was the last ship built there before this private yard closed for lack of government orders.

The building of warships in the Royal Yards had long been justified on the grounds that some new construction was essential for the Yards 'to keep their hands in' and to provide employment for a number of trades not required in large numbers for refitting work.

The refitting work in the Royal Yards was also being subject to criticism. The delays in the conversion of the cruiser **Lion** at Devonport caused the navy to propose the removal of the **Lion** to a private yard for conversion; a step vetoed by the Government. It was becomingly increasingly evident that the cost of a large conversion or refit in the Royal yards was little different from the cost of a new ship.

The refitting of the **Forth**, a depot ship for submarines, was an important task in Chatham Yard. This refit lasted four years and was completed in 1966 at a cost of three million pounds.

However, one important development in Chatham Yard was about to start; the formation of a nuclear establishment for the refitting of Fleet submarines of the **Dreadnought** and **Valiant** classes which had been built at Vickers Armstrong, Barrow. John Mowlem & Co started in 1966 the preliminary operations for the buildings around Nos 6 & 7 Docks, the Nuclear Refitting Centre. In 1966, **Valiant** was the first atomic powered submarine to come into the Yard and was docked in No 9 Dock.



## DEVELOPMENT OF H.M. DOCKYARD CHATHAM

### Ships built at Chatham Yard during the period 1945/1971

Name	Rate	Date	Slip	Tonnage	Launched by
Acheron	Submarine	1947	7	1120 tons	Mrs Middleton
Vidal*	Survey Ship	1951	7	1940 tons	
(No 3 Dock caisson)		1956	7		
(No 2 Dock caisson)		1956	7		
(No 4 Dock caisson)		1957	7		
Oberon	Submarine	1959	7	1610 tons	HRH Duchess of Kent
Onslaught	Submarine	1960	7	1610 tons	Mrs Pelly
(No 6 Dock caisson)		1961			
Ocelot	Submarine	1962	7	1610 tons	Lady Sandes
(No 5 Dock caisson)		1962	Dock No 9		
Onyx renamed	Submarine for				
Ojibwa	Canadian Navy	1964	7	1610 tons	Lady Miers
Onondaga	-do-	1965	7	1610 tons	Mrs Hellyer
Okanagan	-do-	1966	7	1610 tons	Madame L Cadieux
MAC 1010**	DY generator load				
	test barge	1968	7		
MAC 1012	Cleaning unit for				
	nuclear submarines	1971	7		

\*Bell in Mayor's Parlour, Gillingham. (Ceased survey 1971, disposed of 1973)

\*\* MAC= Machinery Account

### The Royal Dockyards <sup>1</sup>

	<i>opened</i>	<i>closed</i>	<i>Number of men at peak</i>	<i>1980</i>
Portsmouth	1212		17,200	7,400
Deptford	1513	1829		
Chatham	1559	1984	14,500	6,000
Woolwich	1650	1869		
Sheerness	1665	1960	3,300	
Devonport	1690		16,400	12,700
Gibraltar	1740		4,000	1,300
Bermuda	1798	1950	1,200	
Haulbowline (Queenstown)	1806	1925	2,000	
Pembroke	1809	1925	3,600	
Malta	1814	1959	10,800	
Hong Kong	1856	1959	4,200	
Simonstown	1861	1957	600	
Rosyth	1916	1925/3	87,000	5,900
Singapore	1937	1969	3,200	

#### *Areas of Dockyards (modern)*

Chatham	504 acres	Devonport	319 acres
Rosyth	330 acres	Portsmouth	294 acres

<sup>1</sup> Taken from 'A Century of Naval Construction. The History of the Royal Corps of Naval Constructors, 1883-1983.' D K Brown

## CHAPTER 2

### ADMINISTRATION OF CHATHAM DOCKYARD

#### The post of Commander-in-Chief in the Medway & at the Buoy of the Nore

During the War of English Succession (1689-1697) Admiralty devised the policy of keeping the crews of some warships in sea pay throughout the year instead of following the usual custom of paying off the men from the autumn to the spring and allowing the Dockyard to refit the ships. This led to problems of seniority of the sea officers and to overcome this difficulty it became the practice to create a new rank, C-in-C on a station, filled, in the absence of a flag officer, by the senior captain in the area. This officer exercised a general disciplinary supervision over any ship on the station, saw that orders reached the ship from London, and was empowered to hold courts-martial.

Captain Graydon received additional pay of £1 for acting as C-in-C at the Nore from 20 May 1694 to 27 June 1694, and Captain Munden received 10s additional pay for acting as C-in-C Thames and Medway for periods in 1696 and 1697.

Even after the peace of Ryswick in 1697 it was decided to retain some ships in Extra, i.e., in Commission, pending demobilisation. There were several reasons for this including the lack of funds to pay off the seamen and the desire to provide employment for as many officers as possible.

The officers of these ships refused to acknowledge the authority of the Dockyard officers. Commanding officers of ships in full commission were accustomed to take orders from Flag Officers at sea and to communicate directly with them or the Board of Admiralty. If a Flag Officer was within the precincts of the port, he was actually in charge of ships in sea pay and was liable to override the authority of the Commissioner. A guard boat manned from the ships in Ordinary was under the Commissioner's orders; such a boat from a ship in Extra was under the command of the officer of the ship, which meant divided responsibility and attendant discord. There were continual differences between the captains of the guardships and the Master Attendant.

The cause of the trouble was the lack of clearly defined status of the Resident Commissioner and the other Yard Officers vis-à-vis the officers of HM ships. Whether he had been a civilian or a sea officer before his appointment as Commissioner, his membership of the Navy Board gave him civilian status.

The situation was rendered more tense by an incident at Plymouth, in which the captain of one of the ships openly disregarded the authority of the Commissioner, Captain George St. Lo, who later succeeded Sir Edward Gregory as Commissioner at Chatham. The Lieutenant commanding one of the guard boats at Plymouth went aboard one of the ships and found no officer on deck. The Commander of the ship, Captain Roffey, ordered the Corporal to confine the Master's Mate for not shooting the Lieutenant of the guard boat, and then threatened the latter. The Commissioner sent for Captain Roffey, who replied that the Commissioner was not his superior officer, and was extremely disrespectful. The Courts-Martial trying Captain Roffey ordered him to be mulcted of two months pay for the benefit of Greenwich Hospital, but reported that the court felt itself incompetent to deal with a case in which the captain of one of the ships openly flouted the authority of the Resident Commissioner.

## ADMINISTRATION OF CHATHAM DOCKYARD

Some support for the Commissioner was given when on 10 February 1701/2, the Earl of Pembroke, the Lord High Admiral issued instruction to the respective Captains and commanders of HM ships referring to:

*. . .the great interruptions and inconveniences . . . from the little regard the Captains of HM ships generally have shown to the directions of the Commissioners residing at the several Yards, when the ships they commanded were either fitting out at these places, or came in to be refitted . . . yourself observant to such directions as shall be given by the Commissioner of the Navy residing at the Port.*

A further attempt to remedy this situation was made in 1708 when Superintendents were appointed at the Ports of Chatham, Portsmouth and Plymouth. The Superintendents were in effect C-in-Cs with the power of holding courts-martial. The terms of the appointment of Sir William Juniper to this post were:

*23 January 1707/8. Whereas Her Majesty has been pleased to direct by Order in Council dated 18th of this month that one of the Senior Captains of the Navy shall be appointed to reside constantly at the Ports of Chatham, Portsmouth and Plymouth to hasten out to sea such ships of Her Majesty as shall from time to time be fitting out at these ports of which shall thereafter to be cleaned and refitted, and being well satisfied with your superior diligence, etc, I do hereby appoint you (in absence of a Flag Officer) C-in-C of such ships and vessels in the Medway and at the Nore.*

*Signed George* (Prince George, Consort of Queen Anne, Lord High Admiral)

This appointment was an attempt to speed up the refitting of ships. The Admiralty had laid down that a ship on arrival in the Yard for urgent repairs must be ready to be taken in hand by the Dockyard not more than 48 hours after arrival. A ship had to be ready for sea within four days after the Dockyard had finished her repairs.

By Order of the Navy Board, Juniper was furnished in 1708 with a 12-oared boat with an allowance of 13 men borne in wages and victuals in one of HM ships lying in Ordinary at Chatham.

A letter from the Lord High Admiral to Captain Sir William Juniper, C-in-C of the Medway and at the Buoy of the Nore in the absence of a Flag Officer, dated 9 June 1708, dealt with the complaint that the crews of shipping fitting out, etc:

*. . . have been so far from giving attendance and consequently in performing the necessary work to be done in these ships, such as ballasting and unballasting, rigging and unrigging, tending the fire at their breaming and in transporting them to the places where they are to take in their guns, stores and provisions . . . that all, or the most part of these services have been left to be performed by the riggers and the ordinary of the said Ports.*

There were similar complaints during the 1739-48 War. Excuses were made that untrust-worthy seamen deserted when working in the Dockyards. In any case the superiority of the military over the civil department meant that captains could delay Dockyard efforts to accelerate refitting of their ships by excessive demands, etc.

## ADMINISTRATION OF CHATHAM DOCKYARD

A ruling was given on 30 November 1711 by Admiralty relating to the Guardship in the Medway.

*In time of war the Guardship is to be under the directions of Sir William Juniper, Superintendent at the Nore and in the River Medway, and in time of peace under the direction of Captain St. Lo.*

By September 1712 it was proposed, for economy reasons, to discharge the Superintendents on half-pay and to give their commissions to the Resident Commissioners. The order to Commissioner St Lo stated:

*Whereas Her Majesty hath been pleased to direct that the Superintendents at Chatham, Portsmouth and Plymouth shall be discontinued from 20th day of this month for easing the public charge, but it is necessary that some proper person should be appointed to hasten out to sea . . . We do therefore appoint you C-in-C of HM Ships and vessels in the Medway and at the Buoy of the Nore in absence of a Flag Officer*

On 11 October 1712 it was ordered that the vessel and men attending upon the Superintendent at Chatham were to be discharged from the Ordinary. Tickets for the wages due to them were to be made out and sent to the Navy Board in order to our assigning them for payment.

On 11 November 1712, St Lo was ordered:

*. . . to see that he (Feversham) does repair with her and cruise between the South Foreland and the Nesse according to our order of the 4th inst for preventing the exportation of wool*

On 14 September 1713, Admiralty resolved:

*. . . all orders for the future to the ships at the Nore, Chatham, Sheerness, Portsmouth and Plymouth be directed to the C-in-C of HM Ships at these places.*

On 14 September 1713, Admiralty directed that a fifth-rate ship, under orders to be laid up and paid off, should do the duty of a guardship at Sheerness. The guardship, in sea pay, was under the Commissioner's orders.

By Admiralty Order dated 27 January 1713/14, the power given to the Commissioner to act as C-in-C of such ships and vessels as should from time to time repair to Chatham, should in time of peace, cease. The Commissioner retained his control over the officers of the ships in Ordinary.

On 18 November 1715, during a period of alarm owing to the threat of the Old Pretender, Commissioner Littleton was sent a commission appointing him:

*Commander in Chief of such of HM ships and vessels as shall from time to time be in the River Medway and at the Buoy of the Nore, in the absence of a Flag Officer.*

As the size of the Navy grew, Admiralty and the Navy Board each became increasingly occupied with their own problems. They grew out of touch with each other and in particular Admiralty failed to appreciate the Navy Board's problems, and tended to judge the situation by results only. This was particularly noticeable after the appointment of the Duke of Bedford as First Lord in 1744, together with Sandwich and Anson.

In the section on Development, mention is made of the complaints of the Board of Admiralty that they were misled by the information about progress of work in the Royal Yards.

## ADMINISTRATION OF CHATHAM DOCKYARD

The Board decided to send Flag Officers to supervise the fitting out of ships initially at Portsmouth<sup>1</sup> and Plymouth and later at the Nore.

From 1745-47 there was usually a Commander in Chief at the Nore. His command was of ships only; he had no authority over the Commissioner's superintendence of shore activities. He ensured that the Captains applied themselves diligently to the preparation of their ships but he was in a position to observe Dockyard progress and report shortcomings.

In 1752, Isaac Townsend, Admiral of the Blue, was appointed C-in-C of His Majesty's ships and vessels in the River Thames and at the Buoy of the Nore. He is regarded as the first C-in-C of the Nore; the regular sequence of C-in-Cs commenced in 1778. The C-in-C was designated Admiral of the Port and normally hoisted his flag in the guardship of the Port.

At the time of the Nore Mutiny, the Port Admiral was Charles Buckner. He lived on shore at Sheerness, his flagship, **Sandwich**, was in charge of Captain Mosse. In correspondence, Buckner was referred to as the officer in command of His Majesty's ships and vessels in the River Medway and at the Buoy of the Nore.

Admiralty House at Sheerness was built by order of 31 May 1827 to please the Duke of Clarence, afterwards William IV, who proposed to reside in it. Earlier, during the Napoleonic Wars, a 28-gun ship had been hauled ashore to serve as residence for the Port Admiral. An Admiralty official wrote:

*. . . £2,000 was applied for to build a house, but the fitting of a ship at an expense of little short of £5,000 was deemed more economical, not to reckon the value of the ship*

(Admiralty House at Sheerness has now been demolished)

In 1905 the C-in-C's house was built in Gillingham when he moved from Sheerness to Chatham. The C-in-C supervised all naval establishments on the East coast of England including Chatham and Sheerness Dockyards. All submissions for new works including building, additions and alterations to be included in Vote 10 proposals had to be approved by the C-in-C.

Nore Command ceased to exist in 1961 and the Medway Sub-Command was formed in April 1961 and Rear-Admiral Beloe, the Admiral Superintendent of Chatham Dockyard, was appointed Flag Officer Medway responsible to the C-in-C Portsmouth Command. His residence in the Dockyard was designated Medway House.

From 15 September 1971 Rear-Admiral Lawson, the Admiral Superintendent at Chatham Yard, was designated Flag Officer Medway and Port Admiral Chatham, the latter title replacing Admiral Superintendent.

This last change reflects the findings of the committee under Sir John Mallabar, appointed in 1968, to examine the organisation of the larger establishments of the Ministry of Defence. The Dockyards should be put on a more commercial basis and the responsibilities of the General Managers increased. The Port Admiral was to co-ordinate the activities of the organisation at the Naval Base, of which the repairing and refitting of ships was one part. After 1970 Chatham Dockyard was referred to as Chatham Naval Base.

1 At Portsmouth the right of the Admiral to give orders directly to the Dockyard Officers was challenged successfully by the Navy Board. The relationship between Admiralty and the Navy Board eventually improved and requests replaced orders.

In 1763 a C-in-C was appointed to Portsmouth as Admiral of the Port and he relieved the Commissioner of many duties and responsibilities

## ADMINISTRATION OF CHATHAM DOCKYARD

A further Dockyard study was carried out in 1979 to examine the organisation of the Royal Dockyards. The improvement of Dockyard efficiency was again advocated and the government whilst accepting their recommendations confirmed the retention of the four Yards.

However in 1981 Mr John Nott, the Secretary of State for Defence, announced huge cuts in defence spending. A decision was taken to close Chatham Dockyard with all its modern nuclear submarine refit facilities and to reduce Portsmouth Dockyard to a repair yard.

### COMMANDERS-IN-CHIEF THE NORE

<i>Name</i>	<i>Rank on taking Appointment</i>	<i>Date of Appointment</i>
Sir Isaac Townsend	Admiral of the Blue	1752
John Campbell	Rear-Admiral	1778
Robert Roddam	Rear-Admiral	1778
George Boyer	Captain	1783
Sir Andrew Snape-Hammond, Bart	Captain	1785
Richard Edwards	Vice-Admiral	1787
Skeffington Lutwidge	Captain	1788
Thomas Pasley	Captain	1790
John Dalrymple	Rear-Admiral	1791
Thomas Pasley	Captain	1791
George Murray	Captain	1792
John Dalrymple	Vice-Admiral	1793
Sir George Collier	Vice-Admiral	1795
Charles Buckner	Vice-Admiral	1795
Skeffington Lutwidge	Vice-Admiral	1797
Andrew Mitchell	Vice-Admiral	1799
Alexander Graeme	Vice-Admiral	1799
Bartholomew Samuel Rowley	Rear-Admiral	1803
Thomas Wells	Rear-Admiral	1807
Sir Henry Edwyn Stanhope, Bart.	Vice-Admiral	1810
Sir Thomas Williams, KCB	Rear-Admiral	1812
Sir Charles Rowley	Rear-Admiral	1814
Sir John Gore, KCB	Rear-Admiral	1818
Sir Benjamin Hallowell, KCB	Vice-Admiral	1821
Sir Robert Moorson, KCB	Vice-Admiral	1824
Hon Sir Henry Blackwood, Bart, KCB	Vice-Admiral	1827
Sir John Poo Beresford, Bart., KCB	Vice-Admiral	1830
Sir Richard King, Bart., KCB	Vice-Admiral	1833
Hon. Charles Elphinstone Fleeming	Vice-Admiral	1834
Sir Robert Waller Otway, Bart., KCB	Vice-Admiral	1837
Sir Henry Digby, KCB	Vice-Admiral	1840

## ADMINISTRATION OF CHATHAM DOCKYARD

### COMMANDERS-IN-CHIEF THE NORE continued

<i>Name</i>	<i>Rank on taking Appointment</i>	<i>Date of Appointment</i>
Sir Edward Brace	Vice-Admiral	1841
Sir John Chambers White, KCB	Vice-Admiral	1844
Sir Edward Durnford King, KT, KCB	Vice-Admiral	1845
Hon. George Elliot, CB	Vice-Admiral	1848
Hon. Josceline Percy, CB	Vice-Admiral	1851
Hon. William Gordon	Vice-Admiral	1854
Edward Harvey	Vice-Admiral	1857
Sir William James Hope Johnstone, KCB	Vice-Admiral	1860
Sir George Robert Lambert, KCB	Vice-Admiral	1863
Sir Charles Talbot, KCB	Vice-Admiral	1864
Sir Baldwin Wake Walker, Bart., KCB	Vice-Admiral	1866
Richard Laird Warren	Vice-Admiral	1869
Hon Charles Gilbert John Brydone Elliott, CB	Vice-Admiral	1870
Hon George Fowler Hastings, CB	Vice-Admiral	1873
Henry Chads	Vice-Admiral	1876
Sir William King Hall, KCB	Vice-Admiral	1877
Sir Reginald John MacDonald, KCSI.	Vice-Admiral	1879
Edward Bridges Rice, CB	Vice-Admiral	1882
John Corbett, CB	Vice-Admiral	1884
H.S.H. Ernest LVCAJE, Prince of Leiningen, GCB <sup>1</sup>	Vice-Admiral	1885
Charles Ludovic Darley Waddilove	Vice-Admiral	1887
Thomas Bridgeman Lethbridge	Vice-Admiral	1888
Charles Thomas Curme	Vice-Admiral	1890
Sir Algernon Charles Fiesche Heneage, KCB	Vice-Admiral	1892
Sir Richard Wells, KCB	Vice-Admiral	1894
Sir Henry Frederick Nicholson, KCB	Vice-Admiral	1896
Sir Charles Frederick Hotham, KCB	Vice-Admiral	1897
Sir Nathaniel Bowden-Smith, KCB	Vice-Admiral	1899
Sir William Robert Kennedy, KCB	Vice-Admiral	1900
Sir Albert Hastings Markham, KCB <sup>2</sup>	Vice-Admiral	1901
Sir Hugh Lewis Pearson	Vice-Admiral	1904
Sir Gerard Henry Octred Noel, KCB., KCMG	Admiral	1909

1 Prince of Leiningen , son of Queen Victoria's half brother. The first marriage of the Queen's mother, the Duchess of Kent had been to a Prince of Leiningen (Prince Albert, Duke of Edinburgh, the Queen's second son commanded Sultan and Black Prince and was in 1881 Rear-Admiral commanding Reserve Squadron. He lived in Eastwell Park near Ashford

2 Loss of the Victoria

The principals were Sir George Tryon, C-inC and Rear-Admiral A H Markham

## ADMINISTRATION OF CHATHAM DOCKYARD

### COMMANDERS-IN-CHIEF THE NORE continued

<i>Name</i>	<i>Rank on taking Appointment</i>	<i>Date of Appointment</i>
Sir Charles Carter Drury, GLC.B, GCVO, KCSI	Admiral	1909
Sir Richard Poore, Bart, KCB, CVO.	Admiral	1911
Sir George Astley Callaghan, GCB, GCVO, ADC	Admiral (Admiral of the Fleet)	1915 1917)
Sir Frederick Charles Doveton Sturdee, Bart, GCB, KCMG, CVO, LLD	Admiral	1918
Sir Hugh Evans-Thomas, KCB, KCMG, MVO, LLD	Admiral (Admiral of the Fleet)	1921 1921)
Sir William Goodenough, KCB, MVO	Admiral	March 1924
Sir Edwyn S Alexander-Sinclair, KCB, MVO	Admiral	May 1927
Sir Reginald Y Tyrwhitt, Bart, GCB, DSO DCL	Admiral	May 1930
Sir Hugh J Tweedie, KGB	Admiral	May 1933
Sir Edward RGR Evans, KCB, DSC, LLD	Admiral	December 1935
Sir HJ Studholme Brownrigg, KBE, CB, DSO	Admiral	January 1939
Hon Sir Reginald AR Plunket-Ernlé-Erle- Drax KCB	Admiral	December 1939
Sir George HC Lyon, KCB	Admiral	April 1941
Lord Tovey, GCB, KBE, DSO, DCL	Admiral (Admiral of the Fleet)	July 1943 1943)
Sir Harold M Burrough, KCB, KBE, DSO	Admiral	April 1946
Sir Henry R Moore, GCB, CVO, DSO, ADC	Admiral	1948
Sir Cecil J Harcourt, KCB, CBE, DSO, DSC	Admiral	1950
Hon Sir Cyril E Douglas-Pennant, KCB, CBE DSO, DSC	Admiral	1952
Sir Geoffrey N Oliver, GBE, KCB, DSO	Admiral	May 1953
Sir Frederick R Parham, KCB, GBE	Admiral	October 1955
Sir Robin LF Durnford-Slater, KCB	Admiral	1958
	until closure 31 March	1961

### Resident Commissioners and Superintendents

After the defeat of the Spanish Armada the Privy Council ordered that Principal Officers of the Navy were to take turns at Chatham to supervise the activities of that port. Benjamin Gonson, later Clerk of the Ships, was in attendance at Chatham for:

*. . . better guarding and safe keeping of the ships at Chatham for 275 days beginning  
12th March 1586/7*

In 1588 Sir Henry Palmer, the Comptroller, received £30 for:

*. . . his diet, attending daily at Chatham . . . sixty days.*

Whilst the new Dockyard at Chatham was being built after 1618 the Surveyor of the Navy resided at Chatham.



## ADMINISTRATION OF CHATHAM DOCKYARD

### 1618-1625 THOMAS NORREYS

Norreys had been appointed a Commissioner of the Navy in 1618 when the Comptroller and Surveyor were dismissed from their posts <sup>1</sup>. He acted as Surveyor of the Navy whilst resident at Chatham, but was paid less than the other members of the Board (£200 pa).

On the East wall of Rainham Church, Kent, is a monument bearing the following inscription:

Neare this place lyes buried ye body of Tho. Norreys, Esq., who after many paynfull and dangerous expeditions at sea achieved the charge and credit of a commander and master of ye Trinitye House; and a commissioner of the Navye Royall, etc, and dyed ye 19th December 1624 . . .

### 1625-1628 JOSHUA DOWNING

Downing also acted as Surveyor of the Navy; at one time in his career he had been Keeper of Stores at Chatham. There appear to be only two references to him apart from statements of his pay:

*1625 Jarvic Hyckett, Acting Master Attendant, for five weeks in direction and oversight of the service there in the time of Mr Downing's sickness, £8.*

*Joseph Fenton, surgeon, for journey to Chatham giving his assistance in searching the viewing the hurt Mr Downing received by a shot aboard the George Drumler, £6 3s 4d.*

1630-47 - PHINEAS PETT (See Master Shipwrights)

1647-67 - PETER PETT (See Master Shipwrights)

After the revoking of Peter Pett's Patent in 1668, it was granted to John Tippetts who was to reside at Portsmouth. The practice of having a Commissioner at one of the Yards, who, when in town was eligible to sit and act upon the Board ceased when Tippetts was appointed Surveyor in 1672.

### General Notes on the Resident Commissioners after 1672

After 1672, the Resident Commissioner was still a member of the Navy Board but had a lower status than his predecessors. He was expected to consult the Board on matters of policy and he was asked for his opinions on matters affecting the Yard.

The main function of the Resident Commissioner was the supervision of the Dockyard Officers and to check that Navy Board regulations and orders were obeyed. He was supposed to visit every part of the Yard at least once a day to see that Officers and workmen were performing their work satisfactorily.

In the case of an offending Officer the Commissioner could threaten to recommend the Officer's dismissal to the Navy Board, but this was rarely done; he had no power to dismiss or to punish an officer. The strength of his authority lay in the fact that all entries and promotions in the Yard were subject to his approval as well as that of the Navy Board. The functions of the Commissioner as a magistrate are dealt with in the section on Theft and Embezzlement. the Commissioner could issue arrest warrants on the authority of the Navy Board.

<sup>1</sup> See section on Administration of Royal Navy chapter 23

## ADMINISTRATION OF CHATHAM DOCKYARD

The Commissioner could discharge workmen for certain offences and he had the power to award punishment for the less serious offences such as absence, insubordination, etc, but the work in the Yard was almost solely the concern of the Yard Officers. Each officer had a defined area of responsibility and for that he was accountable to the appropriate Principal Officer in London, the Master Shipwright, the Master Attendant and Clerk of the Survey to the Surveyor of the Navy, and the Clerk of the Checque and the Storekeeper to the Comptroller.

As the Commissioner was a civilian (until 1832) his relations with the sea officers were ambiguous and the cause of frequent trouble. Theoretically he exercised a general supervision over their demands upon the Yard and their compliances with the rules of the Ordinary; in practice he either submitted to them or quarrelled with them as long as they were in his port. This particular trouble was met finally by appointing a senior Captain to each of the major ports with the title of Superintendent and the power of holding courts-martial.

The Ordinary, the ships out of commission in the charge of the Master Attendant were the responsibility of the Commissioner. The care and maintenance of the ships was carried out by shipkeepers supervised by warrant officers. There were complaints that some of these seamen were unfit for service and the situation became complicated when women and children were aboard the ships in Ordinary. Periodically the Commissioners prohibited this practice but the regulations seem to fall in abeyance. The authorities had a constant fear of fire.

By Navy Board Order, 11 August 1676, in the ships in Ordinary, one warrant officer was to watch all day and two all night and attend weekly by turn. Checks were made that these orders were obeyed by both the guardship at Chatham and the Commissioner. The Commissioner was responsible for punishing the officers of the ships in Ordinary for breaches of discipline. Sir Edward Gregory in an order to the Clerk of the Checque, dated 9 September 1700 wrote:

*Whereas complaint has been made by Captain Fletcher, Commander of the Romney Guardship, that the Purser, Gunner and Cook of HM Ship the Colchester were all absent from their ship the 1st and 2nd instant at night, these are to direct and require you to checque the Purser out of three months' wages. It was his duty week, the Gunner out of two months wages, it was his sleeping week, and the Cook out of one months wages for neglect.*

On 2 June 1707, St Lo the Commissioner, ordered the Clerk of the Checque to mulct the officers of the watch on the **Union**, **Prince George**, and **London**, ships in Ordinary, twenty shillings a man on checque book for not hailing his passing on the 30th.

The Commissioner had the power to make local purchases but he was expected normally to obtain prior sanction of the Navy Board. He was responsible for controlling the payment of seamen's wages in the ships in his port.<sup>1</sup>

The posts of Resident Commissioner in the Dockyards were filled either by civilians or sea officers. Captain Sir John Cox who followed Peter Pett at Chatham was a sea officer; Sir Phineas Pett and Sir Edward Gregory had both risen in the Dockyard service; the former as a Shipwright and the latter in a clerical capacity. The post itself was a civilian appointment. After Sir Edward Gregory's term of office the Commissioners were senior sea Captains who accepted a civilian appointment instead of waiting for their flag on the retired list. On the abolition of the Navy Board in 1832, the Resident Commissioners were replaced by Superintendents.

<sup>1</sup> The Resident Commissioner at Chatham was responsible for both Chatham and Sheerness

## ADMINISTRATION OF CHATHAM DOCKYARD

The salary for the post rose from £350 in 1660 to £500 in 1682, the figure at which it remained for many years. By the latter date the post of the Commissioners in London and at Chatham were becoming interchangeable.

### 1669-1672 SIR JOHN COX

The post at Chatham was vacant for nearly two years. After the fiasco of 1667 when the Dutch attacked the ships in the Medway, it was apparently decided to avoid the appointment of civilians to the post of Commissioner at Chatham. He had served as the Master of the Duke of York's flagship **Royal Charles**, in 1665, and was again in action against the Dutch in 1666. He was appointed Master Attendant at Deptford in 1667.

In his diary for 13 May 1668, Evelyn wrote:

*. . . Invited by that expert Commander, Captain Cox, Master of the lately-built Charles the Second, now the best vessel of the Fleet, designed for the Duke of York, I went back to Erith where we had a great dinner.*

The ill feeling between Phineas Pett, the Master Shipwright and Commissioner Cox has been dealt with in the section on Master Shipwrights. Cox endeavoured to reform the bad habits of the officers and men of the Yard. In 1670 he wrote to the Navy Board complaining of the times the officers and their instruments attend work.

*They do not attend the Clerk of Checque's calls and come in at 8 o'clock and later leave at 11; they come in at 2 and leave at 4.*

In 1672 Cox was appointed Flag-Captain to the Duke of York in the **Prince**<sup>1</sup> without vacating his office at Chatham. He was knighted by Charles II on board the Prince at the Nore in April of that year and was killed in action at the Battle of Sole Bay in May of the same year. According to Phippen there was in St Mary's Church, Chatham :

*. . . a memorial to Sir John Cox, Knight a distinguished naval commander who was captain to the Duke of York's ship in the expedition against the Dutch in 1672, when in a fight with the said enemy on the 2nd of May in that year, he was slain by a great shot, in the 49th year of his age.*

### June 1672 - December 1672 THOMAS MIDDLETON

Middleton had been one of the Commissioners of the Admiralty and the Navy in 1660. He was appointed Commissioner at Portsmouth in 1664 and the Surveyor of the Navy in 1667. Middleton soon experienced the sharp practices of the Master Shipwright and the indiscipline of the officers and men of the Ordinary at Chatham. He wrote to Pepys:

*You cannot do the King (Charles II) better service than to dismiss all the carpenters, bosuns and pursers out of the ships so abused, as it will be an example; but as long as such outrages are committed and connived at, it makes the offenders incorrigible, believing that their superiors are like themselves, as so dare to find fault with them.*

*I have ordered a notice to be put up at the Gate that the man who absents himself one day without leave shall forfeit two days work and if two forfeit four, and if three made run, and the Clerk of the checque (is) not to spare any man. I used to think those at Portsmouth the worst men in the world, but they are saints compared with those at Chatham.*

Middleton died after six months in the post.

<sup>1</sup> The Prince, a 1st rate designed by Phineas Pett was launched at Chatham in 1670

## ADMINISTRATION OF CHATHAM DOCKYARD

### 1672-1679 REAR-ADMIRAL SIR RICHARD BEACH

Beach, an old royalist Privateer Captain of the Commonwealth period had little patience with the habits of the Master Shipwright and the officers of Chatham Yard who complained of his continual threats and cursing us. He seems to have had some sympathy for the workmen who were in a sorry plight owing to the delay in the payment of their wages.

The Commissioner found further faults with his officer that their perquisites, casks of tallow, oil and resin, took up so much room in the Yard. How they came to have such perquisites is not known; possibly Beach was being sarcastic. Dockyard Officers were allowed the condemned stores of their departments.

Beach was transferred to Portsmouth as Commissioner and in 1690 he was appointed Comptroller of Victualling Accounts; he died in 1692.

### 1679-1686 SIR JOHN GOODWIN

Goodwin was a sea officer in the 1660's but left the sea and was subsequently employed in the Victualling Department. At Chatham, his salary was £500 per year with an allowance of two clerks at £30 per year each, and £12 paper allowance.

After serving just over six years at Chatham, Goodwin was transferred to the Navy Board in 1686 as a result of changes attendant on the appointment of the Special Commission by James II to reorganise the Navy; he died in 1689.

### 1686-1689 SIR PHINEAS PETT (See Master Shipwrights)

On the appointment of Pepys Special Commission for the reform of the Navy, Sir Phineas Pett was sent to Chatham as Resident Commissioner interchanging with Goodwin. The reason given for the change was . . . his (Pett's) eminence as a shipbuilder. This appointment was in some way extraordinary since Pepys had earlier reported adversely on him. Early in 1686 when Deane had refused the post of Head of this Commission, <sup>1</sup> Pepys had written a report to the King on the Master Shipwrights. Pett was referred to as . . . as being in every respect as Tippetts, and the report on the latter stated:

*. . . his age and infirmities arising from the gout (keeping him generally within doors or at least incapable of great action abroad) would render him wholly unable to go through the fatigue of work designed for Sir Anthony Deane.*

As if to confirm Pepys report, it happened when in April 1686 James II and the Commissioners proceeded to Chatham to inaugurate their task, Sir Phineas was bedridden with lameness. The Council was held at Mr Gregory's house.

The Patent constituting Sir Phineas the Resident Commissioner for Chatham and Sheerness was dated 19th April 1686. It required him to reside at Chatham in the dwelling house usually enjoyed by the Commissioner of the Yard there. It conferred on him the salary of £500, and a staff of two clerks of his appointment, at salaries of £50 and £30 per year respectively.

He was given the power to administer an oath. He assumed full responsibility for all the transactions of the Yard. He had to keep all the Yard Officers to their

*. . . constant and personal attendance upon their several duties, all pretences to the contrary, disability only by sickness accepted, being set aside.*

<sup>1</sup> Sir Anthony Deane did eventually head this commission

## ADMINISTRATION OF CHATHAM DOCKYARD

Leave of absence was to be granted by the Commissioner in writing for a specified time. The Commissioner, himself, was not to absent himself from Chatham without licence. The Commissioner had the power to

fine and suspend offenders, pending a report to the Lord High Admiral or the body of Commissioners. The like he is to do in reference to ships in Ordinary. He had to report his observations of the behaviour of all officers.

He was ordered to call before him:

*. . the whole number of officers (of the Yard) and cause their instructions to be publicly read in their joint hearing, with his observations of what failure (if any) he shall happen to have noted in their execution.*<sup>1</sup>

For the better prevention of embezzlement, the Commissioner was not only to promote as far as possible the regularity of the new system of keeping accounts, (The Clerk of Control was restored in 1686) of the receipts and issues of stores, but he was also to be frequent in his visiting the workmen at their departure out of the Yard, keeping a strict and severe eye upon the Porter and to the attendance given at the gates. He was also to visit and:

*. . stop up all present and prevent all future back-doors or other outlets, more than the public gates leading into and out of the Yard . . Lastly to be as frequent as he may, and the distance of the places will admit, in his nightly rounds in and about the Yard.*

He was to visit the ships in Ordinary by night and the ships in Ordinary on float. He had to superintend the delivery of stores in the Yard and to see that the Officers of the Yard keep constant journals of each days principal transactions and business within their several provinces. He had to see that no work was taken in hand without a proper estimate and a warrant from three or more of the Commissioners authorising the same.

Sir Phineas Pett failed to secure election as MP for Rochester in 1688; a staunch Protestant he lacked royal support. But for the need of reliable Dockyard Officers in 1688 Sir Phineas would have been dismissed for his unbending Protestantism. The king visited Chatham in September 1688 and Sir Phineas hearing that it was intended to move him, prayed James to allow him to stay. James informed him that it had been reported that he was gouty and infirm, and it was thought a Navy Board post would suit him better. Pett replied that he had been troubled with gout and though less nimble than others, yet in professional understanding and judgment he was as good as ever. James promised that he should stay in Chatham, but in the following March, shortly after the accession of William & Mary he was dismissed the service for political reasons.

An Act 2 William & Mary (1690/1) set up a special fund for financing the construction of 27 ships. Sir Phineas Pett offered to build the ships on commission instead of by fixed price contract. He estimated a cost not exceeding £12 per ton and his fee or reward was to be £1400; his offer was not accepted.

After his dismissal it is possible that Sir Phineas Pett lived at a house in Rochester, described in an anonymous history of that town edited in 1817.

*Beyond the Victualling Office (site was near the Railway bridge which crosses the High Street) on the same side of the High Street at Rochester is an old mansion, now occupied by a Mr Monon, an Attorney, which formerly belonged to the Petts, the celebrated shipbuilders. The chimney piece in the principal room is of wood, curiously carved, the upper part being divided into compartments with caryatides.*

<sup>1</sup> In 1849 it was directed that Admiralty Orders for the Day were to be read in the presence of the Superintendent to Principal Officers of the Yard at 9:30 am.

## ADMINISTRATION OF CHATHAM DOCKYARD

*The centre compartment contains the family arms, viz: Or, on a fessgu, between three pellets, a lion passant of the field. On the back of the grate is a cast of Neptune, standing erect in his car, with Triton blowing conches, etc and the date 1650*

This house is possibly on the site occupied by the old Featherstones Stores: the office of Mr Featherstone is of the period. (Seen in the 1960s)

### 1689-1703 SIR EDWARD GREGORY

Gregory had served as a purser in a ship in Ordinary in 1662 and had been associated with the Chatham Chest. His father held the post of Clerk of the Checque from 1662-1665 when he was followed by his son Edward (See Clerk of the Checque).

A Dutch naval force which was sent to attack England sailed up the Thames on Sunday 9th of June 1667. Sir Edward Spragge in command of the ships in the Medway ordered Edward Gregory to bring up a hundred seamen from Chatham to Sheerness Fort for its defence but the craft carrying them down went ashore and only forty appeared at Sheerness.<sup>1</sup> A company of trained bands under Major Sir William Hugessen appeared on Monday 10th of June 1667 just before the Dutch attacked Sheerness. The Dutch soon overwhelmed the defenders of the fort; many of whom retreated but Gregory and six others were taken prisoner. Sir Edward Spragge escaped in the **Unity** which made for Chatham; the ship was taken on the following Wednesday by the Dutch. The prisoners were released when the Dutch evacuated Sheerness. Gregory provided an eyewitness account of the attack and capture of the fort which is in the Bodlen Library.

Although Gregory remained in the service until 1703, he did not enjoy good health, perhaps he was a hypochondriac. For some reason or another in 1683, Jeremy Gregory, Gregory's son-in-law, took his place as Clerk of the Checque at Chatham, and it is thought that Gregory assumed duty with the Chatham Chest Charity. However in April 1689 he was appointed Resident Commissioner at Chatham at the salary of £500 per year.

Apart from his supervision of the Yard one duty mentioned frequently in the official correspondence was to deliver, on behalf of the Admiralty, commissions to Captains and Lieutenants and warrants to Warrant Officers of HM Ships, and warrants of officers of Chatham and Sheerness Yard. The officers had to take Oaths and Tests prescribed by law and pay the King's duty for the Stamps.<sup>2</sup> Mention of some of Gregory's activities in the Yard is given in the Section on Dockyardmen.

The Commissioners and their clerks were favoured employees. On 4th September 1702, the Navy Board informed Gregory that approval had been given by His Majesty:

*to grant the repayment of the taxes assessed upon the salaries of the several members of the Board and their clerks for the two last and this present year.*

Gregory was knighted in January 1690/1 and married as his second wife, the widow of Sir John Goodwin, a previous holder of the office.

On the 24th March 1703, the Navy Board wrote to him:

*. . . but the news of your removal from the post you have so long filled and so laudably executed is very unwelcome to us, wishing your health would have prevented your thoughts of it.*

1 This may seem strange to modern readers that a civilian clerk should undertake such a duty but it should be remembered that one of the duties of the Clerk of the Checque was to muster the seamen of the ships in the Medway

2 See Spiritual Welfare chapter 16

## ADMINISTRATION OF CHATHAM DOCKYARD

On 4th June 1703, Gregory was told:

*. . . when Mr St Lo comes to Chatham you must resign both your office and house to him . . . his Royal Highness<sup>1</sup> had laid a memorial before ye Queen for a pencion of £300 to you . . . and will commence from the time of your being discharged as a Commissioner of the Navy.*

Sir Edward Gregory died in 1713 aged 74 and was buried in St Mary's Church, Chatham. There is a memorial in the present church which gives details of his family and records that he bequeathed £100 to the Minister and Churchwardens of the Parish of Chatham, the interest from which was to be distributed to the poor of the town.<sup>2</sup>

### 1703-1714 CAPTAIN GEORGE ST LO

St Lo was in command of the **Portsmouth** in 1689 when he was captured with his ship and taken to Brest severely wounded. After his release from the French he wrote a number of pamphlets, one was entitled England's Safety, a Bridle to the French King 1693, which purported to show how 20,000 men could be raised for the Navy without impressment. Another was England's Interest, or, a Description for Seamen, wherein is proposed a sane method for raising qualified seamen for the well manning of their Majesties fleet on all occasions.

In 1693 he was appointed to the Navy Board as a Commissioner and transferred to Plymouth as Resident Commissioner in 1695. He was responsible for the building of the first Dockyard Chapel at Plymouth. In 1703 he was transferred to Chatham and held office during the War of the Spanish Succession. (Salary £500 pa)

His supervision was in marked contrast to that of his predecessor. Gregory had been Clerk of the Checque at Chatham for twenty years and controlled the Yard in the same way as he ran his office, i.e., according to the wishes of the Navy Board. He had sympathy with the dockyardmen with their money problems. So Lo on the other hand proved to be a blunt, uncompromising officer who seemed to disregard the feelings of both the men and the Navy Board.

His first request was the rebuilding of the Commissioners house. An Admiralty letter dated 19th June 1703 to Commissioner St Lo stated:

*The Navy Board will be spoken to at their attendance here about rebuilding the house in Chatham Yard to which you are to dwell in. And enclosed comes an order for St Lo Yacht to attend on Chatham.*

On 5th of July 1703, Admiralty was admonishing St Lo for his attitude to his predecessor in office.

*His Royal Highness being informed that Sir Edward Gregory, your predecessor, is under some uneasiness upon reports he has heard of your objection to his*

1 Prince George of Denmark Lord High Admiral of England

2 See Charities chapter 17

3 The first Dockyard chapel at Devonport was erected in 1700 from the contributions of officers and men paid off in Devonport Yard being propagated and carried on by the industry and religious endeavours of George St Lo Esq Commissioner of the Yard and Comptroller of the pay.

This chapel was pulled own and rebuilt in 1814/15 but was destroyed in a wartime blitz in April 1941. In 1957 another Devonport Dockyard Church was dedicated to 'the Glory of God and in Honour f St Lo' by the Lord Bishop of Plymouth.

## ADMINISTRATION OF CHATHAM DOCKYARD

*continuing in his son's house in Chatham Yard, to which after long service in the Navy he is retiring from Publick business, and although Prince does not think you will offer anything that may be a hardship to one who was so lately your brother officer I am commanded to let you know that it is the pleasure of His Highness, he be not only permitted to remain with Mr Gregory, his son, so long as he shall think convenient, but that in consideration of the Post he has held in the Navy and his good service to the Publick, he be always treated with civility and respect . . .*

St Lo was prepared to make improvements in the Yard without consulting the Navy Board and the Secretary of the Admiralty wrote on 6th September 1703:

*You will let me know whether you gave the Navy Board any previous notice of your design to make a cistern in Chatham Yard for the more speedier watering of Her Majesty's ships . . . and I am directed to acquaint you that ought not only to have done that, but not to have put the Government to such expense without its having been first considered of and regular orders given therein.*

St Lo asked to be excused from the duty of attending the pay of ships:<sup>1</sup>

*. . . you desire to be excused as much as may be from going to the Nore to pay ships . . . agreed you should be sent on such service but when there was an absolute necessity for it, and even then, only in cases of paying some few men removed from one ship to another, which generally does not take up above three or four houres time . . .*

In February 1703/4, St Lo was involved in a difficult situation concerning the riggers which resulted in their ceasing work at a time of war.<sup>2</sup> The departmental heads of the Riggers, the Master Attendants, came under the wrath of St Lo and he secured the superannuation of one, Sampson Bourne, and the suspension of the other. St Lo was later forced to lift this suspension.<sup>3</sup> Having taken action against the Riggers, St Lo attempted to whittle down the privileges of other Dockyard workmen. On 31st October 1704, the shipwrights imprest for HM Yard at Chatham petitioned that by ancient custom they were allowed to go to the market on Saturday afternoons and that St Lo had withdrawn this privilege. The Commissioner was instructed not to take hours from them which have been allowed the Prest men by ancient custom.

St Lo was again in trouble in 1704 for making a contract to the value of £47,000 for timber. This was a sum vastly in excess of anything in which a local commissioner was considered to have authority. The Board considered the price too high and St Lo's agreement to pay in ready money ran contrary to the policy of payment in course. The Board refused to confirm the agreement and managed to renegotiate with the contractors for some modification of terms.

St Lo then asked the Navy Board to lay before the Lord High Admiral a report concerning abuses on the entering of servants and others in the Yard at Chatham. On 5th February

1 When ships came into port to pay off the Commissioner was expected to see the ship's company mustered and paid in person. In 1781 the Commissioner of Portsmouth was reprimanded by the Navy Board for sending the Master Attendant to control the payment of the Lion

2 see chapter 3 on Dockyardmen

3 see Master Attendants chapter 9



## ADMINISTRATION OF CHATHAM DOCKYARD

1704/5, the Lord High Admiral directed the Navy Board to suspend the Master Shipwright and the Chyrurgeon and to report on the matter. The Master Shipwright, Robert Shortis, was superannuated in 1705.

St Lo disapproved of the running of the Chatham Chest Charity: this led to a dispute between Mr Pitts, the Master Attendant and Mr Billingsley in 1705. The Commissioner was ordered by the Lord High Admiral to leave the direction of the Chest to the Governors who were entrusted with it by Charter. However, St Lo still watched the administration of the Chest. An Admiralty Letter dated 21st June 1708 stated:

*Touching the expenses of the Governors of the Chest at Chatham and in answer therefore I am to acquaint you that his Royal Highness approves of your recommending what you propose to the supervisor and governors when they meet for their regulating that matter either to 10s each or dinners not exceeding £5.*

In 1707 St Lo ordered the gallery over the south aisle of St Mary's Church, Chatham, to be built for the use of the Navy and the Ordinary.

In the period 1712 to 1714 St Lo acted as Commander-in-Chief of the Nore; an instance where Commissioners who were naval officers were given military authority. (See section on Commanders-in-Chief)

St Lo's name was omitted from the New Patent for the Navy Board issued after the accession of George I in 1714. He died in September 1718 and was buried at Northfleet. There is a floor memorial stone in Northfleet Church recording his death and family.

### 1714-1722 VICE-ADMIRAL J LITTLETON

Littleton who was appointed captain in 1693 followed St Lo at Chatham. A year after taking office the country was threatened by a rebellion headed by the Old Pretender.<sup>1</sup> Littleton was appointed Colonel of the Chatham Dockyard Regiment and also Commander-in-Chief of the Nore in the absence of a Flag Officer; a further instance where a Commissioner holding a civilian post was given military authority.

In January 1715/16, the Navy Board was instructed:

*to sell the Cleveland and Isabella Yachts and to set another to attend the Commissioner in Chatham in room of St Lo of about 60 tons burthen.*

On 1st February 1716/17, Commissioner Littleton was given Flag rank as Rear-Admiral of the Red. On the 14th of the same month Sir George Byng was ordered to repair to Chatham to hasten the fitting out of the ships so that they may best oppose any attempt on the ships in the Medway and magazine there. There were fears of invasion by Sweden and Swedish ships had been sighted near Yarmouth Sands; Admiralty had no desire for a repetition of an attack on the Fleet in the Medway. Littleton was instructed that Sir George Byng would be at Chatham on the next day and that he being one of the Flags appointed to go to sea with him might hoist his flag on any 3rd rate in the Medway. On 11th April the Admiralty ordered the Navy Board:

*to have some direction about taking care of Chatham Yard in the absence of Commissioner Littleton . . .*

Littleton was promoted Vice-Admiral of the Blue on 24th March 1718; he died in March 1722. It is interesting to note that by becoming a Commissioner, a Captain did not forfeit all chances of promotion to Flag rank; he merely diminished them.

<sup>1</sup> Details of the Dockyard Defence Force created for this emergency is given in chapter 15 on the internal security of the Yard.

## ADMINISTRATION OF CHATHAM DOCKYARD

### 1722-36 CAPTAIN THOMAS KEMPTHORNE

Kemphthorne was appointed Captain in 1704 and followed Littleton in 1722. Kemphthorne Street in Gravesend, is named after his daughter who became the wife of John Wakefield and to whose memory a table tomb with an epitaph in verse once stood at the south-west corner of St George's Churchyard. John Wakefield's name is perpetuated in Wakefield Street, Gravesend.

### 1737-1742 CAPTAIN THOMAS MATTHEWS

Matthews was appointed Captain in 1703 and followed Kemphthorne in 1737. He had an unhappy time at Chatham during the industrial troubles of 1739.<sup>1</sup>

Although he held a civilian appointment Matthews was restored to his former position on the Seniority List of Captains in 1742 and promoted Vice-Admiral of the Red, he never held the rank of Rear-Admiral. He was appointed Commander-in-Chief in the Mediterranean with his old rival Rear-Admiral Lestock<sup>2</sup> under his command. Matthews was ordered to blockade Toulon to prevent the passage of troops from France and Spain to Italy. the combined Franco-Spanish Fleet was ordered to leave Toulon and clear the route and were engaged by Admiral Matthews. Though he did not decisively beat the enemy, Matthews put them to flight and succeeded in getting back to Toulon before an enemy transport could emerge. He was subsequently accused of bringing about a battle without staying to order and dress his line and of engaging the enemy in a half-hearted fashion; he was ordered to be court-martialled.

Admirals Matthews and Lestock and other prisoners awaiting trial for their conduct in the action off Toulon in February 1744 were interned within the walls of Chatham Dockyard and not allowed outside them. The courts-martial of the officers started on board the **London** at Chatham on 23rd September 1745 under the presidency of Sir Chaloner Ogle, Vice-Admiral of the Blue. There was a strong feeling in the town in Matthew's favour and riots were feared; Admiralty decided to shift the place of trial to Deptford. Matthews was found guilty on both counts and dismissed the service. Lestock was acquitted of the charge of refusing to obey his superior, Admiral Matthews, in action. Matthews died in 1751.

### 1742-1753 CAPTAIN CHARLES BROWN

Brown was appointed Captain in 1709 and followed Matthews at Chatham in 1742. He died in office in 1753.

In Addington churchyard there is an obelisk erected in memory of Captain Locker RN and his wife. From the inscription it appears that the daughter of Charles Brown, commissioner at Chatham, married Admiral William Parry who resided at St Vincents. Their only daughter married Captain William Licker, Lieut-Governor of Greenwich Hospital.

No successor was appointed after the death of Commissioner Brown : the duty was performed in the meantime by Richard Hall, Comptroller of Treasurer's Accounts, who was detached from the Board for this purpose.

1 See chapter 3 on Dockyardmen

2 Lestock was appointed Captain of the Somerset, a guardship in the Medway in 1734 and turned over to the Grafton on similar service in 1738. Mathews was the Commissioner at Chatham at this time and the relationship between these two officers was not friendly. Lestock was further embittered when, in 1742 Mathews was appointed Vice-Admiral of the Red

## ADMINISTRATION OF CHATHAM DOCKYARD

### 1754-1755 CAPTAIN ARTHUR SCOTT

Scott was appointed Captain in 1743. After serving at Chatham for just over a year he was removed to the Navy Board as an Extra Commissioner. He died in 1756 aged 38.

### 1755-1761 CAPTAIN THOMAS COOPER

Cooper was appointed Captain in 1738. He served as Commissioner of Victualling from 1752 and as an Extra Commissioner of the Navy from 1755. He was transferred to Chatham in the November of that year. During his term of office at Chatham the keel of the **Victory** was laid down in No 2 Dock. He was superannuated in January 1761 for ill-health after an absence of four months; he retired to Bath. During his sickness, his duty was performed by George Adams, the comptroller of Storekeepers Accounts, who was detached from the Board for this purpose.

### 1761-1771 CAPTAIN THOMAS HANWAY

Hanway was appointed Captain in 1744 and in 1747 commanded the **Windsor**, both in Anson's and Hawke's successful actions.

He is thought to be the author of *The Naval Repository or Young Seamen's Best Instructor* published in 1762. This book was dedicated to the Rt Hon Robert Lord Romney, Chairman of the Marine Society. In the book he wrote:

*The chief end of my design is for the instruction of such, whose Inclination may lead them to Marine Employ, and particularly those who enjoy the happiness of your Lordship's patronage.*

Hanway's brother, Jonas Hanway, was the founder of Marine Society and the pioneer of the umbrella.<sup>1</sup> The Marine Society was founded in 1756 to enable boys of good character to go to sea by contributing towards the cost of their pre-sea training or by outfits of clothing on going to sea. Thomas Hanway was a member of the committee of this Society until his death in 1772.

From his correspondence it would appear that Commissioner Hanway was fairly pain-staking in his work. He furnished the Commissioner's Yacht in a remarkably lavish style; he had grave doubts about the soundness of his house in the Dockyard which he thought was badly built. Two hundred years later this house is still standing.

Hannay left the Yard in October 1771 and became Comptroller of Victualling Accounts, exchanging posts with Captain Charles Proby.

### 1771-1799 CAPTAIN CHARLES PROBY

Charles Proby, the brother of the first Lord Carysfort, was appointed Captain in 1747. He became Comptroller of Victualling Accounts in June 1771 and exchanged posts with Hanway in October of the same year. He died in office at Chatham in 1799.

Captain Charles Proby was appointed in 1760 Captain of HMS **Thunderer**, a 3rd-rate, 74 guns. In 1761 he was in action in the strait of Gibraltar engaging two French ships of war and a merchant ship under Spanish colours. He captured **L'Achille** of 62 guns.

In St Mary's Church, Chatham, there are memorials to Sarah Proby, his wife, who died in 1794; Charles Proby Cunningham (his grandson) who died in 1822 and to:

*...Commissioner Charles Proby, died 31st March 1799 aged 74. He served the military and civil departments of the Navy 59 years.*

<sup>1</sup> Their father was the Agent Victualler at Portsmouth

## ADMINISTRATION OF CHATHAM DOCKYARD

Proby's daughter married Rear-Admiral Chichagov in 1799. Chichagov who became Russian Minister of Marine in 1805 was with the Russian squadron accompanying Admiral Duncan's North Sea Fleet. Captain Francis Hartwell, a Commissioner of Victualling, Proby's successor, investigated complaints that Russian ships victualled by the Navy Board in 1796 had sold bread, flour and brandy to Mordecai Usher of Rochester. These stores were ferried from the Russian ships by Sheerness wherries. It was apparently a common practice to supplement the sailors pay in this manner and the victualling Board had to accept this practice in dealing with the Russians.

Until 1796 the Commissioner at Chatham was responsible for Sheerness Yard; from that date Sheerness had its own Resident Commissioner.

### 1799-1801 CAPTAIN FRANCIS JOHN HARTWELL

Hartwell was appointed Captain in 1769 and was made Commissioner of Victualling in 1793. He was the first Resident Commissioner at Sheerness appointed in 1796 and held this post during the Nore Mutiny. In 1799 he came to Chatham and two years later joined the Navy Board in London. He was knighted in 1803, created a Baronet in 1805, and retired in 1814. He died in 1831.

### 1801-1808 CAPTAIN CHARLES HOPE

He was appointed Captain in 1777 and in 1794 joined the Navy Board as an Extra Commissioner. He was appointed Deputy-Comptroller of the Navy in 1796 and was transferred to Chatham in 1801. He died in September 1808 whilst on a visit to Edinburgh.

The pay of the Commissioner at Chatham was increased to £1,000 per year from the beginning of the 19th century:

1st October 1794	1st July 1796	1st June 1801
£500	£800	£1,000

The Commissioner was affected by the changes of 1801. As was the case with his Yard Officers he lost his perquisites and allowances. Former sea officer lost their allowance of half-pay. He was deprived of his rent allowance and allowances for coals and candles.

The Portsmouth Commissioner continued to be granted £100 for acting as principal to the Naval Academy in the Yard. Those on business had a guinea a day subsistence and 1s 6d a mile for transport.

The Commission of Revision issued orders for the revision of regulations for the running of the Navy Departments. By December 1806 the Yard Commissioner and Principal and Inferior Officers were issued with instructions which remained the basis of Yard Management until the mid-19th century.

### 1808-1823 CAPTAIN SIR ROBERT BARLOW

He was appointed Captain in 1793 and in 1806 joined the Navy Board as Deputy-Comptroller of the Navy. He retired owing to ill-health from the post at Chatham as a Rear-Admiral in 1823, having been created KCB in 1820. In 1840 he was restored to the Active List with the rank of Admiral.

During his terms of office the authority of the Commissioner was strengthened. From 1822 correspondence with the Yard was addressed solely to the Commissioner who issued all orders to the officers. All reports had to be made to the Commissioner who alone corresponded with the Navy Board. The Commissioners became more directly concerned with the management and operation of the Yard.

## ADMINISTRATION OF CHATHAM DOCKYARD

He was given the Freedom of Rochester in 1820 and there was a bust of him in Rochester Museum. In Gillingham Parish Church there is a memorial to Admiral Sir Robert Barlow, KGCB who died 11th May 1843, aged 86 years. A letter from his Principal Officers is given on the facing page.

### 1823-1829 CAPTAIN CHARLES CUNNINGHAM

Cunningham was appointed Captain in 1793 and was Captain of the Clyde during the Nore Mutiny of which he wrote an account. From 1806-1823 he superintended both the Woolwich and Deptford Yards (there had been no Commissioner at these Yards since 1749). He was appointed to Chatham in 1823. He retired with the rank of Rear-Admiral and was the last Resident Commissioner at Chatham. He was created KHO<sup>1</sup> in 1832 and died in 1834.

After the retirement of Captain Cunningham, Chatham Yard was placed under the inspection of Captain John Mason Lewis, the Resident Commissioner at Sheerness, until December 1831 when Captain Bullen was appointed Superintendent of Chatham Yard. Captain Lewis's duties as Resident Commissioner were then confined to Sheerness until 1832, when his office was abolished. During the interval when there was no Resident Commissioner at Chatham the Master Shipwright and other Principal Officers corresponded directly with the Navy Board.

### Superintendents

#### 1831-June 1832 CAPTAIN CHARLES BULLEN, CB

Bullen was appointed Captain in 1802. The terms of his appointment were:

*My Lords of the Admiralty in appointing Captain Bullen to the new office of Superintendent of Chatham Yard invest him with the same power and authority as a Resident Commissioner, except in such matters as were required by Act of Parliament to be done by a Commissioner of the Navy . . .*

A similar step was taken about the same time at Woolwich but the other Yards were still administered by Resident Commissioners.

On the 1st of June 1832 the Act II Will 4 cap XL came into force by which the Navy Board was abolished. The responsibilities of the Board were transferred to the Board of Admiralty and the Resident Commissioners at various Yards were replaced by Superintendents having the same authority. There were disadvantages in the lack of military authority on the part of the Commissioners whose office was a civil one. Admiralty was authorised by Order In Council dated 27th June 1832 to place the Superintendents of the Yard in Commission whenever they might think it desirable to do so. The normal period of duty in the Dockyard was five years.

In June 1832 Bullen was appointed the first Captain-Superintendent of Pembroke Yard. He was awarded the KCB in 1839 and reached the rank of Admiral in 1852. He died in 1853.

#### June 1832-1837 CAPTAIN SIR J A GORDON KCB

Gordon was appointed Captain-Superintendent of Chatham and Sheerness. After 1834 Captain Kennedy was appointed to Sheerness Yard. Gordon left the post at Chatham in 1837 with the rank of Rear-Admiral. By the end of his naval career he was Admiral of the Fleet and had held the post of Governor of Greenwich Hospital. He died in 1869.

1 KHO Knight Commander of the Royal Hanoverian Guelphic Order

## ADMINISTRATION OF CHATHAM DOCKYARD

To Sir Robert Barlow,  
Commissioner of His Majesty's Dockyard,  
His Majesty's Dockyard, Chatham,  
Chatham Yard, 11th December 1812.

Sir,

We beg leave to represent to you that your Minute of the 26th of October last, forbidding Stage Coaches to enter the Yard, is already found from experience to be attended with many inconveniences to our Families, Ourselves and Friends. We had hoped from the conversation which passed in your Office on this subject sometime ago (since which a Warden or trusty person from the Gate has attended them within the premises) that you should not have thought it expedient to adopt such a Measure, depriving thereby, many Individuals of an accommodation which not only themselves but their predecessors had ever enjoyed until the period before mentioned, more especially as we do not understand it has ever been attended with any injury to His Majesty's service.

Placed as we are, and of necessity from our situations must be in lodgings, which are some distance from the entrance to the Gate, we are now precluded the convenience of being taken up or put down at our Dwellings, a comfort which may be enjoyed by the lowest Individual living without the Yard. To enumerate the many unpleasant circumstances arising from this prohibition would be taking up unnecessarily your time, persuading ourselves, that upon reflection they will very strongly appear to you.

As Principal Officers of the Yard and some of us many years in the Service, we feel that we should not forget our duty, and be responsible, were we to ask a continuance or renewal of anything which had been detrimental to the Public, or impeded the Service, neither can we be indifferent to the Opinions and Observations of the people in the Neighbourhood who may think that something improper must have occurred (probably reflecting on the present Inhabitants within the Yard) or else so strong a measure and deprivation would not now have been resorted to after an indulgence of so many years.

We therefore request you will be pleased to take our situations and this representation into consideration and remain with our respect.

Sir,

Your most obedient and humble servants,

Signed by:	R A Seppings	(1)	S Henmans	(4)
	G Palliser	(2)	W S Cooper	(5)
	S Duncan	(3)	J Nobbs	(6)
			J White	(7)

- (1) Master Shipwright
- (2) Clerk of the Checque
- (3) Second Master Attendant
- (4) First Master Attendant
- (5) Storekeeper
- (6) Clerk of Survey
- (7) Surgeon

## ADMINISTRATION OF CHATHAM DOCKYARD

### SUPERINTENDENTS OF THE DOCKYARD

- 1837-1841 Captain John Clavell
- 1841-1846 Captain William Henry Shirref. He was Admiral Superintendent at Portsmouth in 1847
- 1846-1849 Captain Sir Thomas Bouchier, KCB. A tablet to his memory was placed in Chatham Dockyard Church
- 1849-1854 Captain Sir Peter Richards, KCB. Appointed Lord Commissioner of the Admiralty in 1854
- 1854-1856 Captain Christopher Wyvill
- 1856-1861 Captain George Goldsmith, CB
- 1861-1863 Captain Edward Gennys Fanshawe, CB. He was Lord Commissioner of the Admiralty 1865-1866
- 1863-1868 Captain William Houston Stewart, CB. Admiral-Superintendent Devonport 1870; Admiral Superintendent Portsmouth 1871; Controller of the Navy 1872; 1881 Commander-in-Chief, Devonport
- 1868-1874 Captain William G Chamberlain
- 1874-1879 Captain Charles Fellows, CB. In 1876 he was promoted to Rear-Admiral and re-appointed, it having been decided that a Flag Officer should be the Admiral-Superintendent of this important Yard
- 1879-1881 Rear-Admiral Thomas Brandreth. 1881, Controller of the Navy and Lord Commissioner of Admiralty
- 1881-1886 Rear-Admiral George William Watson
- 1886-1887 Rear-Admiral William Codrington, CB. Superintendent of Sheerness Dockyard from 1883-1885. Lord of the Admiralty 1885-1886
- 1887-1892 Rear-Admiral Edward Kelly. Superintendent of Pembroke Yard 1886-1887. There is a memorial in the form of a wall brass tablet on north wall of Rochester Cathedral nave:  
*In memory of Edward Kelly, late Admiral Superintendent of HM Dockyard, Chatham. Born April 1836, Died January 16 1892. His work was done In Singleness of Heart fearing God.*  
He was buried in the Cathedral Cemetery, Borstal Road, Rochester. After the decease of Admiral Kelly, the period of superintendence was reduced from five to three years.
- 1892-1895 Rear-Admiral George Digby Morant. Superintendent of Pembroke Yard
- 1895-1899 Rear-Admiral Hilary G Andoe, CB. Captain of Dockyard Reserve, Chatham 1890-3. Extension of office for one year.
- 1899-1902 Rear-Admiral Swinton C Holland. Memorial to him in Chichester Cathedral
- 1902-1905 Rear-Admiral Robert William Craigie. Promoted to Vice-Admiral February 1905.

## ADMINISTRATION OF CHATHAM DOCKYARD

### SUPERINTENDENTS OF THE DOCKYARD continued

1905-1907	Rear-Admiral Alvin Coote Corry. Buried in Chatham Cemetery <sup>1</sup>
1907-1909	Vice-Admiral George Augustus Giffard
1909-1912	Rear-Admiral Robert Nelson Ommaney
1912-1915	Rear-Admiral Charles Eustace Anson, MVO
1915-1919	Vice-Admiral Arthur David Ricardo, CB
1919-1920	Rear-Admiral Sir William E Goodenough, KCB, MVO. Appointed C-in-C Africa
1920-1921	Rear-Admiral Lewis Clinton-Baker, CB, CBE. Appointed C-in-C East India Station
1921-1923	Rear-Admiral Edward B Kiddle, CB
1923-1925	Rear-Admiral Percy M R Royds, CB, CMG
1925-1927	Rear-Admiral G F Beatty-Pownall, CMG
1927-1930	Vice-Admiral A J B Stirling, CB
1931-1935	Rear-Admiral Charles W Round-Turner, CB, CMG
1935-1942	Vice-Admiral Sir Clinton F S Danby, KBE, CB
1942-1946	Vice-Admiral John G Crace
1946-1950	Vice-Admiral G B Middleton, CB, CBE
1950-1954	Vice-Admiral Sir A E Poland, KBE, CB, DSO
1954-1958	Rear-Admiral G V M Dolphin, CB, DSO
1958-1961	Rear-Admiral J Y Thompson, CB
1961-1963	Vice-Admiral I W T Beloe, CB, DSC.

In April 1961 the post of Flag Officer Medway was combined with that of the Admiral Superintendent in charge of Chatham Dockyard when Chatham was down-graded from the Headquarters of Nore Command to Medway Sub-Command. He was responsible to the C-in-C Portsmouth Command. His house was renamed Medway House. Admiral Beloe was promoted Vice-Admiral in 1963; he finished his career as NATO Deputy Supreme Allied Commander, Atlantic.

1963-1966	Vice-Admiral I L T Hogg, CB, DSC. Appointed Defence Services Secretary
1966-1969	Vice-Admiral J Parker, CB, OBE, DSC. 1967 Promoted from Rear-Admiral to Vice-Admiral. Knighted and appointed Deputy Director of the Incorporated Society of British Advertisers.
1969-1972	Rear-Admiral F C W Lawson, DSC, bar, MI Mech E.

<sup>1</sup> In front of his grave is a superior looking memorial to his Secretary. Christopher Robert Sayers and his family



## ADMINISTRATION OF CHATHAM DOCKYARD

In September 1971 the title of Admiral Superintendent in all Home Dockyards was replaced by that of Port Admiral. Rear-Admiral Lawson was titled Flag Officer Medway and Port Admiral, Chatham. On leaving Chatham in 1972 Rear-Admiral Lawson, former ADC to the Queen, was appointed Chief Executive of all the Royal Dockyards succeeding Mr Leslie Norfolk. <sup>1</sup>

The pay and allowances of the Captain Superintendent about 1870 was about £1250 a year made up of:

Sea Pay	£600
Command Money	£91
Allowance in lieu of provisions	£27
-do- fuel & light	£13
Civil Allowance	£517

In addition, the Retinue allowed: Three domestics £87  
 Allowance in lieu of provisions to these @ 1s 6d a day each £82

In later estimates the retinue allowance was modified to:

Coxswain to the Captain Superintendent	£67
Allowance	£125

After the rank of Superintendent was raised to Admiral in 1876 the pay and allowances were:

Sea Pay and allowance as Rear Admiral	£1095
Table Money	£548
Allowance in lieu of provisions	£27
Allowance in lieu of fuel & light	£13
	£1683

Allowance to A/S in lieu of servants	£200
Coxswain	£67
Allowance for provisions @ 1s 6d a day <span style="margin-left: 20px;">27</span>	£94

The superintendents were recruited from Executive Officers until the 1960's when the distinction between the branches of the Naval Service were abolished apart from the Medical Branch.

The heads of the various departments of the Yard, Master shipwright, Master Attendant, Clerk of Checque, Storekeeper, Clerk of the Survey, were responsible collectively for running the Yard.

The earnings of officers at Chatham Yard at beginning of 19th century.

	<i>Basic salary to 1801</i>	<i>Salaries from 1 July 1801</i>	<i>Salaries from 1 October 1806</i>
Master Shipwright	£200	£720 (650)	£720 (650)
1st Master Attendant	£200	£480	£650
2nd Master Attendant	£200	£480	£500
Clerk of the Checque	£200	£600	£600
Storekeeper	£200	£480	£600
Clerk of the Survey	£200	£420	£500
Clerk of the Ropeyard	£100	£300	£350

<sup>1</sup> See Administration of Navy chapter 23

## ADMINISTRATION OF CHATHAM DOCKYARD

	<i>Basic salary to 1801</i>	<i>Salaries from 1 July 1801</i>	<i>Salaries from 1 October 1806</i>
Assistants to Master Shipwright	£100	£360	£400
Master Smith	£100	£240	£260
Master Ropemaker	£100	£250	£250
Master Joiner	£100	£240	£250
Master House Carpenter	£100	£240	£250
Master Boatbuilder	£100	£240	£250
Master Mastmaker	£100	£240	£250
Master Sailmaker	£100	£240	£250
Master Bricklayer	£100	£240	£250
Surgeon	£100	£360	£500
Timber Master	£100	£360	£500

From The Royal dockyards during the Revolutionary and Napoleonic Wars by Roger Morriss

On 31 October Sir Robert Barlow, Kt, the Commissioner announced the scheme of salaries to commence 30 September 1808. (Order in Council 14 September 1808). The salaries of officers and clerks would in future be paid by bills made out quarterly at the Navy Office.

Their titles changed over the years and additional departments were formed with the alteration in the methods of construction and propulsion of warships. The heads of department were termed Principal Officers; these were assisted by Superior and Subordinate officers. <sup>1</sup>

### LIST OF OFFICERS OF THE YARD

<i>1900</i>	<i>1906 (Production side only)</i>
Staff Captain	Captain of Dockyard
Chief Constructor	Manager, Constructive Dept
Chief Engineer	Manager, Engineering Dept
Senior Officer i/c Works (SCE)	Electrical Engineer
Assistant Staff Captain	Chemist
Naval Store Officer	
Officer i/c Expense Accounts (according to seniority and Cashier in either case)	
Principal Medical Officer	
Secretary	

<i>Superior Officers 1900</i>	<i>Superior Officers 1906</i>
Constructors	Constructors and Assistant Constructors
Electrician	Assistant to MED
Assistant to Chief Engineer	1st AEE
Assistant Medical Officer	Surveyor of Stores
Civil Engineer or ACE 1st Grade	Assistant Admiralty Chemist
Assistant Constructor, 1st Class	
Surveyor Stores	
Admiralty Chemist	

<sup>1</sup> At the beginning of the 19th century the principal officers of the Yard were classed as Superior Officers and the others, Masters, Foremen etc as inferior Officers

## ADMINISTRATION OF CHATHAM DOCKYARD

### *Subordinate Officers*

Assistant Constructors, 2nd & 3rd class  
Foremen, Masters of Trades  
Assistant Admiralty Chemist  
Boatswain of Yard  
Principal Writers  
Inspectors of Trades  
Inspectors of Trades

### *Subordinate Officers*

Foreman of Yard  
Foremen of Trades  
Master Smith  
2nd AEE  
Master Rigger \*  
Boatswain of Yard

\*When this post is held by Lieut RN to be classed as Superior Officer

There were sharp social divisions between the classes as shown by the example below:  
(See also Dockyard workmen)

### 14 April 1896 Use of Pavements

*The Pavement is reserved for the use of Officers (which includes all salaried Officers), Women and Children, Leading Men, Writers, Draughtsmen, Chargemen, Measurers, Recorders and Timekeepers.*

### 30 May 1896

Admiral Superintendent Andoe countermanded the order issued with reference to Dockyard paths

### **Civil Assistant & Director of Dockyards**

In the period 1885/7 several Committees were set up by Lord George Hamilton to enquire into Admiralty and Dockyard Administration. Among their recommendations was the appointment of a new officer of Chief Constructor rank at Portsmouth, Chatham and Devonport Dockyards to be called the Civil Assistant. The proposal was adopted and this officer, the General Manager of the Civil section of the Dockyard, was to assist the Admiral Superintendent in the general administration of the Yard, including the distribution and supervision of labour and the inspection of work in progress. The salary for the post was £1,000 per year and it was hoped that by effecting economies in the working of the Yard, this would be saved.

R Barnaby was transferred from Portsmouth to Chatham to be the first to take up the post of Civil Assistant at Chatham in March 1886. J G Wildish, an ex-Chatham apprentice, was appointed from Portsmouth to fill this post in July 1895. He was succeeded in September 1902 by J A Yates who held the office until its abolition in 1906.<sup>1</sup>

At the same time as the creation of the post of Civil Assistant the office of Director of Dockyards was created. This Officer was responsible to the Board of Admiralty for all departments concerned with ship repair, ship building, etc in the Royal Yards; he carried out the duties of the Surveyor. The post was initially regarded as a civilian post held by a Naval Architect but eventually others, including Naval Officers were appointed to this office. The first holder of the post was Francis Elgar, ex-Portsmouth apprentice, who

<sup>1</sup> The details of Yate's career is given in chapter 5 on the Constructive Department

## ADMINISTRATION OF CHATHAM DOCKYARD

was the first Professor of Naval Architecture at Glasgow University. He held the chair from 1883-1886 when he was appointed Director of Dockyards, a post he resigned in 1892. <sup>1</sup>

No sooner had the Civil Assistants been appointed when moves were afoot to abolish this office. In 1888, among the proposals put forward at the Inquiry in Naval Administration (Constructive Department) were the abolition of the post of Civil Assistant to the Admiral Superintendent, the Staff Captain and Queen's Harbour Master, and the Chief Boatswain, etc. It was estimated that a saving would be effected of £800 to £2,000 at each Yard.

Admiral Lord Fisher's Naval Establishments Committee proposed, in 1905, a number of reforms, among which the following were subsequently implemented; the abolition of the post of Civil Assistant, and the constitution of the heads of the Constructive and Engineering departments as Managers of these Departments, with effective and authoritative control over the work people comparable with managers of private ship building <sup>2</sup> yards, the reduction in the number of employees in the dockyards <sup>3</sup> and more frequent visitations by the Director of Dockyards to the individual Royal Yards.

### The Dockyard Organisation after 1906

The Director of Dockyards as before mentioned was responsible to the Board of Admiralty for the departments concerned with ship repair, shipbuilding, etc in the Dockyards. There were others who were responsible to the Board for activities in the Yard such as Civil Engineering, Naval Stores, Expense Accounts, etc. There were also branches of the Admiralty Secretariat concerned with administrative details such as conditions of service, the appointment of officers and non-industrial workers, etc.

In the Dockyard itself the Superintendent was responsible for the direction and co-ordination of all Dockyard departments, but this did not preclude the Heads of these Departments from maintaining direct contact with the parent Departments.

The organisation that existed prior to the changes in 1958 were:

AS	Superintendent (Vice or Rear-Admiral) assisted by his Secretary (civilian)
CD	Captain of Dockyard, Deputy to the Superintendent, Captain, RN
MCD	Manager of Constructive Department
MED	Manager of Engineering Department, Captain, RN or Rear-Admiral
EEM	Manager of Electrical Engineering Department
SCE	Superintending Civil Engineer
SNSO	Superintending Naval Stores Officer
C	Cashier
EAC	Expense Accounts Officer
SMO	Senior Medical Officer, Surgeon Commander, RN
PDTC	Headmaster of Dockyard School (later Principal of Dockyard Technical College)
CH	Chaplain
ACC	Superintendent of Police (later Superintendent of Constabulary and then Assistant Chief Constable)
	Surveyor of Stores
	Welfare and Safety Officers.

1 See chapter 23 on Administration of Navy

2 The Managers were given authority over the entry of men for their departments, but as a rule Admiralty sanction was required for the discharge of established men

3 See chapter 3 on Dockyardmen

## ADMINISTRATION OF CHATHAM DOCKYARD

The Admiral Superintendent would take the chair at Board Meetings at which the Heads of the Professional Department and others attended. Normally the Heads of Department such as PDTC would only attend if items on the agenda required their presence.

For many years, certainly before 1811<sup>1</sup> it was customary for the Principal Officers of the Yard to assemble in the office of the Superintendent of the Yard for the reading by the Superintendent of all orders and letters received from the Admiralty during the previous 24 hours. At Devonport, if not at Chatham, this practice ceased in 1906 and was replaced by a weekly meeting of the Superintendent and his Principal Officers.

In 1926, the Fighting Services Economy Committee under the chairmanship of Lord Colwyn was set up. The Dockyard or Biles Sub-Committee of the Colwyn Committee investigated the Royal Dockyards and their administration. The latter recommended that:

*Persons expert in the management of industrial organisations should be in charge of the Dockyards, both locally and at HQ.*

The Controller was antagonistic to the idea that the Director of Dockyards should be a civilian. Objections were also raised to the exclusion of naval engineers from the Royal Yards.

### Changes in the Dockyard organisation after the Second World War

The need for Dockyard reorganisation became apparent after the War, as ships entering the Fleet became more and more complex. The 1950 Select Committee on Estimates suggested that more planning should be undertaken in the Yards. The Nihill Committee investigated the Controllers Department<sup>2</sup> and the Marshall Committee, Dockyard organisation. Discussions were held within the Admiralty and among Dockyard specialists and visits were paid to the United States to see how the work was done there. Finally Vice-Admiral Sir Gordon Hubback, who had been Admiral Superintendent at Portsmouth and later, from 1954 to 1957, Director of Dockyards at the Admiralty, called a conference in 1956 on the future of the Dockyards. Based on the recommendations of the Marshall Report, it was agreed unanimously that if the effectiveness of the Royal Dockyards was to be increased and they were to operate economically their administration would have to be reorganised.

Under the old system the Managers and Heads of Department were directly responsible to the Superintendent. Managers of the Constructive, Engineering and Electrical Engineering Departments, carried out their own section of the work, with the Manager of the Constructive Department co-ordinating their efforts.

Chatham Yard was chosen for a pilot scheme and a civilian General Manager, Mr Perrett (initially designated Deputy Superintendent, Industrial) was appointed at Chatham in 1958. Under him in the final arrangement were five departments: Production, Planning, Personnel, Yard Services and Finance. The General Manager was directly responsible to the Superintendent for their activities; the Heads of the other Departments such as the Stores, the Police and the Dockyard Technical College together with the Chaplain and the Senior Medical Officer, remained directly responsible to the Superintendent. The Admiral-Superintendent was in overall charge of the organisation.<sup>3</sup>

1 See chapter 1 on development

2 By the end of World War 1 there were 14 to 16 departments of varying importance forming the Ship Department under the controller of the Navy. As a result of Judge Barclay Nihill's investigation, four Director-Generals were established in charge of Ships, Weapons, Dockyard Maintenance and Naval Aircraft respectively

3 See Bentham's management proposals in chapter 8 on Civil Engineering

## ADMINISTRATION OF CHATHAM DOCKYARD

The General Manager held weekly progress meetings with the Managers of his Department. On alternate weeks the General Managers Meeting was immediately preceded by the Admiral-Superintendent's Board Meeting which was attended by all Dockyard Officers mentioned in the preceding paragraph, together with the Managers of the General Managers Department. The Admiral normally attended the General Managers meeting after the Board Meeting to familiarise himself with the work in the Yard.

The Production Department comprised the production sides of the old Constructive, Engineering and Electrical Engineering Departments together with a Central Division which handled the general administration of the Production Department. Each Division of the Department, Constructive, Engineering and Electrical, was divided into a number of trades under a Trademaster. In the Constructive Division there were five Trademasters dealing with the following groups: Shipwrights afloat, Miscellaneous Trades Afloat, Submarines, Shipwrights and Shipwrights in Shops and Miscellaneous Trades in shops such as joiners, smiths, etc. Supervising the groups were Foremen, Inspectors and Chargemen.

The Planning Department, concerned with design, planning and estimating, was concerned with the Yard programmes a year or two ahead and included the Design Division combining the three old departmental drawing offices.

The Personnel Department combined the work previously undertaken by the various departments in connection with the recruitment of employees and their training, welfare and safety. Before the creation of the Personnel Department a Regional Welfare Officer looked after the interests of the non-industrial staff, the Dockyard Welfare Officer the industrial staff. In 1964, the Yard Industrial Welfare Officer became responsible to the Personnel Manager: in 1967, certain modifications were made to the Civilian Welfare Service and the Yard Industrial Welfare Officer was renamed Yard Welfare Officer and assumed responsibilities for all employees, both industrial and non-industrial.

The Yard Services Department was formed in 1961 by merging the Electrical and Mechanical portions of the old Yard Machinery Sections with the respective drawing office sections and a small part of the Constructive Department. It was hoped to give a more reliable and efficient service for those engaged in shipbuilding and ship repairing in the matter of power supplies, machine tools and equipment and Dockyard facilities. It provided a link with the Ministry of Public Building Work for all works matters. The activities of the Boatswain of the Yard formed part of the utility section of the Yard Services Department. His men were responsible for cleaning the Yard, including road clearance and the removal of scrap from working areas of the dockside and basins, etc.

The Finance Department combined the departments of the Cashier and the Expense Accounts Officers and was responsible for the payroll, accounts, the machines used in the Department, and the recording of work. The Finance Manager owed allegiance both to the General Manager and the Admiralty carrying out an Audit function for the latter.

The carrying out of a refit was undertaken by four types of main grade officers: the Project Planning Officer of the Planning Department who decided the work to be undertaken; the Scheduling Officers of the Control Division who produced the plan for the refit, the Trademasters who carried out their sections of the work; and the Ship Superintendent of the control Division who co-ordinated the whole of the work done on the ship.

The Estimates Committee in the session 1961/2 recommended that suitably qualified naval officers should be recruited to the senior professional posts in the Dockyards. This was implemented and naval officers held managerial posts in the new organisation. Captain Haynes, RN was the first Personnel Manager at Chatham Yard. <sup>1</sup>The Production,

<sup>1</sup> See chapter 4 on Apprentices

## ADMINISTRATION OF CHATHAM DOCKYARD

Planning and Personnel Manager posts were termed functional posts and could be filled by constructive, electrical or engineer officers. <sup>1</sup> Later other groups came under the General Manager, the HQ Audit Group, the Manager, Organisation & Review, and the Nuclear Power Manager.

*General Managers*      1958      W H Perrett, MINA  
                                 1960      F S Sutherby  
                                 1970-3   W R N Hughes

### Secretaries to the Captain (later the Admiral) Superintendent

The Superintendent of the Yard had always been provided with clerical assistance. In the 17th Century the office staff appears to have been of little importance, but as the Yard grew and its organisation became more complex the Superintendent became more and more dependent upon his Principal Clerk for information and advice about the Yard and its personnel. This particularly became the case after 1832 when the post of Superintendent became one of the last steps in the career of distinguished naval officers.

William Donald, the Secretary to the Superintendent (1864-1878) was provided with a house in the Terrace. There were changes in the Admiral's Office in 1898 when the Secretary, J. Davison, was transferred to Sheerness as Deputy Naval Stores Officer at the same salary, but no house was provided. There were other alterations made to the staff of the Superintendent's Office, civilian writers being replaced by pensioner clerks (ex-service men).<sup>2</sup>

In the 20th century the post of Admiral's Secretary has been frequently filled by Cashiers of the Yard, officers skilled in the interpretation of regulations.

Up to the changes in the Yard organisation of the 1960's the duties and responsibilities of the Secretary, a Principal Officer, were:

- 1) Secretary to the Admiral Superintendent
- 2) Adviser to the Superintendent on all matters normally dealt with by the latter.
- 3) Adviser on regulations and establishment codes.
- 4) Normally to act as the Secretary of the Official & Management sides of the Yard Industrial and District Admiralty Whitley Committees.
- 5) Ensure that the views of the Cashier were made known to the Superintendent as required.

### SECRETARIES

1823	James Reed	(in office 1829) (First Class Clerk 1826)
1838	Thomas Sutton Vinall	(in office c 1847)
1855	Charles Slade	(See Finance )
1864	William Donald	Salary £315-450
1878	C G Morgan	Accountant 1881-1886

<sup>1</sup> The labour force at Chatham at the time of the change was of the order of 7,000. The planning staff was increased from about 600 to 900 and all were given special training courses. The old Dockyard School Building was taken over for Management Training Courses.

<sup>2</sup> Mt Tomkins an ex-Warrant Officer of the Royal Marines held the post of pensioner clerk in the Superintendent's office until after the end of the Second World War.

## ADMINISTRATION OF CHATHAM DOCKYARD

### SECRETARIES continued

1879	G H Salmon	Pensioned at £269 18s 4d a year
1886	E Besant	Salary £350-500
1888	E T Howard	Pensioned at £383 6s 8d a year
1897	J Davison	
1899	G Egan	
1902	C R Sayers <sup>1</sup>	
1915	A E Kimpton	
1918	B Jewell, OBE	
1921	G H C Smith, OBE	
1924	A E Ashton	
1928	C E Woolmer, OBE	Cashier 1920-1928
1935	E W Colvill	Cashier 1931-1935
1937	B Jewell, OBE	
1939	J K Dixon	Cashier 1935-1939
1946	E W C Corry	Cashier 1944
1946	C C Ellis	Cashier 1944-1946
1957	A Wrigley	
1960	R C Hurst	

<sup>1</sup> See footnote page 23



## DOCKYARDMEN

### General Introduction

The early development of Chatham Dockyard took place in the 16th century when Chatham and Gillingham were unimportant North Kent villages. The table taken from Peter Clark's Religion, Politics & Society in Kent, 1500 -1640 shows the composition of their inhabitants at this time.

Contours of Poverty 1598				
	<i>Impotent Poor</i>	<i>Respectable Poor</i>	<i>Destitute of Grain</i>	<i>Ratepayers</i>
Chatham	8	63	404	110
Gillingham	10	-	580	-

The impotent poor refers to those who needed constant parish relief, the lame, the blind and the aged. The respectable poor were those who in terms of high prices or heavy unemployment would be forced into destitution. Those under the heading destitute of grain were those who were slightly better off than the respectable poor but were unable to contribute towards parish relief; labourers, sailors and tradesmen, especially those with large families. The number of the poor was occasionally increased by the demobilisation of soldiers and sailors.

Some of the inhabitants of the Medway Towns were employed in agriculture, others earned their living by fishing or by serving in merchant ships, and others by the support trades, shipbuilding and ropemaking, building, baking, etc. There was a little work in the district for Shipwrights and allied craftsmen. A return dated 14 January 1628/9 enumerated vessels and seafarers.

Place	Ketches & Hoys	Seamen		Fishermen
		Master	Mariner	
Strood	6 2 of 24 tons	5	12	44
	3 of 20 tons			
	1 of 50 tons			
Chatham	2 2 of 30 tons	2	1	Nil
Gillingham	3 1 of 22 tons	3	6	30
	1 of 18 tons			
	1 of 20 tons			

As there was no large source of shipbuilding labour in the Medway Towns in the 16th century, the demand for a large number of workmen in Chatham Dockyard was met by impressing (conscripting) workers from London and the coast. In 1574 Shipwrights were prested from Weymouth, Poole, Shoreham, Portsmouth, Christchurch, Canterbury and London for work at Chatham.

At this period there was usually a charge in the Dockyard Accounts for presting Shipwrights and caulkers. Prest men were given an advance prest and were paid halfpenny a mile conduct money for the journey from their home to Chatham and back home

## DOCKYARDMEN

again when their services were no longer required. A few settled in the Medway district, but there was no fixed establishment for the workmen at this period.

1572: *for the prest and conduct of 450 men to be taken about London at 2s 6d a man, £56 8s*

The account shows that the wages for 500 men for six weeks came to £360; their victuals to £437 10s and that the cost of transporting their victuals from London to Gillingham was £20

1602: *for prestring 100 Shipwrights and caulkers at London and otherwise and sent to Chatham at 2s 4d per man, £11 13s 4d*

Sawyers, bricklayers and house carpenters, topmakers, pump makers, etc were all recruited when their services were required. The men so entered were paid wages and given board and lodging, and when the occasion for which they were required was over, they were sent home. Sometimes a board wage was paid instead of victualling.

Many men came from Limehouse, Rotherhithe and Deptford; a fact accounting for the accent of many today in the Medway Towns.

Extract from the 1577 account:

*Victualling and lodging of Shipwrights. Victualling at rate 4s and 5s per man per week, Lodging 2d per week*

In 1561 there is the first mention of a ropemaker:

*16s 4d for wages and victualling of Botolph Mungey giving his daily attendance in the providing of cables, ropes and other cordage*

Impressment of Shipwrights in peace time was carried out long after the Royal Dockyards were placed on a permanent footing. An Admiralty memorial to King and Council in 1677 stated:

*... As it also appears that neither the repair of HM Ships now in hand, nor the building of the 30 ships granted by Parliament can be carried out without a power of impressing carpenters, Shipwrights, caulkers, joiners and what workmen shall be needful and over what are already entertained in HM yards or can be expected to come voluntarily while they may be elsewhere employed by merchant builders at higher wages than what is already allowed by His Majesty*

(The warrant authorising impressment would be issued by Admiralty to the Navy Board)

In 1600 only 172 workmen were employed on the average through the year at Chatham, 36 at Woolwich and insignificant numbers at other yards. Workmen could be moved from one Yard to another, for example, for preparing for the launching of a ship. The Book of Lodging for the Midsummer Quarter 1611 (Chatham Extra) list 234 Shipwrights and caulkers including the Master Shipwrights, Matthew Baker, William Bright and Phineas Pett. The latter were paid 5d a week, and the remainder 2112d a week, lodging allowance. This list also included four house carpenters, seven topmakers and pumpmakers, three joiners, two carvers, 10 sawyers, two thatchers, two bricklayers and three pitch heaters, all paid 2112d a week lodging allowance.

In October 1628 there were 244 workmen at Chatham Yard, 101 Shipwrights, mastmakers, boatmakers, 48 caulkers, oakum boys and pitch heaters, 12 joiners, 7 carvers, 10 sawyers, 31 scavelmen\* and crane labourers, 5 sailmakers and 18 spinners, 9 hatchellers\* and 3labourers in the ropeyard. (\* See next page)

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\* Scavermen were Dockyard Labourers whose duty it was to clean out the docks and slips. The name, which disappeared after 1844, probably on the introduction of steam pumping machinery, was no doubt a survival from the time when the dock was formed of piling, wattles and clay, which was placed round the ship when she had been brought to the shore, across the mouth of the creek into which she had been hauled, and which had to be dug away in opening the dock. The word 'scavel' means shovel.

By the beginning of the 19th century there was a regular complement of subordinate officers under the Boatswain controlling Scavermen:

Foreman	£90
Leading Man superintending day work	Summer 3s 6d a day; winter 2s 9d a day. Extra 4d per hour
Leading Man superintending task work	Summer 4s a day; winter 3s 5d a day. Extra 5d per hour

There was a Leading Man to every 25 Scavermen

*Hatchellers* were workmen who combed and prepared hemp for rope manufacture.

### Hours and Wages

The hours of labour were, in theory, controlled by the Statute of Artificers, 5 Elizabeth c 4, 1563. The hours were roughly 12 per day in the summer, March to September and 7 to 7<sup>1</sup>/<sub>2</sub> hours winter, September to March, excluding meal breaks.

The same Act gave the Justices in Quarter Sessions power to fix the rate of wages of labourers and artificers. This Act was not repealed until 1813 but it had been suspended since the beginning of the 19th century when workmen used to prosecute employers for failing to observe the Statute which governed their wages and conditions of their trades.

The daily wage rates proclaimed at Maidstone on 23 September 1563:

	with victuals	without victuals
Chief Carpenter	7d	12d
His servant	4d (summer) 3d (winter)	7d (summer) 6d (winter)
Shipwright, the Master Hewer	12d	17d
Clincher <sup>1</sup>	10d	15d
Holder	6d	11d
Master Caulker	10d	15d
Caulker	8d	13d
Carver and Joiner	7d (summer) 6d (winter)	12d (summer) 11d (winter)
His servant	5d (summer) 4d (winter)	10d (summer) 9d (winter)

[Arch Cant XXII pp 316-9]

The daily wage rates for Faversham on 9 April 1621:

Carpenter	14d
His apprentice	8d
Mason	14d

[Arch Cant XVI p 270]

1 Of clincher or clinker built boats where the planks lap one over the other  
Chapter 3

## DOCKYARDMEN Board and Lodging Allowance

The wages of the Shipwrights employed in the Royal Yards rose steadily from the middle of the 16th century and then remained constant until the 1780's at 25d a day together with 2<sup>1</sup>/<sub>2</sub>d a week lodging allowance. In 1559 wages ranged from 8d to 12d a day, and in 1588 from 12d to 15d, in addition to board and lodging. The men were provided with three meals a day and as much beer 'as shall suffice them' and between 25 March and 8 September an afternoon snack of bread, cheese and beer. The total value of the wages and allowances was taken as 1s 7d a day per man in the Accounts of the last quarter of the 17th century.

Board and lodging allowance was provided since there was no appreciable resident Dockyard population and workmen normally entered the King's service, voluntarily or involuntarily, for a short period. The lodging allowance was maintained until 1812. In his autobiography, Phineas Pett states that in 1602, he, the Assistant Master Shipwright, and a colleague undertook the victualling of the Shipwrights and caulkers for a short period and ran into trouble. <sup>1</sup> In 1603 and 1611, writers had suggested that at Chatham there was an omission of checking absence of men owing to the fact that the Master Shipwright and the Clerk of the Checque victualled the carpenters in the Yard and they:

*... do not prick absence for fear of losing the board wages for the time of absence*

The Declared Accounts of the 17th century suggest that Dockyard workmen were paid a daily rate of wages with a lodging allowance of the order of 2<sup>1</sup>/<sub>2</sub>d per week; the victualling allowance being discontinued. The pay was made quarterly in arrears; in certain circumstances, board wages, a small proportion of their pay, was advanced to workmen during the quarter to enable them to work on until the next pay day. Such advances were deducted from their pay at the end of the quarter. William Brown, acting Clerk of the Checque at Chatham, reported to the Navy Board in July 1677 that he paid 256 prest men on old and new work, 5s a week, board wages.

The real wages of the Shipwright actually fell during the period 1550 to 1650. The cost of living tripled during this hundred years and in this period the pay of the shipwright was raised from about 12d to 25d a day and 2112d a week lodging allowance. When food prices fell after the end of the Civil War, the shipwright's real pay increased.

The Christmas Quarter Account of the Extraordinary at Chatham in 1622 gives information about the wages and allowances of the Shipwrights and allied trades

Master Shipwright and Assistant	2s day for 7 days a week with 5d per week lodging allowance <sup>2</sup>
Master Shipwright	
Shipwrights	22d to 14d a working day with 2112d per week lodging allowance and overtime <sup>3</sup>
Apprentices	8d a day
Master Joiner	24d a day with 2112d per week lodging allowance
Joiners (5 in number)	18d a day
Sailmakers (5 in number)	20d a day (contractor's workmen)
House Carpenters (5 in number)	18d a day
Bricklayers (5 in number)	18d, 17d, and 12d a day
Pitch Heaters (2 in number)	13d, 14d a day

1 See section on Pett family in chapter 5

2 There were other allowances not included in this account. See section on Master Shipwrights

3 The unit of overtime, the night, a period of 5 hours, was paid the same as that for a day. The other unit of overtime, the tide, a period of one and a half hours was paid, 6d.

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Pump Makers (4 in number)	24d, 20d and 17d a day with 2 <sup>1</sup> / <sub>2</sub> d per week lodging allowance (contractor's workmen)
Plumbers (2 in number)	24d, 12d a day
Sawyers	14d to 16d a day (also employed on task work)
Night Watchmen (8 in number)	6d a night
Foreman of Scavelmen	16d a day
Scavelmen (10 in number)	14d a day
Foreman of Labourers	14d a day
Labourers (4 in number)	8d and 9d a day
Master Carver	24d a day with 2 <sup>1</sup> / <sub>2</sub> d lodging allowance (contractor)
Carvers	22d to 24d a day
Clerks (2 in number)	8d a day

Richard New of Strood for the hire of 4 horses and a man for drawing timbers from cranes and to and from saw pits 53 days at 4s a day, £10 12s

Scavelmen and labourers received no lodging allowance; for the others this allowance varied from 5s 5d a quarter in the case of the Master Shipwrights to 2<sup>1</sup>/<sub>2</sub>d a week in other cases.

The wages were for a six day week, apart from the two clerks. For comparison the Master Shipwright was paid about £103 a year and his Assistant, £56 per year; allowances and perquisites such as the wages of apprentices have been omitted.

Some of the labourers employed on general duties and on the cranes and some of the scavelmen were recruited from the shipkeepers attached to HM ships at their moorings.

### **Delay in payment of wages**

After the accession of James I there were delays in the payment of wages of the men of the Yard. The men should have been paid at the end of each quarter but the Commissioners of the Navy could not get the money for prompt payment. In 1626 the Navy debt was of the order of a million pounds, much of it pay owing to the Dockyard workmen. In his autobiography, Phineas Pett states that in 1613 he accompanied:

*... the ordinary Shipwrights and others of Chatham to move the Lord Admiral about their pay, being much behindhand.*

The officers of the Dockyard suffered this delay of payment at the same time as the men. In the 1618 Accounts there is, in addition to a statement of arrears of pay owed to the Shipwrights, a record of payment to the Clerk of the Prick and Check of £110 for 2<sup>3</sup>/<sub>4</sub> years ending the last of December 1618.

In 1626 the Commissioners of the Navy complained that the Shipwrights from Chatham had besieged them in the London office for 20 days after complaining about their failure to pay them their wages.

The Lord High Admiral, Buckingham, ordered the Commissioners of the Navy to make ready about twenty or so of the most serviceable ships of HM Navy as would be available by the end of February 1626/7. In answer to the Commissioner's request to hurry on the necessary repairs, the Shipwrights of Chatham took the opportunity to present a petition to the effect that for 12 months they had been:

*... without one penny pay, neither having any allowance for meat or drink, by*

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*which many of them having pawned all they can, others turned out of doors for non-payment of rent, which with the cries of their wives and children for food and necessaries, doth heavily dishearten them.*

The men were owed six months' board usually paid every 14 days, as well as the year's wages, a total debt of £5,540. It was not within the power of the Commissioners to relieve the Dockyard men and they reported the position to Buckingham on 16 January 1626/7.

As no satisfaction was forthcoming at Chatham, the workmen left the Yard in a body and marched to London to lay their grievances before Buckingham and the Treasurer of the Navy. Buckingham reported the position to the Council in April, but what was done is not recorded.

Work on the **Defiance** and **Vanguard**, in dock at Chatham came virtually to a standstill for the want of materials to the value of £400 which the authorities could not get on credit and in April 1627 the workmen had 15 months' pay due. Such was the disorganisation that the Assurance was repaired only by the expedient of selling 54 guns. There were 224 men at Chatham Yard in 1627; the arrears of wages after 18 months amounted to £7,740.

The workers were eventually paid but in February 1628 the Dockyard workers were petitioning the Privy Council that their wages had not been paid for a period of months, and that accordingly they had been forced to pawn all their personal possessions in order to keep themselves, their wives and their children. The authorities had insufficient money and were faced with a dilemma, if the men were discharged they came to the Yard daily clamouring and threatening for their wages; if they were retained there was not sufficient stores for them to work with.

The petitions of the workmen for the payment of arrears of pay were usually answered tactfully. When Buckingham came to Chatham to inspect the ships in April 1627, he addressed the Shipwrights 'in courteous terms' and urged them to use the utmost diligence in fitting out the Fleet for action against the French.

Another explanation of the patience of the Dockyard workmen is to be found in the rule under which servants of the Crown could not be proceeded against in law until permission had been given by the Lord High Admiral. The workmen were thus protected to some extent from their creditors.

Critical comments on conditions in the Royal Dockyards were made by Edisbury and Hollond, both of whom had held the office of Paymaster of the Navy. In 1629 Edisbury pointed out that great waste and theft occurred in the Dockyard. Many families lived in the Dockyard in storehouses converted in lodgings and the cabins of ships were ransacked and materials stolen or used for firewood. The standard of supervision in the Yard was very poor. John Hollond, in his 'First discourses of the Navy' (1631) reiterated the last criticism. He declared that the Master Shipwrights absented themselves one or two months at a time in their own private yards, '... rated their subordinates according to favour' and never made '... any inferior suffer for delinquency.' He criticised the Clerk of the Check for failing to record carefully the attendance of the Dockyard workers. The calling of the men was not carried out carefully and they arrived late and left early without check.<sup>1</sup>

When half, if not the whole Fridays, being market day at Rochester every week, shall be spent without appearance or check for non-appearance, when so great, a trust as the prick and check is committed to the care of careless boy clerks, and sometimes to labourers that can neither write nor read, when no master workman

<sup>1</sup> The men were assembled at the clerk of the Check's office and a roll call was taken at both in- and out- musters; there were four calls a day. The office adjoined the Dockyard gate.

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*nor his assistants tho' absent from the work whole months together, shall be priced one day in the paybook ...*

As well as commenting on the great increase of expenditure on the ornamental carving and painting of ships which he blamed on the Master Shipwrights, he drew attention to the houses of Dockyard officers which were:

*... fitter for knights, than for men of their quality.*

### 'Chips'

An important perquisite of the Dockyard workmen was the privilege of 'chips.' By an ancient right 'chips' were distributed among workmen and they were allowed to take the wood out of the Yard. As early as 1626 an attempt was made to end the abuse of this custom by allowing the Shipwrights an extra 1 d a day in lieu of 'chips'. The delay in the payment of wages and allowances prevented this reform and Shipwrights followed the old custom of taking wood from the Yard. The main problem for the officers was the liberal interpretation of the term 'chips' by the men; by tradition, 'chips' were 'lawful hewed chips that fall from the axe.' A critic wrote:

*... a great quantity of wood is carried away by the workmen when they go for breakfast, at dinner, and at night. Under the colour of chips they cut up good timber and call it chips.*

In some Dockyards the Shipwrights built huts to store their timber and in one case a lighter containing 9,000 treenails, said to be made from 'chips' was seized and the destined receiver was found to be one of the Dockyard Shipwrights who also owned a private shipyard.

It would seem that ultimately the 'chip' was taken to be a piece of wood not more than 3 feet long. Custom prescribed that the 'chips' should be carried out under the arm, but later men were allowed to carry a load on their shoulders. It has been said that this defined the size of domestic architecture in the Medway Towns.

Bishop Goodman's Memoirs (I pp 53-4) include the passage:

*Walking one day with a friend in Chatham where the King's ships were, his friend remarked, "/will tell you a wonder. All these goodly houses that you see ... houses fit for knights to dwell in ... they are all made of chips."*

[Life & Works of Sir Henry Mainwaring, Vol I NRS 1920]

In 1634 it was ordered that the Shipwrights were not to take away 'chips' but that... 'chips' not used for the King's 'pitch kettle' were to be distributed to the poor of the parish. The old allowance of 1d a day was to be restored. In April 1650 another attempt to get rid of 'chips' was made by raising the pay of Shipwrights and caulkers from 10d to 2s 1d and of labourers from 1s to 1s 11d. Two years later at the beginning of the First Dutch War the Shipwrights' pay was increased to 2s 2d a day; this was lowered to 2s 1d after the Restoration.

In 1662 the authorities allowed 'chips' to be taken out one day a week and it became customary on 'chip day' for women to come into the Yard to carry off the 'chips'. In 1673, Phineas Pett, the Master Shipwright at Chatham, reported:

*... and being chip day an unruly mob entered the Yard, took away good plank, and split it into chips.*

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The men soon disregarded orders about 'chips' they could not do without the perquisites. Apart from the loss of wood, the men wasted time in collecting their load before out-muster.

The Navy Board then ordered the 'chips' to be collected and sold; the cost of collection proved to be high and there was a fire risk as few would buy the collected 'chips'. Next the Board directed that the larger pieces of wood were to be used for the fires in the Yard and the rest thrown outside the gates for the poor. In 1677 the Navy Board gave up the struggle and allowed the men to take out 'lawful chips' twice a day at first, and then once a day. The men had no authority to carry out wood but the Yard Officers exercised 'silent connivance' in allowing the men to resume their ancient practice of 'gathering chips' at their leaving work.

In 1689, Sir Edward Gregory wrote to the Navy Board explaining the position of 'chips' at Chatham Dockyard:

*Workmen belonging to this Yard are permitted to carry out chips once every day and no more, and that at Noon, except they work Breakfast and Dinner time, Tidework, and then they carry them at night only. There is always an officer standing at the Dock Gate to view what they carry out besides the Porter, viz, either the Master Shipwright, or one of his Assistants, or at least the Foreman of the Yard  
As to the poor inhabitants, it has been customary to admit them on Wednesday and Saturday mornings to gather such chips, and such only as would otherwise offend the Yard and annoy the workmen.*

It would appear that the taking out of 'chips' was considered to be the perquisite of the shipwright. However, others availed themselves of this privilege and in any case the poor, who might include the families of the lower paid workers in the Yard were admitted on certain days to gather the waste wood. In September 1723 Commissioner Isaac Townsend of Portsmouth ordered his officers to see that wood was taken out of the Yard only by Shipwrights, joiners, house carpenters and wheelwrights and that sawyers might remove sawdust.

From the middle of the 18th century Admiralty made critical inspections of the Yards and soon became aware of the problems of 'chips'. A fresh 'chips regulation' was issued in 1753; the bundles of wood were to be carried out of the Yard under one arm and not as previously over one's shoulder. The length of each piece was restricted to 3 feet. When attempts were made to enforce this regulation in 1755, the men leaving the gate defied the Master Shipwright and his Assistant. The men went on strike and were locked out. The Navy Board threatened to dismiss the strikers and held firm. The strike was broken within three weeks and the regulations regarding 'chips' were obeyed.

The authorities, however, were later shocked to find that the privileges of 'chips' were still abused and in 1767 the Navy Board reprimanded the Officers of Chatham Yard:

*... the abuse has been suffered to increase at Chatham Yard more than any other, particularly by the accumulation of the very great quantity of chips. Many of them, unlawful ones, near the Dock Gate for sale ...*

Another problem associated with 'chips' was the concealment of other items in the bundles taken out of the Yard. Only a very small proportion of such bundles could be checked by the insertion of an iron rod into them during an out-muster.

The problem of 'chips' continued to dog the authorities until 1801 when the privilege was commuted to an additional cash allowance.



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### **Ship Money and the later effects of an empty Exchequer**

An improvement to the finances of the Navy occurred after 1634 when Charles I, to raise money, introduced the obligation to provide ships for use in the King's service. 'Ship Money' was imposed on parts of Kent in 1634. In 1635, 1636 and 1637 the whole of Kent had to provide each year a ship of 800 tons with 320 men at a charge of £8,000. This ship was fictitious and the amount levied on individuals was small. In 1638 the Kent Assessment was lighter, £2,750, but in 1639 there were protests when the County was asked to provide a ship of 640 tons and was charged £8,000 instead of the expected £6,400.

During the Civil War and the early days of the Commonwealth there appears to have been money available for the Navy and the workmen in the Royal Yards were paid reasonably promptly. Undoubtedly the fines, etc levied on Royalists provided additional funds for this purpose.

As noted previously the wages of the Shipwrights were raised in April 1650 from 1s 10d to 2s 1d a day and two years later to 2s 2d a day. Conduct money was fixed at 1<sup>1</sup>/<sub>2</sub>d a mile in 1649. In October 1649 the ropemakers at Chatham and Woolwich were given increases in pay on condition that a certain standard of production was attained. The daily wage of spinners was raised from 1s 6d to 1s 8d, of hatchellers from 1s 4d to 1s 5d, winders from 1s 3d to 1s 4d, and labourers from 1s 2d to 1s 3d.

In comparison, during the building of the steeple of Chatham Church in 1636, the Parish Officers on 21 May gave 4s 8d to John Davies, carpenter, for 2 days' work in pulling down timberwork whilst those 'who wrought with him,' possibly journeymen craftsmen, received 1s 6d a day. On 28 May two bricklayers received 14s each for six days' work and another 2s for one day; four labourers were paid at the rate of 1s 2d a day, and another at 1s a day.

By 1656 the Dockyard workmen were again feeling the effects of an empty exchequer; in March 1657 they were paid wages to the preceding Christmas and this was the last punctual payment before the Restoration. By 1658 many had 12 months' wages owing and during the following year work was beginning to come to a halt in the Dockyard owing to lack of materials which the contractors would not supply without payment.

The supervision of the men in the Yard again started to deteriorate leading to stealing of stores and poor performance of the workmen. A regulation of October 1658 tightened up the leave of officers which was an attempt to rectify the situation. The most important factor, money, was missing and by July 1659, a year before the Restoration, the total Yard wages were in arrears by some £38,000. John Taylor, the Master Shipwright at Chatham, complained:

*He could not walk in the streets or appear in the Yard at Chatham without extreme complaints and cries of lame and maimed persons of whom 140 have two years' pay due.*

### **Settlement of Shipwrights in the Medway Towns**

Shipwrights were beginning to settle close to the Dockyard and their sons naturally became their apprentices, thus ensuring a steady supply of labour for the Yard. Houses were erected for them; on 20 acres called Brookfield, near Chatham Church, belonging to Rochester Chapter. Parcels of land, some no more than 30 feet by 100 feet in size were being let or sold between 1650 and 1690 for the erection of workers' dwellings, some detached and others in terraces of up to 12 cottages. During the Interregnum, Henry Smith had purchased Brookfield from Parliament and though he sold several plots after the Restoration, the whole property seems to have been held on lease from the Chapter.

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The building boom of 1650, concentrating the population, led to unhealthy conditions and nearly 900 people out of a total population of about 3,000, were killed by the plague between March 1665 and the end of 1666.

In 1600 Chatham had a population of well under a thousand; it grew steadily, especially with the development of shipbuilding as well as ship repairing, in the early part of the 17th century. By 1670, the population was of the order of 3,000 people in about 400 houses, a quarter of which were inhabited by people classed as 'poor.' By 1700 there were at least 5,000 in the town.

From Hearth Tax returns for 1664:<sup>1</sup>

Chatham	1,800
Rochester	2,400
Strood	750

As will be seen later, the further development of the Dockyard led to increased building in the 18th century, e.g., the Best Estate, east of Clover Street. Chatham was a forerunner of the modern industrial towns of the Midlands and the North.

### Numbers working in the Yard

During the First Dutch War nearly 2,000 men were employed in all Yards, and when peace came in 1654 an order was issued limiting the number to 980. In 1655, 304 men were employed at Chatham and 100 additional men were to be entered to put out the Winter Guard and to prepare the next summer fleet.

In February 1664, 324 men were employed at Chatham. Warrants were issued to the Navy Commissioners to press workmen for the Yard, and by 1665, there were 800 workmen at Chatham. These included 440 Shipwrights, 129 labourers, 47 house carpenters, 41 joiners, 31 caulkers, 23 scavelmen, 8 bricklayers, 17 'ocum boyes,' 15 boatmakers and plumbers, pumpmakers, coopers and pitch heaters. A Navy Board letter dated 6 December 1677 dealing with redundancy gives the details of the men employed at Chatham:

Shipwrights	424	House carpenters	78
Caulkers	58	Joiners	84
Pitch heaters	2	Bricklayers	13
Ocumboys	33	Sawyers	5 pairs
Sailmakers	8	Scavelmen	45
Pumpmakers	8	Labourers	107
Blockmakers	4	Riggers	1

Total employed: 875

The number employed in the Royal Yards in 1688 are given below:

	Chatham	Deptford	Woolwich	Portsmouth	Total
August	836	320	213	380	1749
November	886	305	292	362	1845

<sup>1</sup> Hearth Tax was an impost of 2s levied on every hearth in all houses 'paying to the church and poor' first imposed in 1663 and abolished in 1689

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During the War of English Succession, 1689-1698, the numbers employed at Chatham fluctuated between 800 and 1300, with a peak figure of 1450 in 1693. About half of these workmen were shipwrights and caulkers. These figures included men employed by contractors: smiths, blockmakers, painters, turners, pumpmakers, coopers, glaziers, etc and men from HM ships ashore for the winter. Impressment of workers was occasionally required but voluntary enlistment provided a strong force of labour.

In peace time the Yard would normally be busiest in the summer when the fine weather would allow work to be done on the ships in the open. In wartime, the Yard would be very active in the winter on repairing work when the ships were laid up; it was unusual for any ship larger than a 4th-rate to keep at sea even in wartime. In the winter months there would be little overtime on ship work since the daylight period was short. The number of men required would thereby need to be increased. The number of workmen required for the building of a ship in the latter part of the 17th century is given in the table:

	Shipwrights	Caulkers	Sawyers	labourers
First rate	120	6	7 pairs	10
Second rate	110	5	6 pairs	10
Third rate	75	4	5 pairs	6
Fourth rate	40	3	3 pairs	4
Fifth rate	15	1	1 pair	
Sixth rate	8	1		

### Supervision in the Dockyard

After the Restoration when James, Duke of York, became Lord High Admiral, efforts were made to improve the running of the Royal Dockyards, but as in the past, lack of money hindered progress in this direction. In August 1660 the Yard wages were in arrears by £36,000.

Undoubtedly there was a great waste of money in the Yards and to check this the duties of the Dockyard Officers were set out by regulations issued on 28 January 1660/1. Laxness of the supervision in the Dockyard was noted by Pepys, who wrote in his diary on October 2nd 1665:

*Having sailed all Night (and I do wonder how they in the dark find their way) we got by morning to Gillingham, and thence walked all the way to Chatham; and there with Commissioner Pett in the Yard; and among others a teame of four horses came by' us, he being with me, drawing a piece of timber than I am confident that one man could easily have carried on his back. I made the horses be taken away, and a man or two to take the timber away with their hands. This the Commissioner did see, but said nothing, but I think had cause to be ashamed of ...*

Despite the fire risk, smoking seems to have been permitted in the Yard until this period. In March 1663/4 this practice was forbidden but little heed was paid to the order. In 1672 some Shipwrights were found smoking amid wood shavings in the cockpit of the **Henrietta** and Commissioner Middleton put the culprits in stocks, and had a whipping post set up as a warning to others. The men, objecting to this show of firmness, pulled up the whipping post and threw it in the river. They started to leave work, a guard was sent for, and the Mayor of Rochester was asked to put the offenders into jail until further orders were issued by the Lord High Admiral. In 1769 the punishment for smoking was a fine of 6 days' wages for the first offence and dismissal for the second.

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### Working hours in the Yard

The hours of labour of the men were redefined in 1664. By the Statute of Artificers of 1563, men were to work from 5 am to 7.30 pm during the summer months with breaks amounting to 2112 hours including time for breakfast and dinner. This had later been modified for Shipwrights outside the Royal Yards to 5.30 am to 6.30 pm, but the Yard hours were fewer. By a Warrant issued by the Lord High Admiral, on 6 February 1663/4, the hours for all the Royal Dockyards were to be those of the outside shipwrights.

The workmen at Deptford refused to start until 6 am and left at 6 pm, the old Dockyard hours, and in 1665 they mutinied (went on strike); because of the stress of work, it was proposed to alter the time of their breaks. The Dockyard hours after this, were from 6 am to 6 pm in summer with 112 hour for breakfast and 1112 hours for dinner, i.e., 10 hours of labour per day. (Work on Saturday stopped an hour earlier, apparently without authority. An attempt to enforce the continuance of work on Saturdays to 6 pm at Portsmouth in 1811 caused a riot. The Board discovered that the men would be deprived of an indulgence they had enjoyed for more than a century and gave way.) In the winter the hours were from daylight to dusk with 1 hour for dinner, about 7 hours of labour.

### Protests and Petitions

·After the Restoration, the Dockyard Shipwrights had their wages reduced to 2s 1d a day and again suffered from delay in the payment of their wages. From July 1661 to September 1662, nearly £16,000 was due in wages at Chatham Yard. On the 12 November 1665, Commissioner Middleton of Portsmouth (later of Chatham) wrote to Samuel Pepys saying that a mutiny had arisen in the Portsmouth Yard for want of money. He had seized a cudgel out of the hands of one of the men and used it with great effect. He had clapped three men in the stocks and had them taken to prison; the trouble appeared to be over.

Men who had been impressed for service in the Yard suffered the most when board wages were unpaid. They were strangers to the area and had difficulty in obtaining credit. In November, the impressed ropemakers claimed they were six weeks in arrears for the payment of board wages; in March 1666 a further petition claimed they were then 17 weeks in arrears; in June 1666 a further petition claimed they were nine months in arrears. The Clerk of the Ropemakers at Chatham added his name to this protest pointing out their plight.

As well as protesting in the Yard to such an extent that one Commissioner at Chatham wrote that he was almost torn to pieces each week by the workmen for their pay, the men marched to London and staged demonstrations outside the Navy Board offices.

One appeal reported in the Calendar of State Papers Domestic 1667/8, included the phrase '...their families are denied trust and cannot subsist.' Under this pressure the authorities made arrangements to '... pay off some of the most disorderly.'

In 1679 a petition of workmen from Chatham was read and:

*... two persons that brought it were called in and acquainted that a quarter's pay would suddenly be provided and the Board would use their utmost to get them another quarter's pay speedily.*

Other Royal Yards experienced the same problem. On 11 March 1671, Jonas Shish wrote from Deptford:

*The Shipwrights and caulkers are very much enraged by reason that their wages is not paid them. The last night the whole street next the King's Yard, both of men*

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*and women, was in uproar and meeting with Mr Bagwell, my foreman, they fell on him, and it was God's great mercy that they had not spoilt him. I was then without the gate at my son's house and hearing the tumult, I did think how Israel stoned Hadoram that was over the tribute and King Rehoboam made speed and gat him up to fly to Jerusalem so I get speedily into the King's Yard, for I judge if the rude multitude had met with me I should have had worse measure than my foreman.*

Despite the bad conditions of service it was rare to hear of Dockyard workers mutinying, or using the modern phrase, going on strike. There was a possibility of dismissal with the loss of money and above all credit, and the difficulty of obtaining employment elsewhere. For mutiny the Navy Board had one punishment the men feared acutely, that of sending them to sea. This could not always be applied because it interfered with the work of the Yard; it was done however in 1672.

If the men deserted from the Yard in wartime there was a possibility of their being caught by a press gang and drafted into the Navy. Those who worked in the Yards were exempt from pressing. A copy of an exemption certificate dated 1691 is given below:

Navy Office Stamp quietly	These are to certifie all whom it may concern that the Bearer hereof . . . . . is employed in their Majesties Yard at . . . . . You are thereon to let him pass to and again between the said Yard and his own habitation, during the space of ..... days from the date hereof without being otherways impressed. Dated the ..... of ..... 16 ..
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[Laird Clowes 'The Royal Navy in History' Vol II page 367]

## Plague in Chatham

In 1666, in addition to the money problems, Chatham Dockyardmen had to face the plague: In August 1666, Sir John Mennes, the Comptroller, staying at Upnor Castle, appealed for £8,000 to pay the whole Yard and asked for the money to be sent by water to avoid infected places. In his diary entry dated 17 August 1666, Pepys wrote:

*Sir John Mennes came home tonight, not well, from Chatham where he hath been at a Pay, holding it at Upnor Castle, because of the plague so much in the town of Chatham.*

Construction and repair were at a standstill for want of materials; work on a 3rd-rate ship had stopped. The Yard being so infected, Mennes proposed discharging some of the Shipwrights.

Under the circumstances there was little esprit de corps in the Yard and it was not surprising that when the Dutch Fleet sailed up the Medway and attacked the ships at Chatham, Albemarle reported that when he came to the Yard on 11 June 1667 there were not twelve workmen there out of the 800 borne on the Yard books.

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### Theft in the Yard

The delays in pay resulted in theft of stores, embezzlement and neglect of duty by all types of Yard employees. In December 1667 the Navy Board wrote to the Clerk of the Checque at Chatham that a contractor claimed payment for stores not entered in the Dockyard books and complained:

*... it is no small trouble to us to find the negligence of the officers so published to the world.*

In the spring of that year a petition from the men who had a year's wages due said they were starving; this led to a counter-complaint that:

*... the people's hands are so inured to stealing that no half-cut work could be left in the sawpits overnight.*

Commissioner Beach of Chatham proposed that men should work from 8 am to 4 pm in winter,

*... because of the roguery and villainy they commit when it is dark.*

To check theft, orders were issued soon after the Restoration that government stores were to be marked:

metal and timber items were to be stamped with a broad arrow  
white threads were to be run through cordage  
canvas was to have a blue strake in the middle

The security of the Yard was to be entrusted to watchmen at night and warders in the day time.

### Debts due to late payment of wages

Despite their disapproval of the lack of discipline in the Yard, the Commissioners, whether appointed from the civil or military branches of the Navy, by and large, were sympathetic to the troubles of the workmen, who with their families, suffered from delays in the payment of wages. Commissioner Beach, who had been a naval captain, wrote many times to the Navy Board about the plight of his men. On 2 December 1673, Admiralty proposed to the Navy Board:

*Those poor workmen in Chatham Yard who by their late coming into work there have no advantage of the pays last made, they not falling within the term those payments serve for, they are to relieve with board wages as far as they are enabled by the moneys to do it.*

The close of the Third Dutch War in 1674 brought opportunities to practise economy by reducing the numbers in the Yards. It was proposed to discharge 1616 men from Chatham, Woolwich, Deptford and Portsmouth, retaining only 424 in pay. £31,600 was owing in wages. Since there was no money to pay the discharged workmen it was necessary to protect them from arrest by their creditors to which they were liable as soon as they left the King's service.

It was suggested that the names of the men discharged from the Yard should be kept on the Yard books. This device was used again during the War of English Succession when Admiralty informed the Commissioner, Sir Edward Gregory, that:

*... those who desired it, might be kept on the Yard books, although they were actually working elsewhere . . .*

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Admiralty was prepared to protect from arrest these Dockyardmen, but they did not always support their employees in resisting demands for money. In 1677 they refused to uphold the officers of Portsmouth Dockyard when they neglected or refused:

*... to do and pay what may be rightfully demanded from them by the parishes to which by their abode in HM Yard they belong.*

The effect of discharge from the Yard is illustrated by an appeal made on behalf of a Mr Attewell on 23 August 1678:

*Mr Attewell had been HM boatbuilder by contract 14 years. He was admitted into the Yard with his two servants which he would not have desired if it had not been to keep himself out of prison on account of debt. The Shipwright made him foreman of a new ship. Since his discharge he (Attewell) had been arrested several times.*

This custom of protecting Dockyard employees from the consequence of debt by the rule that the permission of the Admiralty was necessary before they could be sued at law, dated from early Stuart times and gradually fell into desuetude.

The debtor, whether officer or workman, was expected to make strenuous efforts to discharge his debts; an Admiralty ruling in one particular case is given below:

*If his creditors discharge him (the debtor) from his present arrest and petition their Lordships for leave to arrest him, their Lordships will not deny it in the case the party after a little time given to him to that purpose does not give their Lordships satisfaction touching the same. Their Lordships not holding it fit that any man should be protected by his relation to the King's service in his denying rightful satisfaction to other his Majesty's subjects where the present condition of the service under the care of that officer will without obstruction permit the same.*

The lack of wages led to heavy absenteeism in the Yard. In 1677, Commissioner Beach of Chatham complained that the Master Shipwright had given 247 days of leave in one week to the men so that they could work elsewhere. In May of that year there were 232 Shipwrights and caulkers at Chatham, 162 at Woolwich, 113 at Deptford and 15 at Sheerness. A heavy shipbuilding programme was about to start; in 1677 approval had been given to the building of 30 new ships. Beach was in a difficult situation; some of his men were taking casual leave, others were leaving to work for hire and more regular wages in private yards, and yet the proposal to send 360 more men to Chatham when those in the Yard were unpaid was a frightening one. No wonder that Beach concluded one letter with; '... if there be purgatory upon this earth, I am in it here.'

In 1688 the workmen at Chatham Yard made another petition:

*They say that they have been about two years in arrears, two quarters pay on Christmas 1685 and Lady Day 1686 for want of which your petitioners have been exposed to the mischief of extortion of their creditors and forced to pay unreasonably for forbearance and some of them lately compelled to quit the Yard and list themselves soldiers to prevent them being dragged to jail.*

Sir Edward Gregory, the last civilian Commissioner at Chatham, encountered the same difficulties as his predecessors regarding the delay in payment of his men and the contractors; he wrote a large number of letters to the authorities requesting the settlement of the debts. In 1693 he declared to the Navy Board:

*... the case of the men is truly deplorable; and since I can but make shift to live, from my very heart I wonder how they rub through.*

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The country was at war and one argument he advanced was the dangerous political consequences likely to follow delay in paying the workmen, since there were plenty of agents to ferment discontent. Again when the local contractors refused further credit, the supply of timber for ship repair and construction was in jeopardy.

There may have been some exaggeration in these statements. The men got their money ultimately, but they lived on credit to a large extent, a feature of life in the Dockyard Towns in the 17th and 18th centuries. During the war there was plenty of overtime.

Gregory wrote in July 1690:

*We keep our men employed from 4 in the morning till 8 at night. We make no distinction of days and with the numbers we have it is impossible to do more.*

No doubt some of the men worked slowly to ensure overtime.

### Combating Theft

Theft was rife in the Yard. As a result of a 'tip off' the workmen at Chatham were searched on one out-muster and Gregory wrote to the Navy Board:

*Chatham, 2nd December 1694*

*The evening on Thursday last having proved wet and obscure, the Bell no sooner summoned the Workmen to their call, but they found themselves surrounded by the Officers, the Master Shipwright planted at the gate with three or four trusty fellows about him, to search every individual Man and Boy that passed. This transaction begot a horrid consternation among the Guilty, and every rascal soon let drop his Purchase in the Crown, amongst which were found Spikes, Nails, Bolts, Lead Rope, etc, which have all been punctually returned to the Stores. But with all the care and caution that could be used it was impossible to seize any more than four of these offenders. The Chief Rogue of which number is Richard Hind, Junior, a Shipwright, who has a year's pay due at Christmas and in my conscience is an inveterate Offender. For we not only seized him overnight with the King's goods actually about him, but /found a quantity of lead in his chest the next morning, when I called all the receptacles pretended for tools to be searched throughout the whole Yard. I have not yet undertaken to punish this Villain, because I would leave him to the utmost severity that Law and Justice can inflict upon him, and I request you to resolve upon making him a Public Example. The discontent which the discovery of these cursed practices has given me is greater than I can express to you. In a word I am weary of passing my time among such a pack of Villains and shall incessantly pray for deliverance.*

*Yours etc, (signed E.G.)*

As a result of this discovery orders were sent to the other Yards to search the workmen:

*... when they least expect it ... and as you find any theaverys of any kind .. that we may prosecute them for the same. And you are to begin this very night.*

(Navy Board Order 4 December 1694)

Prosecution was not very satisfactory and it was decreed that those caught stealing were to be fined treble the value of the article stolen. In any case Admiralty suspected that the Dockyard Officers connived at these abuses.



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A further result was that the workmen in the Yard were limited to one chest each, and cabins were allowed only to the Master Workmen, Foremen, Quartermen and Cabin Keepers. Dishonesty was not restricted to the workmen alone; the Dockyard Officers were capable of fraud and embezzlement and to check this the policy of bonding the officers for security was adopted. This tended to stop such malpractices as the issuing of bills to contractors for stores never received and the acceptance of timber of unsuitable shape and size for conversion to ships on the plea that the wood was useful.<sup>1</sup>

### Payment of Wages

The Navy Board was willing to pay the men but the Treasurer of the Navy was never given sufficient funds for the building and refitting of ships, and for the payment of wages. The first had priority and both Dockyardmen and Seamen had to wait for their pay. This lack of money was due to many causes, the principal of which were the extravagances of the Stuart Kings, the failure of Parliament to vote sufficient money for the Navy, and the Navy Debt inherited from the Commonwealth regime. Until 1814 wages were paid quarterly and were always at least a quarter in arrears, i.e., a man might have to work for six months before he received three months' wages. Sometimes the pay was in the form of tickets so that unless clerks were sent down to the Yard these could only be changed for money at the London Office, unless the unfortunate ticket holders sold them to professional buyers who were prepared to purchase the tickets at a discount.

One particularly despicable trick was attempted in paying Dockyardmen and Seamen in 1695/6. In December 1695 a proclamation was issued that all clipped silver coins should be withdrawn from circulation and replaced by milled coins; these changeovers had to be completed by 2 April 1696. An insufficient number of milled coins was minted and the payment of the Navy by clipped coins was authorised. The wealthy could get rid of their clipped coins by their dealings with the banks and by paying taxes etc, but these facilities were not available to the poorer classes. The clerks who went to pay the ships at Chatham at the end of 1695 had a particularly hostile reception from the men who refused to take the coins. Sometimes other government departments showed singularly inept understanding of the situation of its poorer employees. In his book 'The Records of the Woolwich District,' WT Vincent wrote:

#### *Royal Arsenal- Payment of Wages c 1820*

*Wages were paid once a month and then in one pound notes. This meant dependence on shopkeepers to change the notes; some of the shopkeepers insisted on giving a good proportion of their change in copper pence or tokens which only they or those in league with them would afterwards accept. The Marquess of Anglesey, Master-General, had his attention drawn to this by a workman showing him a double handful of coins and tokens and the Marquess introduced a better system of paying wages. This nearly ruined the 'truck shops.'*

The reader may find interesting the letter dated 27 May 1702 from the Navy Board to the Chatham Commissioner announcing the payment of wages:

*We are to acquaint you, that Money will be going from hence (Navy Office) tomorrow for paying halfe a year to the Yard at Chatham ... we desire you will take upon you to Comptrol the same, in the absence of Sir Richard Haddock (Comptroller) who is at present attending ye payment of Bounty Money at Portsmouth ... not Doubting but this Great Care taken by her Majesty for the payment of the Workmen will be a great encouragement to all who perform their duty with great cheerfulness and diligence.*

<sup>1</sup> See section on Naval Stores in chapter 11  
Chapter 3

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### Demarcation Disputes

The Shipwright was one of the highest paid tradesmen in the Yard. This status was zealously guarded; no one was allowed to practise the craft of shipwright unless he had served an apprenticeship. The Shipwrights were particularly concerned that House Carpenters did not undertake Shipwrights' work. Occasional demarcation disputes over this occurred both in and out of the Royal Dockyards for many years.

On 22 June 1677 Commissioner Beach reported:

*On Saturday night the young Shipwrights employed here found one Busfield, a house carpenter, at work in a shipwright's yard at Chatham, horsed him upon an oar and so carried him through Chatham, Rochester and Strood, and have, according to Sir Richard Head's report, severely beaten and bruised him, of which complaint being made to Sir Richard Head and Colonel Manley, they issued their warrant for apprehending and bringing several of the said Shipwrights to make answer thereto before them, Who refusing upon their examination to give security to answer the law, the Said Justices made their mittimus (order for committal) for Maidstone Gaol, but upon their way they resisted the Constable and came away again. The Constable hath since seized upon some of them, which divers others hearing of, left the works yesterday and went after them and most of all the rest had followed them but the Clerk of the Checque dissuaded them. What became of those that left I know not nor whether they will return. George Matthews was the ring leader (a prest man) who I have asked Sir Richard Head to give severe punishment. 45 servants concerned and 24 prest men.*

Commissioner Beach reported on 26 June 1677 that 20 had been clapped into prison.

Rates of Pay in the last quarter of the 17th century

	per day	per tide
Shipwrights	25d	7 $\frac{1}{2}$ d
Caulkers	25d	7 $\frac{1}{2}$ d
Joiners	24d	7d
House Carpenters	22d	6d
Plumbers	28d	9d
Riggers	18d	4d
Sailmakers	22d	6d
Bricklayers	20d	5d
Sawyers (pair)	36d	11d
Cooper	24d	7d
Pitch heaters	15d	4d
Wheelwrights	24d	7d
Team of 4 horses and man	72d	20d
Labourers	13d	4d
Quarter Boys	8d	2d
Oakum boys	6d	1d

The actual hours of labour per day in the summer was 10; the hourly rate of Shipwrights was 2 $\frac{1}{2}$ d and overtime, the tide and the night, was paid at 5d per hour.

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Roughly the shipwright's income at this period might be reckoned as 25d day wages, 2<sup>1</sup>/<sub>2</sub>d per week lodging allowance, 'chips' 5d a day (estimate in later negotiations) possibly an apprentice, 14d to 22d a day, and overtime. From this has to be deducted the maintenance of the apprentice and 2d a month deducted, since 1660, for the surgeon of the Yard, a kind of medical insurance.

This latter deduction was to meet the cost of medical attendance for hurts received in the Yard, but not for accidents of diseases contracted outside the Yard. In 1708 the riggers and sailmakers also came under the care of the surgeon of the Yard. It was not until the passing of the Employers' Liability Act in 1880 and the Workmen's Compensation Act in 1906 that an employer was legally liable for compensation for injuries received at work.

### Holidays

The holidays of the workmen varied to some extent with the reigning monarch. During the reigns of Charles II and James II the holidays included New Year's Day, Shrove Tuesday, the King's Birthday, Gunpowder Treason Day, November 5th, Coronation Day and Restoration Day. Some were only half day holidays; in his book 'Records of the Woolwich District' W T Vincent wrote:

*May 12th 1663, The workmen of Woolwich Yard entreated for an allowance of a whole day's holiday as on the previous Gunpowder Plot Day and Coronation Day they worked till noon and had no breakfast time.*

Oppenheim states that after the Restoration, the men then had nine full days and four others for which a day's wages were given for half a day's work, including Restoration and Coronation Days.

On 2 November 1715, the Navy Board having considered the details of holidays allowed to workmen supplied by the Yard Officers, issued the following instructions about holidays:

*No allowance to be made for the future but for the four days, King's Birthday, Coronation Day, Fifth November, and the 29th of May, Oakapple Day, and then on those days they should work from 6 o'clock in the morning till 12 o'clock noon and have the wages for the whole day. If absent on other days or times on account of holidays or otherwise to check them as you ought by the rules of the Navy.<sup>1</sup>*

The Commission of 1806/17 recommended observance of these holidays. By 1800 the Yard Officers had 14 days' annual leave.

Wages for day's or half day's absence were forfeited and no compensation was given for sickness or for injury due to work. No additional penalty was imposed for absence when the men secured temporary employment elsewhere such as assisting a merchant builder or harvesting. After a long absence the Dockyard put an 'R' or 'Run' against the workman's name which theoretically deprived him of his arrears of wages. Some absent Dockyard workers sold their pay and had Bills of Sale made out for their wages to shopkeepers and there were petitions from wage buyers to have the 'R's' take off. If the wage buyer possessed a vote he could exercise some pressure through his MP to achieve this and secure payment of wages earned by the erring Dockyard worker.

When men were laid off before the quarterly payment was made at the Yard, the Clerk of the Checque made out and sent Tickets to the Navy Board to be assigned for payment of

<sup>1</sup> The Yard may have been closed on other days for extreme urgency although it does not appear that the men received pay for this, e.g., Christmas Day, Whit Monday, Easter Monday etc

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their wages. The men could draw their pay in London or, when a local pay was being made, at the Pay Office, Chatham. Those who wanted their money quickly would sell their tickets at a discount to recognised ticket buyers.

### Overtime

Overtime was worked regularly during the wars of the 18th century. This tendency to compensate for low wages by overtime payment is a characteristic which has persisted to this day. Overtime in peacetime had to be approved by the Navy Board. On 29 June 1700, the Navy Board ordered it owing to the:

*... glut of business at the cranes occasioned by the arrival of HM storeship, Katherine, with timber from Portsmouth, a Dantsicker with plank, two of Mr Fogg's hays, and several lighters with timber from Maidstone ... to cause the labourers to work two tydes per diem extra ... Taking in your allowance of the same on your Quarter books that nobody have it but those who shall actually set upon the above works ...*

The same allowance of overtime was made for the two teams of horses employed in the unloading. Even in wartime, especially in winter, the Navy Board would often refuse to allow overtime. In a letter dated 19 January, 1708/9 in answer to a request from the Master Shipwright at Sheerness for the men to work overtime, the Board wrote:

*We think that at this time of the year it can very little forward the works and are sure it is very chargeable (as also very dangerous to work by candlelight on board ships) where there must be as many to hold the candles as to work, and therefore would have you avoid it ...*

To illustrate the timing of overtime: On 19 April 1711 the Board approved of the men working one tide per day extra. The men began work at 5 o'clock in the morning and left at 6.30 pm, having worked a day and a tide.

### Wage comparisons

It has been estimated that with 'chips' the Shipwrights earned about 15s a week and the labourer half that. A shipwright with an apprentice would have a higher income, so that if a figure of £39 per year for a shipwright is used, this errs on the low side. In Gregory King's Tables of 1688, a figure of £38 per year is given as the average wage of artisans and craftsmen. Leaving aside the delays in payment, the Shipwrights in the Royal Yards were not so badly off compared with craftsmen in general; the increase in price during wartime was offset to some extent by the increase of wages by overtime. The price of wheat fell gradually to a minimum about 1740 when there was a short period of stability, after which it rose steadily for the rest of the century. If this is used as a cost of living index it will be seen that there was an increase of real wages of the shipwright from the Restoration to the middle of the 18th century, though the nominal value of the wages remained constant.

According to Gregory King's Tables, the Dockyard labourer earned as much or more than his counterpart outside the Yard and would not normally have qualified for Parish relief. If he had a wife and a large family he must have had a struggle to live, especially when there were delays in the payment of his wages. The pay of an ordinary seaman was 19s a month and when victualling, etc was taken into account there was a rough parity between the income of a labourer and an ordinary seaman.

By the second half of the 17th century private yards were paying higher wages than the Royal Yards. Instead of raising wages to attract labour into the Royal Yards impressment

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was employed. Undoubtedly the prospect of steady employment and the better working conditions in the Royal Yards were attractive to many workmen and caused their acceptance of lower wages than were paid outside. A further inducement to enter the Royal Yards was offered in the latter half of the 18th century when pension schemes for the workmen were introduced.

A Deptford Yard out-letter dated 28 October 1743 emphasised the payment of higher wages in the outside yards. Men working for the merchant builders were paid from 3s 6d to 7s or more for a standard day's work, 6 am to 6 pm. The Dockyardmen would earn 2s 1d; if he were fortunate enough to have a servant, an additional 1s, and if he worked two tides extra, about 1s 3d together with his 'chips.'

### **Conditions in Chatham in the 17th & 18th centuries**

An account of conditions in the Medway Towns, excluding Gillingham, at this period has been given by A J F Dulley in an article in Arch Cant LXXVII, 1962, 'People and Homes in the Medway Towns 1687-1783,' but there are few first hand accounts available. About one in three of the workers in Chatham depended on the Dockyard for their livelihood. The population of Chatham increased until 1710, remained sensibly constant during the period of peace, and then increased during the wars in the latter half of the 18th century. In 1760 there were 1,204 rateable properties in Chatham; by 1819, 2,648.

The houses were normally of two storeys with garrets in the roof. Often the houses stood end on to the street with one room front and back and a lean-to wash house at the rear. Many of the smaller houses were only a single room deep, even they might have two storeys, a garret in the roof, and a cellar below ground. The houses were crowded on to narrow sites since so many of their inhabitants needed to live within an easy walk of their employment in the Yard.

The size of the houses of those who were well off enough to pay hearth tax may be deduced from their assessments. For Lady Day assessment 1664, Rochester averaged 3.63 hearths per house; Chatham, 3.31, Strood, 3.20. These figures are high compared with rural parts of Kent and other towns in England. On the 1696 list of freeholders qualified to serve on juries, Chatham had 50 qualified, 19 with the title of 'gent' and amongst these were persons associating with the Yard, while 13 were Shipwrights. Prosperity was greater in period of war. The living standards in the Medway Towns may have been higher, but it must be noted that Kent was a well wooded county providing cheap firing, the Dockyard provided 'chips' and even poor houses might have a second hearth. Commissioner Pett's house had twelve fireplaces, Robert Fitzhugh, the Constable, had seven.

The Poor Rate returns of Chatham revealed the status of the Dockyard Officers relative to the other residents. Assessments were made on 428 residents on 5 May 1684; King's Pay House, £1; Sir John Godwin, Commissioner of Chatham Yard £1; Richard Lee, £1, Isaac Walker, Hy Sheafe, William Yardley, 14s each; Baldwin Duppa Storekeeper, Robert Lee, Master Shipwright, Richard Vittles, Master Attendant, 10s each. Twelve inhabitants were assessed at 5s each, but the majority were assessed at a figure between 1s and 2s and the average amounted to 2s 7d a head. The national average in 1714 was 3s 3<sup>3</sup>/<sub>4</sub>d per head. In that year His Majesty's Dock, Pay and Storehouses were rated at £128, and the Victualling Office at £80.

### **Shopping**

It has been recorded that shopkeepers usually gave up to 3 years' credit. There was no attempt to place any attractive items in the shop windows and there was some hesitation in pricing the goods. All items were sold loose; buyers of flour took a wooden box, and small pieces of meat were collected on a skewer. Publicans had profitable sidelines in

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discounting seamen's tickets and lending money to Dockyardmen. Fish and fruit were abundant and weekly markets were held at Chatham and Rochester.

### *Chatham Market*

In his book '17th Century Kent' W Chalklin states that as early as 1666 a market was held in the Dockyard so that workmen might buy food without going into town. In February 1679, despite opposition from Rochester, Sir Oliver Boteler, Lord of the Manor of Chatham, was granted permission for Chatham to have a weekly market every Tuesday in the town itself, and to have an annual fair on the 4th, 5th & 6th May. Rochester maintained their opposition and gained a declaration that Boteler's Fair and Market were prejudicial to the interests of the City. Boteler and the inhabitants petitioned for a grant and the opinion of the Navy Board was sought on 25 May 1687. The Navy Board supported Chatham; James II granted the market and fair and the grant was confirmed by William III in 1689. By 1738 the market at Chatham was held on Saturday and the fairs were held on 4 May and 8 September near Fair Row.

Mr Dulley examined the probate inventories of Chatham residents: those of two Dockyard employees are given below:

William Bostock, Master Joiner c 1688

William Thread, Ropemaker c 1700

Clothes	£10. 0. 0.	Chamber	£3. 10. 0
Kitchen*	14. 9. 2.	Lower Room*	3. 2. 6.
Buttery	7.0.	Linen	12. 0.
Hall*	2. 1. 0	Other items	2.0
Parlour*	9. 8. 0.	Wages due in HM	
Best Chamber*	13. 5. 8.	Service	17. 10. 0
Kitchen Chamber	7. 16. 7.	Debts due	19. 10. 0
Lower Room	1. 0. 0.		
Garret1.	5. 6.		
Brewhouse	1. 19. 6.		
Closet	2. 9. 0.		
Maid's Chamber	14. 6.		
Out of door (deals)	1.15 . 0		
Linen	11. 13. 4.		
Silver	19. 2. 2.		
Cash	159. 9. 0.		
Wages due in HM			
Service	35. 0. 0.		
Doubtful Debts	5. 0.		
Etc	10 0 0	*Rooms with fireplace	

The constantly recurring items in the inventories of Dockyard employees are the arrears of pay which sometimes amounted to more than half the total value of the inventory.

### **Out-work**

The Dockyard supplied some out-work to the inhabitants of Chatham in the form of oakum picking.<sup>1</sup> Some oakum picked from lengths of old hemp rope, was supplied to the prisons. (In 1860 convicts in the County Gaol at Maidstone picked oakum which was purchased by the Dockyard at £6 per ton.) In a letter dated 6 July 1715, the Navy Board

<sup>1</sup> On 1st January 1702/3 the Navy Board wrote: 'An imprest is granted to the Storekeeper ... for £150 for paying the Ocham Pickers which shall be assigned for payment.'

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complained that at Chatham 16 lb a cwt was allowed for waste, whereas 14 lb was allowed at other Yards. The Board ordered the wastage at Chatham to be reduced to the lower figure and the pickers allowed 3s 8d a cwt instead of 3s 6d. In 1783 the Navy Board ordered:

*... oakum is to be picked by the Parish Poor, only so long as the work is properly performed ...*

During the Napoleonic Wars, hammocks were made by outside labour.

### **Relationship between the Dockyard and the Administration of the Medway Towns**

In the early days of the Yard there were two centres of local administration in Chatham: the Court Leet, headed by the High Constable, responsible for law and order, etc and the Overseers and Churchwardens, superintended by the Justices of the Peace, who dealt with matters affecting the parish and with social problems including the assessment and collection of the Poor & Church Rates. The Court Leet appointed the Custodians of the Peace and judged cases of petty offenders.

By the early part of the 19th century the trial of all such cases became the responsibility of the County Magistrates at Rochester, and the Board of Guardians elected at St Mary's Vestry Meeting took over the maintenance of the poor. In 1849 the Local Board of Health assumed the duties of the Court Leet and the High Constable then acted roughly as the civic head of Chatham. In 1894 the Court Leet and the Board of Health were replaced by the Mayor and Corporation of Chatham.

Long before the beginning of Chatham Dockyard, Rochester was controlled by the City Council consisting of the Mayor Aldermen and Assistants or Common Councillors. The last group were elected by the Freemen of the City and the Aldermen were elected by the Councillors; the members of each group held the office for life. After 1836 the Councillors were elected by the Burgesses of the City and held office for three years only.

In Gillingham, the population of which was half or less than that of Chatham until after 1850, local administration was carried out by Boards appointed at Vestry Meetings and the court Leet. Gillingham Board of Health took over the responsibility of local government in 1873; this Board was replaced in 1894 by Gillingham Urban District Council with directly elected Councillors, and, in 1903, Gillingham was created a Municipal Borough.

In the 17th century there had been instances where Master Attendants, Naval Contractors and Surgeons had held the office of Mayor of Rochester. Peter Pett, the Resident Commissioner, was an active JP and sat as MP for Rochester in 1660. In the early part of the 19th century the office of High Constable of Gillingham was held at times by subordinate officers of the Dockyard: the last Clerk of the Survey was involved in local affairs and was a member of the jury of Chatham Court Leet. There was a close connection between the Parish Church of Chatham, St Mary's and the Yard. In 1655 the Clerk of the Checque and the Clerk of the Survey were Churchwardens; until the 19th century the Vestry was a centre of civil authority.

By Order in Council of 28 August 1663, officers belonging to the King's Navy or the Royal Dockyards holding their places by Royal Patent or Warrant from the Lord High Admiral were exempt from having to watch or ward, from bearing office in their respective parishes as constables, surveyors, churchwardens, etc, and from attending Assizes & Sessions and other meetings in the County. They were not to be withdrawn 'from their continual care and attendance in their several places in HM Navy.' The Clerk

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of the Checque sent to the Sheriff of the County and the Clerks of the Assizes & Sessions the names of Officers belonging to HM ships, Navy and the Dockyard.

The exclusion of Dockyard Officers from the affairs of the Town was a reform instituted by the Duke of York after the Restoration. Prior to that there seems to have been no firm ruling on this subject. In November 1628, John Neale, Anchorsmith to the King, living at Deptford, complained to the Admiralty that despite being employed in the King's service 'for performance whereof all his utmost pains, rendered night and day, are little enough,' he had been chosen Constable of his Parish. He prayed for a warrant to free him from all parish duties. His prayers were answered and someone with a sense of humour certified that he was:

*... a man altogether unfit to bear any office in the parish where he dwelleth.*

On 8 June 1691 the Navy Board informed the Admiralty that contrary to the Order in Council of 1663 officers in the Yard were being called upon to watch and ward. Steps were taken to renew the Order in Council.

The workmen of the Yard were, however, eligible for certain offices in their parishes. An Order dated 9 December 1795 stated:

*Mr Bower, House carpenter, has lately been appointed to the office of Petty Constable for the Parish of Gillingham. His office does not exempt him from serving and he must therefore find a substitute.*

There was little chance of a Dockyard workman participating in the administration of local affairs before the latter part of the 19th century, partly because his means would not be sufficient to allow his selection and partly because he could not break into the ring of business and professional men who dominated local politics. He had to wait until a more democratic system of local government was introduced.

The Dockyard Officers tended to be isolated from the Town and were really a very privileged class. In January 1759 they asked to be relieved from paying window tax which had replaced hearth tax. The officers maintained that their houses were the property of His Majesty; their view was accepted and the tax was paid out of the contingency account.

The ambitious Dockyard Officer knew that promotion often meant transfer to another station and so took little interest in local politics. An acquaintance with the local MP, especially one with naval connections, was useful to him, but any connection with local business men in general would not further his career. The only officer who might stay in his post was the Foreman, who for one reason or another was unlikely to rise further in his profession. These officers sometimes took an interest in local affairs, instances of which are given in the case of High Constables of Gillingham.

Restrictions on participation in activities outside the Dockyard by its employees occurred in the 19th century. In 1864 an Admiralty Circular stated:

*No person connected with naval establishments is to allow himself to be appointed to fill any parochial office and if so appointed he is not to take any steps in the way of filling the same.*

In June 1874, the Captain Superintendent prohibited a Dockyardman from holding the office of churchwarden in Gillingham. In August of the same year further instructions were issued on this subject: employment in the Dockyard did not necessarily prevent the acceptance of parochial office, the decision was left to the Superintendent.



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The Dockyard Regulations of 1875, Article 31, stated:

*No person is to hold any parochial office or to have any occupation which may call off his attention to duty and thereby cause irregularity of attendance.*

'Chatham News' of 29 May 1875, dealing with the case of the appointment of an Overseer of the Parish, noted that application had to be made to Admiralty in the case of a man employed in the Dockyard wishing to take parochial office and that permission was granted or refused according to whether the condition of the above regulation was likely to be complied with.

A handbook of instruction and information for the guidance of officers in 1893 stated that workmen must not do private work in the Yard for themselves, or the officers. They were not to act as agents for contractors and they were not to hold parochial office nor keep beerhouses or marine store shops. Dockyardmen summoned for inquests or juries were allowed to attend without pay.

'Chatham News' of 22 September 1894 reported that Admiralty had no objection to Dockyard employees occupying seats in the new District and Parish Councils established by the Local Government Act 1894 provided that their civil and Admiralty duties did not clash. Parish Meetings were infrequent and usually held in the evening, but Admiralty had reservations about the membership of District Councils where meetings might be held during Yard working hours.

In modern times Dockyard employees were at liberty to become candidates to serve on County, District, Borough or Parish Councils or on Education Committees, provided that the duties entailed did not interfere with their work. Those who served on Councils, or as JP's were allowed special leave with pay to attend to their civic duties.

In the years before the Yard closed, the Office of Mayor in the Medway Towns was held by Dockyard employees, but these posts were never assumed by officers of high rank after the 17th century.<sup>1</sup> Principal and Superior Officers normally spent a relatively short time in any one Yard and this hindered close liaison between Town and Yard.

In 1927 Mr F C A Matthews, a Second-Grade Clerk (later style, Executive Officer) became Mayor of Rochester and was associated with many activities in the City. Following Mr Matthews were the under mentioned (whose names and trades were taken from articles in 'Periscope'):

*Mayor of Rochester*

Arthur Fray  
Ted Griffith, Machinist

Bill Wilkinson, Electrical  
Shop Worker

*Mayor of Chatham*

Jack Thomas, Storewright  
Tom Hill, YSM Estimator

Ron Foster, Yard Safety Officer

*Mayor of Gillingham*

Jack Mannering, Joiner  
Paul Harriott, Engineering  
Inspector

Over the years the Dockyard withdrew more and more into its walls. The Dockyard Church took over many of the functions of the Parish Church, St Mary's Chatham. The Pay House (Hill House) was vacated when payments were made in the Dockyard offices and finally, just before the Second World War, the Cashier no longer paid pensioners, etc. Attempts were made in more recent times to reverse this process by Navy Days, conducted tours of the Dockyard, etc.

<sup>1</sup> The office of High Constable of Gillingham had been filled on occasions by Dockyard officials. See Section on Subordinate Officers of the Yard in chapter 14

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### Criticisms of the Yard and Employees' Petitions

The Dockyards were subjected to strong criticism, mainly by pamphlets, during the last part of the 17th century. One such attack was made by George Everett, a Thames ship-builder, who published a pamphlet entitled, 'The Pathway to Peace and Profit,' in 1694. Apart from criticism of the system of 'chips' and poor supervision in the Yards, he proposed for Shipwrights the introduction of piece work, or work 'let out by the great,' a fixed price for a given amount of work; a change resisted by the Navy Board for many years. Finally, Everett alleged that the Yard employed too many old and disabled men. Admiralty was impressed by the criticism and called upon the Navy Board to comment on the attack. Everett was paid £100 for his information.

The Navy Board tried to be a humane employer and studied the welfare of their employees. The Board pointed out in defence that the older men were able to undertake light duties such as mooting treenails,<sup>1</sup> mending wedges, trimming grindstones, etc. A letter from the Admiralty office dated 19 April 1699 illustrates the concern of Admiralty for the old men.

*Application having been made to my Lords of the Admiralty of William Banstead who was lately discharged from ye Hulk at Sheerness by reason of age and inability to perform his duty, that he may be borne on board the Hulk at Chatham, he being very poor and unable to subsist otherwise . . . Approved.*

William Banstead wrote another petition and an Admiralty Minute dated 12 February, 1702/3 stated:

*Whereas a petition has been presented to His Royal Highness on behalf of William Banstead setting forth that he has been above 50 years in the service of the Navy, and was by reason of great age and infirmity entered aboard the Rotterdam Hulk at Chatham, which is now sunk, and praying therefore that he may be entered on board the next hulk which shall be appointed to Chatham . . . Approved.*

Admiralty was prepared to take note of appeals and petitions from the men. A letter from the Admiralty Office to Sir Edward Gregory dated 8 June 1699, stated:

*My Lords of the Admiralty having received an Information of some exorbitant rates exacted from the Workmen at Chatham for the drink they have from the Taphouse there; their Lordships have directed me to send you the enclosed copy of the said Information and to signify their directions to you to make enquiry into the matter to give them an account how you find the same to be.*

*On Jenks that keeps ye Taphouse in His Majesty's' Dockyard what was designed only for ye convenience of poor Workmen that belong to ye Yard to drink at as their necessary occasion required, and ye Beer was formerly sold for a Penny a Quart, but now this Jenks admitts of Gameing in the Taphouse aforesaid, and sells his Beer a little more than a full Pint for Three Pence so that poor Workmen are forced to go to the Pump and drink water by reason they have no money at all times to give at so dear a Rate for Beer to refresh themselves with all ... Petition dated 30 May 1699*

Later attempts were made to control the number of old employees by putting age limits on new entries of workmen. By Navy Board Order 3 October 1744, no old, lame, infirm or

<sup>1</sup> The making of treenails, the circular wooden pins which secured the planking and timbers of ships.

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unqualified workmen were to be entered into the Yard. By a similar order of 31 October 1751, labourers and scavelmen were not to be entered over 40 or under 20 years of age: amended in 1722 that labourers were not to be entered over 35 years of age. As a result of the Visitation of 1774 when the Commissioners observed a large number of ancient employees in the Yard fit only for superannuation, the entry age of Shipwrights was lowered to 35 years. This rule had to be relaxed in 1778 when a large number were required in wartime.

The Admiralty did not pamper their employees as shown below: When Commissioner St Lo suggested in 1703 that a shelter for the workmen at the Calls be provided, the Navy Board wrote:

*The sheltering of workmen at their call can be of little service to the Queen.*

Another of his proposals to save men's time at the Call or in-muster was answered:

*As for the calling at two places that might be done if it will be for the service and care ought to be taken to call the men as much in their own times and as little in the Queen's as possible may be, according to the ancient rules of the Navy, the Clerk of the Checque being limited to no sett times, but on the contrary left by his instructions to muster them certain for keeping the better check over the workmen and if he performs his part, and the Porter complies with his duty in suffering none to come in or go out after the Bell had rung ...*

Although he must have been aware of the old custom, Pepys in 1686 expressed surprise that the Yard Officers employed men for their private ends, for gardening, furniture repair, etc. Notices were affixed to the Yard Gate prohibiting such practices

A recurrence of this took place in 1713 when, according to the affidavits of William Shortis and John Martin, Foremen, and James Capeline, Quartermen, a shipwright, Messenger Walters:

*. . . hath neglecteth HM works and been employed in private affairs for 3 months past.*

The Navy Board ordered that Walters was to be discharged and admonished the Officers of the Yard.

*We take notice that not only the Assistant who is said to have employed the said Walters in his private affairs but also the Master Shipwright and the Clerk of the Checque and other Assistants have been very remiss in their duties.*

The Commissioner was ordered to set up notices at the gates of the Yard forbidding the employing of workmen in any sort of private business.

A Circular to all Yards, dated 30 July 1715, dwelt on the irregularities lately discovered at Deptford, such as taking of money for entering and promoting workmen, the entering of servants under the names of workmen who had no benefit from them, the acceptance of defective timber so that it could be used in firing in the officers' houses, the employment of apprentices for extra time to augment officers' income contrary to the Regulations of 16%, and favouritism in the allocation of extra working time.

It was ordered that the back doors opening into Deptford Dockyard of officers' houses were to be bricked up, and again officers were forbidden to employ the King's workmen or to use the King's stores for their own purposes.

In 1692 the Navy Board woke up to the fact that when an officer shifted from one Yard to another he took with him everything that could be moved; the house had practically to be

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rebuilt for his successor. In some ways worse, the officer on transfer took with him the official papers of his department. This arose from the slowness of the examination of the Dockyard Accounts at the Navy Office; for his own protection the officer had to retain his papers until his accounts were passed. The Navy Board in 1692 forbade both practices and officers' houses were to be surveyed on change of tenancy.

Conditions in the Yard at this period may appear bad to the 20th century observer but the work on the ships seems to have been satisfactory. Some sea officers complained of bad workmanship and equipment from the Yards but the successes of the Fleet indicate that a reasonable standard was maintained.

After the accession of Queen Anne the financial stability of the country continued to improve owing to the rapidly expanding overseas trade, the founding of the Bank of England and the subsequent funding of the National Debt.

The War of the Spanish Succession (1702-1713) proved a strain on the finances of the country and the pay to the Royal Yards was often delayed. On 8 November 1707, the Lord Treasurer wrote:

*As also by and out of the £12,000 for the Ordinary and £4,836 12s 6d for Wear and Tear, I which his Lordships have this day appointed to be issued to the said Treasurer at the Exchequer in money, you cause so much to be applied as will satisfy 2 months on the Course<sup>1</sup> .. and that you apply the residue towards paying the Christmas Quarter 1706 to the Yards.*

Admiralty was sent 'The humble petition of the Shipwrights of Deptford and Woolwich' dated 7 September 1710:

*... In a late petition to your Lordships most humbly represented that eighteen months' pay was at present in arrears to them, that several of your petitioners are very ancient, and their families large, which had no dependence but your petitioners' industry in HM service; and humbly prayed your Lordships consideration of their great grievance, to prevent the impositions they generally lay under when obliged to dispose at the discount of 3s in the pound. That in compassion to their great distress, your Lordships were pleased to order six months' pay which they accordingly received, but in Exchequer Notes which they were obliged to exchange at a discount. Their families being in great need, they must humbly beg an order for six months' pay more to relieve their great distress ..*

The delay in the payment of wages meant the maintenance of the system by which Dockyardmen had to be given credit by those outside the Yard. To this end the Commissioner of the Yard played a part in forcing those in debt to repay their creditors in whole or in part when the quarterly pay was received. As mentioned earlier the debtor had some protection against arrest whilst on the Yard books but if he refused to meet his obligations the Commissioner had no alternative but to discharge him.

Mary Hall, wife of a shipwright, put in a petition for help on 5 March, 1705/6. Her husband had worked at Chatham for 14 years and at the last pay of the Yard Commissioner St Lo refused to pay him:

*... unless he would allow one of the two quarters to a creditor that had made friends to him but your petitioner having four children and enceinte and at present a little behindhand in the world could not then spare it and the next day her husband*

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*went to the Commissioner and so acquainted him and pray'd that he might have his money but the Commissioner grew into a passion Kick't her husband and gave three or four blows in the face with his fist and with his ring drew much blood thereupon her husband did hold unto the Commissioner's arm to prevent his blows but did not strike him for which cause he hath caused her husband to be sent on board to serve in the **Nassau** to your Petitioner and her children's ruin unless relieved ...*

The Petitioner asked for her husband to be discharged and returned to work in the Yard: the result of the petition is not known.

Another petition was that of Thomas Barry, dated 15 July 1707, who had been a ropemaker at Melcomb Regis and was ruined by a fire. St Lo, MP with General Charles Churchill for the place, had given Barry work in the Yard at Plymouth and thus protection from his creditors. Barry had followed St Lo to Chatham in 1703; his creditors asked the Commissioner to stop his pay to meet his debts. Barry refused to comply with this request and St Lo discharged him. The petition to reinstate him in the Yard was refused.

The Navy Board enquired about an application for taking off William Palmer's 'R' on the Quarterly Book of Chatham Yard, where he was entered as a sailmaker. The Yard reported that Palmer was '.. made run' after he left the Yard. The last day he had worked was 20 December 1705 and he had lost much time. He was entered on 26 December 1705 in the **Royal Anne's** tender, and on the 20th March 1705/6 on that ship's books; he died in her on 12 December 1708. Apparently Palmer ran into debt, left the Yard, and joined the Navy for fear of his creditors, abandoning his wife and small children.

### **Shortage of Labour during the War of the Spanish Succession and St Lo's trouble with the Riggers**

The demand for labour during the War of the Spanish Succession was greater than the supply, owing to the competition of the private shipbuilders and the unpopularity of the service in the Royal Yards where wages were often in arrears. Several measures were adopted to ease the situation; Shipwrights and caulkers were pressed into service and in December 1703 and in September 1704 ships coming into the dock were ordered to turn over to the Yard all Shipwrights, caulkers and sailmakers borne on their books. These men were entered on the Yard books by the Clerk of the Checque, paid board wages weekly for subsistence and were checked out of victuals on board the ships to which they belonged.

Royal Marines<sup>1</sup> were employed in the Yard as labourers heaving in and out ballast and manning the cranes, with a payment of 6d a day over their military pay. However, the Navy Board was not impressed with Marines as a source of labour.

*Their ungovernableness without their proper officers who would seldom be obliged to attend ... the service were better performed by others.*

Greenwich Hospital pensioners were employed in the Rigging House; their pensions were stopped when they were so employed but restored when the men were past labour, or when their services were no longer required and they returned to Greenwich Hospital.<sup>2</sup>

<sup>1</sup>in 1808, soldiers were employed to hasten the completion of Inflexible

<sup>2</sup>in 1810, Greenwich pensioners were returned to the Hospital by Long Boat as they were found incapable of performing their duties in the Yard

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There was a great deal of industrial unrest in the 18th century at the Royal Yards. The first occurred in the winter of 1703/4 when riggers at Chatham objected to changes instituted by the new Commissioner, St Lo. The riggers were in a strong position for their services were urgently required to prepare the ships for sea and they were in short supply. Formerly, in the winter months the men discharged from the ships obtained employment as riggers in the Yard, but this source of labour was considerably reduced after the outbreak of war. As we have seen above an attempt was made to raise the numbers by fishermen impressed to serve in the Yard.

St Lo who had been transferred from Plymouth to Chatham in 1703 endeavoured to force on the riggers the longer working hours in force at Plymouth. In his report to the Navy Board dated 15 February 1703/4 he stated:

*Observing the many inconveniences which have attended the service in the Yard by the usual practice of the riggers coming to their labour at 7 in the morning and going thence at 4 in the afternoon, I took the opportunity of discoursing with them on that subject and exhorted them to conform to the coming in and going out of the Yard at the times other workmen do, viz, at 6 in the morning and 6 in the evening according as the season of the year will admit; and that, if they wrought their dinnertime, they would have a proportionable allowance for it. To which they seemed to agree and went to their labours. But seeing them at the Gate this morning after 6 of the clock and not coming into the Yard, I expostulated with them as the day before, and desired them to come into the Yard. But instead of complying therewith they cried one and all that they would not be slaves, and would make their own terms, and that if they wrought the usual hours of other men they would have two tides a day.*

*Whereupon /laid hold of one of them (whom I supposed to be the ringleader) but he was twice rescued out of my hands, and once out of the hands of some boatswains who had him in custody; and with a holloa went away in a body, without any regret to the Service or Command. I confess they are very indifferent persons as to their labour, but the necessity of the Service forced us to make use of them.*

The next day the Riggers and Labourers sent a petition to the Navy Board complaining of the treatment they had received from the Commissioner:

*We told him we were ready to obey his commands, provided the usual allowance for labour from 6 to 6 might be allowed us. Which he would not comply with, but told us we should have no more wages that we had from 7 to 4 (which was never before required from any labourers) and whereupon drew his sword and drove us from the Dock Gate, and said he would send us all to the West Indies, notwithstanding we, Your Hons' supplicants, are masters and owners and have several servants under us.*

The Navy Board wrote immediately to the Admiralty that they had heard that 90 Riggers were coming from Chatham to London to protest, and that they had recommended these men to return to duty.

*He (Commissioner St Lo) had no authority to make an alteration in the custom of the Yard, so we think the attempt to do so is ill-timed.*

The situation was not improved when St Lo attempting to replace the strikers by offering extra pay, on his own initiative, to such of the crews of the ships in dock who would

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volunteer as riggers. On enquiry the Navy Board found that 50 seamen were so employed for 3 or 4 days and an extra allowance of 2s a day was made to each of them.

St Lo was not supported in his actions.

*. . . but at present tis not a proper time to meddle with them, and the Queen being very pressing for the dispatch of the ships fitting out in the river Medway, I am to signify His Royal Highness's pleasure to you that you do lett the said riggers work as usually they have done ...*

The dispute was finally settled by promising the riggers two tides a day extra for working from 6 to 6.

### Numbers employed in the Yard 1699 & 1711

An analysis of the number of men borne on the books of Chatham Yard on 14 April 1711 is given below, the figures for 15 June 1699, a time of peace, are given for comparison. (The total for Portsmouth in 1711 was 2,001)

Trade	14 April 1711	5 June 1699
Shipwrights	546	381 <sup>1</sup>
Caulkers	53	56 <sup>1</sup>
Joiners	41	46
House Carpenters	40	47
Plumbers	3	3
Bricklayers	19	18
Sailmakers	11	9
Riggers etc	149	13
Scavelmen	50	40
Labourers	157	80
Oakum boys	21	37
Teams (4 horses plus man)	8	
Sawyers	56	38
Pitch heaters	4	
Blockmakers	2	
Coopers	3	
Quarter boys	24	12
Braziers	3	
Locksmiths	2	
Spinners	83	
Hatchellers	10	
Boys	<u>2</u>	
	<u>1287</u>	

<sup>1</sup>in March 1688 there were 479 Shipwrights and caulkers at Chatham, 171 at Deptford and 96 at Woolwich

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By 1712 active warfare had ceased and the signing of the Peace of Utrecht in the following year meant large reductions in the numbers employed in the Royal Yard. In July 1712 the first order giving details of the dismissals were issued and by 27 October 1712 the permitted complement of the Yards was:

Trade	27 October 1712
Shipwrights	400
Caulkers	40
Joiners	31
House Carpenters	30
Oar Makers, Wheelwrights, Plumbers as occasion requires	40
Pitch heaters	2
Blockmakers, Coopers, Treenail Mooters, Braziers as occasion requires	
Bricklayers	12
Sailmakers	8
Riggers	50
Scavelmen	30
Labourers	120
Quarter Boys	12
Oakum Boys	15
Teams	5
Locksmiths	<u>2</u>
	<u>797</u>

Thus the number employed at Chatham Yard was reduced from approximately 1300 to 800. Wages were then 15 months in arrears. (The Commissioner was ordered to send up the tickets for the wages of those discharged.)

The number employed at Sheerness Yard in 1712 was 162 including 60 Shipwrights.

### **Industrial Unrest in the Yard**

The entry of apprentices into the Ropeyards caused trouble in 1729 at Woolwich.<sup>1</sup> The Ropemakers opposed any increase in the number of apprentices entered since they feared redundancies at a later date. The Navy Board proposed to increase the number of apprentices by entering about a dozen to the Officers of each Ropeyard. The main grievance of the men was the number allowed to the Clerk of the Ropeyard. Though the Navy Board broke the strike the ropemakers gained their point and after 1730 no apprentices were allowed to this officer.

Not only the men but the contractors had their grievances about the Yards, They complained that they could not get their stores received, nor the bills for them, without bribery.

*All the clerks and even the Watchmen and labourers do expect and insist upon treats,  
and the Officers require a handsome douceur.*

<sup>1</sup> See section on Apprentices in chapter 4



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The maximum pressure brought to bear on Admiralty was by the Dockyardmen striking during a war or preparations for one. There was, however, a deterrent to striking, or mutiny as it was called; the strikers could be sent to sea. This was an inconvenient weapon since it caused loss of labour in the Yards, and was rarely used. Thus in 1739 when war with Spain was imminent, the Chatham Shipwrights did not wait for the declaration of war in October, but mutinied in August. On 28 August 1739 they struck work over the fining and discharge of some of their number for alleged laziness in fitting out the **Nassau** Mulcts had been laid on 5 quartermen whose gangs had not installed as many gun deck beams on the **Nassau** as the Master Shipwright thought proper for a day's work. 222 Shipwrights refused to work until the demands of their petition presented to Commissioner Thomas Matthews were met. In the petition were complaints about the arbitrary fines; the curtailment of the privilege of 'chips;' the disturbance of their dinner break owing to rush of work; and the allocation of overtime, the older men declaring that they were not given a fair share.

In their petition, the men declared:

*There is not a man amongst us who would not freely die for our King and Country, butt we will not tamely suffer ourselves to be made slaves to any particular man's whim, for we are free born subjects. For when those that are to do Justice act unjustly if not timely retrieved, Liberty will soon die, for Justice is the prop of Liberty, which is all true Englishmen's lives and souls.*

The Commissioner was in a difficult position, but his later conduct at the Battle of Toulon throw doubts on his qualities of leadership. He appealed to the Navy Board for help in suppressing the strike; they urged concessions to get the ships to sea, the cancelling of doubtfully imposed fines, and the restoration of 'chips.' The Board proposed that the ringleaders be noted and discharged when the pressure of work was over. Commissioner Matthews urged the Board to come to Chatham to deal with the strikers themselves. Four members went to Chatham and negotiated with the strike leaders on 30 August. The strikers pointed out that they were householders and that some were Freemen of Rochester. The Board offered to let the quartermen off with a reprimand but the Shipwrights refused to go to work until they were allowed to carry their 'chips' out upon their shoulders without unbinding them at the Gate, and the older men given a fair share of overtime. The strike was settled on 1 September 1739 but there was no insistence upon a non-victimisation clause and on 19 September, 3 men, alleged to be ringleaders, were discharged and refused further employment in the Royal Yards.

In October there was a strike at Woolwich, but this Yard was not so important as Chatham and the Navy Board stood firm. Troops were sent to Woolwich and clemency was offered to those who returned to work; the strike soon petered out. The Navy Board then consented to receive their petition. The men asked for double time for Sunday working, half a tide extra for those working on ships afloat who could not come ashore for dinner, whole days instead of half days on the four State holidays, protection against the Press for 30 days instead of 4, and to carry out 'chips' according to the ancient custom. After being lectured about their 'enormities,' the deputation retired with 'great submission.' The Board conceded only the first two requests; this applied to all Yards by Navy Board Order 1st February 1739/40. In the case of the 'chips' issue, the Board replied that the men were entitled to 'such chips as shall be split out by their tools.'

1739 was the year of strikes. In Commissioner Matthews' words:

*Insolence is then in fashion.*

On 7 November the Shipwrights at Sheerness downed tools when it was rumoured that one of their number was not indentured and early in December the caulkers at Chatham

## DOCKYARDMEN

walked out because their petition for extra work was ignored. (Sheerness Yard came under the superintendence of the Commissioner of Chatham Yard)

The next group to complain was the Smiths. It is necessary to digress to explain their position. Up to 1723 Smiths' work was carried out by contractors whose men worked at the forges in the Yard. In 1722 it was ordered that ironwork at Deptford, Woolwich and Chatham was to be wrought up under the Master Smith selected from 'persons fitly qualified.' Thomas Dudley, the first Master Smith at Chatham, was appointed in 1723. By Navy Board Order of 9 April 1723, the conditions of work for Smiths were defined:

*The Smiths were to work from 6 am to 6 pm and 5 pm Saturday as the Shipwrights do.*

*Smiths were to be allowed 1 gallon of (7s 6d barrel) beer per day<sup>1</sup> provided they drank it in the shop. In lieu of the beer provided by their Master and for Waygoose and Clem Days<sup>2</sup> for which they likewise have an allowance, they were to be allowed by the Clerk of the Checque on St Clement's Day an additional day's pay.*

The Navy Board proposed a deduction of 2d a month from the pay of Smiths to cover medical care as was the case for Shipwrights.

*Smiths were to be under the same regulations as they are in relation to Hurts, Wounds or Accidents falling out in the Service.*

The Smiths at Woolwich and Deptford made written protests about their conditions of employment. They declared that they worked from 6 am to 6 pm all the year round, whereas other tradesmen had shorter hours in winter. They were given no set times for meals and the overtime rate was low. They demanded double pay for their Sunday work and either to have extra pay for additional hours in winter or else to work the shorter hours of the other men. The Smiths declared that they were the worst paid of all the tradesmen. The protesters then got in touch with the other Yards.

In November 1739 the Navy Board ordered all Yards to report on the validity of the Smiths' claims. At Sheerness, the Smiths worked 12 hours a day from 6 to 6 all the year round, but finished on Saturdays at 5 pm, as did the Shipwrights. They had no allotted dinnertime but were expected to eat 'between the heats.' Overtime was normally paid at the hourly rate proportional to their daily pay. At Chatham, the conditions were the same. Overtime, except when on anchor work, was paid at the normal day rate, but work on the afternoons of the four State holidays earned an extra half day's pay. Since 1723 Smiths had had extra pay and beer for anchor work, and from 1728 they had had a lodging allowance. At Portsmouth, the Master Smith allowed the men half an hour for dinner. Night work was paid for at the rate of a day's pay for 10 hours' overtime and proportionally for a lesser number of hours. Extra pay for anchor work varied from 10d for 2 hours for the Master Smith and First Foreman to 6d for the hammermen.

In July 1740 the Navy Board acknowledged that the Smiths' complaints were well

1 20th August 1804: 'Workmen to be employed ... for copper refining at 30s a week to be allowed 4 quarts of beer of same quality as that allowed Smiths per day'

2 Waygoose was a feast. St Clement is the patron saint of blacksmiths. On St Clement's Day, 23 November, a smith apprentice dressed up as an old man, was carried round Chatham Streets by the Smiths and their apprentices, who collected donations for a supper. In later years the procession was confined to the Yard itself and the custom ceased in the 1870's.

In a similar manner, ropemakers and their apprentices celebrated St Catherine's Day, 25th of November; a boy dressed up as St Catherine was carried round the streets by the ropemakers and their apprentices and again money was collected for a supper. By 1859 this outing was confined to a visit to a public house followed by a game of cricket.

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founded. They maintained that the lower rate of overtime dated from the time when the Smiths' work was put out to contract and had been continued when the Smiths became Yard employees in 1723. An exception had been made for anchor work when 2 hours work extra was paid for by a quarter day's pay. The Board agreed that the Smiths should have the anchor rate for all extra work. Even so the Smiths were worse off than the Shipwrights who earned an additional day's pay for 5 hours extra work, the night. The Smiths had to wait until 1764 before they were allowed to leave the Yard with the rest of the workmen.

In August 1744 the Smiths at Deptford and Woolwich struck and went down to Chatham 'in a riotous manner to prevail upon the Smiths there to do the same.' The men at Chatham were persuaded to strike and together they went to Messrs Crawley's forges at Greenwich (contractors to the Admiralty) and forced the Smiths there to leave off working for the Crown. Admiralty acted ruthlessly; they impressed the Smiths and sent them aboard the **Royal Sovereign** and broke the strike. The Navy Board had difficulty in filling the places of those so impressed.

There was further trouble in 1745 when the ropemakers of Chatham went on strike; picketing and other modern methods were used. To step up the production of cordage the Navy Board decided to increase the number of apprentices; one new boy for every eight working ropemakers.<sup>1</sup> As in 1739, the main reason for the strike was the anxiety of the ropemakers to limit the numbers to avoid excessive dismissals at the end of the War.

Another reason was that in wartime the ropemakers were making all the money they wanted without the additional burden of supervising apprentices. The ropemakers objected that most of the boys taken on could initially be of no assistance in the skilled tasks of hatchelling and spinning and hence had to be employed in the laying house. This could be hazardous:

*It is customary for boys to be careless and addicted to play having no danger so fear none, and should a hook overpower us we can expect nothing but death or being grievously wounded, which may render us incapable to getting bread for life.*

The strike spread to other Yards and during May 1745 three of the four naval ropeyards were at a standstill.

In 1729 the strikers at Woolwich had successfully resisted the Navy Board's entering about a dozen apprentices to the officers of each ropeyard. The strikers of 1745 pointed out the capitulation of the Navy Board over this issue but the Board claimed that the earlier disturbances were over the question of whether the Clerk of the Ropeyard should be allowed servants. The Navy Board, supported by Admiralty, broke this strike and the ringleaders were discharged, pressed and sent to sea.

When the ropemakers at Chatham returned to work their relations with the Master Ropemaker were strained. On 29 December 1745, Commissioner Charles Brown sent to the Navy Board a petition of complaints of the ropemakers against Mr Guy, the Master Ropemaker. They declared that he had encouraged them to oppose the order of the entry of additional servants to the trade. They had gone on strike in May following Guy's encouragement, but on their return to work they had received the 'vilest usage' from him. He had beaten the workmen and despite a reprimand from the Commissioner, they had received nothing but bad treatment from him.

The men had not complained about the delays in paying their wages which had been the foundation of most dockyard disputes a half century before. Most of the disputes had been over their determination to get additional money by overtime and allowances.<sup>2</sup>

<sup>1</sup> See Apprentices in chapter 4

<sup>2</sup> An excellent detailed account of the above industrial disputes is given by B MeL Ranft in Vol 47 of 'Mariners Mirror' (1961)

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However, the workers at Chatham stayed out for two days in December 1745 because their pay was five quarters in arrears; usually payment had been about a year behind. In their petition the men pointed out that their '... dealers were cutting off credit.'

### Daily Rates of Pay 1739<sup>1</sup>

<i>Shipwrights (from Dec 1690)</i>	<i>Joiners (from Jan 1693/4)</i>	<i>Sailmakers (from Jan 1693/4)</i>
Master Mastmaker 3s 0d	Master Joiner 2s 6d	Master 3s 0d
Master Boatbuilder 3s 0d	Workmen 2s 0d	Workmen 1s 10d
Foreman 3s 0d	Servants 1s to 1s 9d	Servants 1s 1d to 1s 8d
Quarterman 2s 6d		
Workmen 2s 1d		
Servants 1s 2d to 2s 0d		
Quarter Boys 8d		
<i>Caulkers (from Jan 1693/4)</i>	<i>Smiths (from Oct 1726)</i>	<i>Riggers (from Jan 1693)</i>
Foreman 3s 0d	Master Smith 3s 6d	Foremen 2s 0d
Quartermen 2s 6d	Foreman 1st class 2s 6d	Workmen 1s 6d
Workmen 2s 1d	Foreman 2nd class 2s 2d	Labourers 1s 4d
Servants 1s 2d to 2s 0d	Foreman 3rd class 1s 10d	
Oakum boys 6d	Hammermen 1s 8d	
Pitch heaters 1s 3d		
<i>House Carpenters (from Jan 1693/4)</i>	<i>Ropemakers</i>	<i>Scavellmen (from Jan 1696/7)</i>
Master 2s 6d	Foremen 1s 10d	Foreman 1s 6d
Foreman 1s 11d	Spinners 1s 8d	Workmen 1s 3d to 1s 6d
Workmen 1s 10d	Servants 1s 6d	
Servants 1s to 1s 9d	Hatchellers 1s 5d	<i>Labourers (from Dec 1690)</i>
	Winders up 1s 4d	Foreman 1s 6d
<i>Bricklayers</i>	Labourers 1s 3d	Workmen 1s 1d to 1s 2d
Master 2s 6d	House boys 6d	
Workmen 1s 8d		
Servants 1s 2d & 1s 4d		
	Wheelwrights 1s 10d	Sawyers 1s 6d
	Blockmakers 2s 1d	Coopers 2s 0d
	Plumbers 2s 6d	
	Braziers 2s 6d	
	Locksmiths 2s & 2s 6d	

Shipwrights, caulkers, joiners, house carpenters, sailmakers, Smiths and ropemakers were paid lodging allowance of 2<sup>1</sup>/<sub>2</sub>d a week.

<sup>1</sup> These rates remained unchanged with the exception of the Smiths until they were replaced by task and job rates in 1788

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### Extracts from Quarter Books of 1739

1st October to 31st December*	Days	Nights	Tides	
Shipwrights    ``	79	9	142	£13.12.1d
		Lodging		2 8d
Labourer	77		10	£ 4. 6.9d
1st January to 31st March	Days	$\frac{1}{4}$ Days	Hours	
Smith	70	24	154	£ 8. 5.2d
		Lodging		2.5d

\*This period occurs during the War of Austrian Succession (1739/1748) and the account shows excessive overtime. In the quarter 1st of January to the end of March before the outbreak of war one shipwright worked 77 days and 34 tides for a total of £9.1.8d for the quarter, an average of 14s a week. In the account given above the earnings in wartime were roughly 21s a week.

A night is a period of overtime of 5 hours attracting a day's pay, (shipwright 2s 6d). This was probably worked on a Sunday.

A tide is a period of  $1\frac{1}{2}$  hours overtime attracting  $7\frac{1}{2}$ d for a shipwright, caulker and joiner, 6d for a house carpenter and sailmaker, and 4d for a rigger, labourer and scavelman.

By Navy Board Order 1st August 1780, Shipwrights' servants were allowed 4d a tide when they worked extra.

The day rate for Smiths was 1s 8d; overtime was paid for at the rate of a quarter day's pay for 2 hours work. Anchorwork was paid extra at 3d an hour.

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1739	Number of workmen at		Chatham in 1739	
	<i>June</i>	<i>November</i>		
Shipwrights	570	590		
Quarter Boys	11	11		
Caulkers	97	99		
Oakum Boys	32	33		
Joiners	52	62	<i>Totals in all Yards</i>	
House Carpenters	100	100	<i>in June 1739</i>	
Wheelwrights	1	1		
Plumbers	2	2	Deptford	895
Pitch heaters	2	2	Woolwich	778
Bricklayers	20	20	Chatham	1365
B L Labourers	21	20	Portsmouth	1531
Sailmakers	28	33	Plymouth	672
Scavermen	49	70	Sheerness	258
Riggers	32	32		
Riggers' labourers	26	26		
Labourers	108	148		
Blockmakers	2	2		
Braziers	2	2		
Locksmiths	2	2		
Teams	10	10		
Sawyers	33	33		
Treenail mooters	2	2		
Coopers	1	1		
Smiths	45	45		
<i>Ropeyard</i>				
Foreman				
Spinners	83	94		
Hatchellers	15	16		
Labourers	16	17		
Boys	3	3		
	<u>1365</u>	<u>1476</u>		

Omitting workers in the Ropery it will be seen that Shipwrights formed roughly half the labour force of the Yard. Another large group of workers were the labourers employed all over the Yard. A letter dated 10 February 1737/8 written by Commissioner Matthews of Chatham to the Navy Board gives their distribution over the Yard.

<i>Labourers</i>			
Attending offices	2	Warders	5
Pumping	5	Cabins	3
Letter Carrier	1	At Gate	2
Cleaning sawpits	2	Mending colours	2
At the Kiln	8	Grindstone turners	2
Lofts & Storehouses	12	Surgeon's shop	1
Dog drivers <sup>1</sup>	9	Ship cleaners	2
In boats	6		62

The number borne 81

Boatswain to do all work of receiving timber, plank and other stores. 18 (insufficient to work one crane). Note 26 labourers are watchmen that lose 4 hours each day.

1 Spikes driven so that timber can be hauled

## DOCKYARDMEN

### Visitations by the Lords Commissioners

By 1747 the Lords of the Admiralty looked for economies in the Dockyards because of the alarming growth of the Navy debt. As a subject for investigation they fixed upon Extra (overtime). Reports from the Dockyard Officers had made it clear that the majority of workmen, including virtually all the Shipwrights and their servants, were working extra.

The Navy Board urged the Dockyard Officers to curtail overtime where possible. They insinuated that these officers sometimes sanctioned extra work for personal gain, the benefits of servants' wages, and stressed the impropriety of allowing old men and servants in the first two years of their apprenticeship to be so employed.

Commissioner Brown of Chatham pointed out that if the shipwright apprentices were allowed nothing for working extra with their masters during the first two years of apprenticeship and elderly men debarred from working extra, the artificers would mutiny as they had done in the past, when they thought themselves deprived of their rights. Many Dockyard Officers thought it was the extra that kept men in the Royal Yards and stopped their leaving for the merchant Yards.

After the peace of Aix-le-Chapelle in 1748, the Board of Admiralty, under the First Lord, the Earl of Sandwich, dissatisfied by the performance of the Dockyards,<sup>1</sup> adopted the system of Visitations of the Dockyards by the Lords Commissioners. The first of these Visitations in 1749 led to severe criticisms of the Yards and of the Officers and Men. The first visit was to Woolwich, where many of the workmen were found to be idle, old or infirm. They found that the labourers doing piece work were estimated to be accomplishing as much in 4½ days as those paid by the day did in ten. The ships in ordinary were found to be in bad condition, were inhabited by women and children, and never visited by the Yard Officers, who had not overhauled the moorings for 3 years. The Master Attendant was immediately superannuated. The Yard Officers were assembled and admonished by the Lords Commissioners. At Deptford, 95 of the elderly and infirm workmen were ordered to be discharged. Many abuses were noticed and there was criticism of the condition of the Victualling houses.

At Sheerness they found that neither the Storekeeper, nor his predecessor, had sent in accounts for an indefinite period, but that the Yard on the whole was satisfactory. At Chatham in 1749, the Lords Commissioners found that the Storekeeper, Daniel Devert, was so old as to be incapable and his accounts were 3½ years in arrears. Workmen leaving the Yard at noon were seen carrying out whole timbers in the presence of the officers. They noted with disapproval the retention of old men in the Yard who were given light work, and that widows were allowed to retain their late husbands' apprentices.<sup>2</sup> The bad condition of the ships in ordinary was noted, which signified 'great neglect in the officers.'

### Piece Work or Task Work

The Visitation by the Lords Commissioners was followed by a series of orders for the better management of the Dockyards. The Navy Board apparently did little; after some reprimands they were ordered in June 1752 to appear before the Admiralty Board for failure to follow their instructions and to introduced task, or piece work, in the Yards. Piece work was already employed to a limited extent in some trades in the Yards: brick-laying, ropemaking, sailmaking, sawing and caulking, but Admiralty wanted piece work employed all over the Yard.

1 Admiralty had been discontented with the operations in the Dockyards for some years. In 1746, Admiral Stuart was ordered by the Board of Admiralty to take Dockyard affairs at Portsmouth into his own hands over the Resident Commissioner

2 See Apprentices in chapter 4

## DOCKYARDMEN

The Navy Board pointed out in defence that in the case of bricklayers a little work had been done by contract. The number of joiners had to be reduced to a minimum and these were employed mainly on repairs, a branch of working which did not lend itself readily to task estimates. Sailmaking had been performed unsatisfactorily by contract task, and it certainly would be so done in the Yards themselves. The Navy Board had ordered in 1749 that ships were to be broken up by task work, but they were against the employment of task work in shipbuilding. They argued that task work would lead to hurried, careless work. Some of the slowness of docking and repairing of many ships could be attributed to the slackness of ships' companies in striking the rigging and clearing guns and stores before docking, and rigging and re-storing after.

By 1757 there was some relaxation of the mustering rules. Workmen hurt or strained on duty, making them incapable of working all day long, were excused the call more than once a day. Those employed at night, shutting the dock gates, were permitted to go out of the Yard when they had shut them; originally they were allowed two tides and kept there all the time even when the gates were closed. Men employed during breakfast and dinnertime were paid for this and not given time in lieu; similarly overtime was paid.

### Conditions in the Yards 1762 - 1774

In 1762 the Yard wages were 15 months in arrears but there was no strike as had occurred in 1745. The financial position of the country was improving and men were able to cash their tickets at 7<sup>1</sup>/<sub>2</sub>%, a great improvement over conditions at the beginning of the century when tickets would have been cashed at discounts from 25% to 50%. An 18th century advocate for the Dockyard Shipwrights wrote:

*Every shipwright in HM service that takes up his money on usury or by assignment, and it is almost impossible to avoid it, suffers a loss of at least 40s a year*

The Shipwrights from all the Royal Yards forwarded to the King petitions complaining of insufficiency of pay and the arrears of payment of wages<sup>1</sup> The one of 1765 was answered by the Shipwrights being allowed to work an extra tide a day during the summer months, thus gaining 7<sup>1</sup>/<sub>2</sub>d a day (5 am to 6.30 pm).

The increased hours were worked in practice for a few months a year; the men petitioned again without success. The cost of living kept rising for the rest of the century. A pamphlet, 'A plea in favour of the shipwright,' published in 1770, pointed out that the shipwright kept a house and paid rates and taxes; to maintain this standard more money was needed and it was proposed that an increase of 5d with the surrender of the privilege of the taking of 'chips' out of the Yard might be made.

During the Seven Years' War, (1756/1763), there was great difficulty in staffing the Royal Yards, but by November 1762, when a preliminary Peace Treaty was signed, all artificers, riggers and labourers were reduced to a single day's work. All who wished to leave the Yard were to be discharged:

*The Clerk of the Checque is to make out and to send Tickets to be assigned for the payment of their wages.*

After 1763 there was a period of peace until the American War of Independence which started in 1775. The numbers employed in the Yards in the years 1754 to 1783 are given on the next page:

<sup>1</sup> There is a copy of one such petition in Rochester Museum  
Chapter 3



## DOCKYARDMEN

### Numbers employed in the Yards

	<i>1754</i>	<i>1761</i>	<i>1764</i>	<i>1765</i>	<i>1768</i>	<i>1772</i>	<i>1783</i>
Chatham	1188	1720	1366	16421	1368	1553	1655
Sheerness	276	455		568	380	439	
Portsmouth			1659	2127	1793	2228	2285
Woolwich	698	1080		972	798		
Deptford	801	1074			839		
Plymouth			1464	2159	1667	2033	2409

### Establishment of the Yard in 1764

Shipwrights	640	Smiths	54
Quarter Boys	11	House Carpenters	52
Caulkers	76	Wheelwrights	2
Oakum Boys	30	Plumber	1
Joiners	34	Pitch heaters	2
Sailmakers	30	Bricklayers	13
Scavemen	50	B L Labourers	13
Yard Labourers	160	Riggers	46
Blockmakers	2	Riggers' Labourers	20
Locksmiths	2	Brazier	1
Sawyers	76	Teams 10 <sup>2</sup>	<u>10</u>
			1325

Sheerness Yard came under the superintendence of the Chatham Commissioners. The establishment of this yard in 1774 was:

Officers	16	Sailmakers	18
Clerks	13	Scavemen	30
Shipwrights	160	Riggers	16
Caulkers	30	Riggers' Labourers	6
Quarter Boys	5	Yard Labourers	33
Oakum Boys	10	Blockmakers	2
Joiners	15	Brazier	1
House Carpenters	30	Sawyers	24
Wheelwright	1	Armourer	1
Plumber	1	Smiths	30
Pitch heater	1	Horse teams	4
Bricklayers	7		
B L Labourers	7		

The total shown is 719, this includes 8 men extra borne on the books and 250 men in the Ordinary.

1 These figures appear high, for in another return, the number at Chatham in May 1765 was 1194, and in November 1765, 1325, the increase being caused by work on the ships in ordinary

2 Teamster and 4 horses

**DOCKYARDMEN**  
**Piece Work in the Yard**

Mention has been made of piece work carried on in certain trades in the Dockyard. The work in these cases was of a nature which made it relatively easy to measure and this could be done by clerks of the Clerk of the Checque.

Much of the **sawyers'** work was paid at a piece work rate. In 1696:

oak, elm, fir	3s 0d per 100 feet
ash or beech	3s 6d per 100 feet

The output of a pair of sawyers was assessed by a Measurer. When the Yard was slack or when there was no timber to be converted the sawyers had a lean time when on piece work. Often they would be allowed to work outside the Yard under these circumstances.

The **oarmaker** was a contractor who worked in the Yard with materials provided by the Navy and was paid an agreed price for each oar.

In most of the other trades the men worked on measured day work; true piece work was not introduced until the last quarter of the 18th century. A Navy Board Order dated 24 August 1721 defined the stint of the caulkers engaged on new construction:

<i>Thickness of plank or thick stuff</i>	<i>Day's work</i>	<i>For a tide</i>
1½ in	40feet	11 feet
2inches	36feet	10feet
3 inches	30feet	7½ ft
4inches	20feet	5feet
5inches	17feet	4¼ ft
6inches	16feet	4feet
7 inches	15feet	3¾ ft
8inches	14feet	3½ ft
9inches	13½ft	3¼ ft
10inches	13 feet	3feet

There were some complaints by sea officers about defective caulking at Chatham. The Chatham officers would be notified of the position of the faulty work with orders to discharge the offending workman.

An example of true piece work for caulkers is given in connection with repair work on the **Victory** :

<i>To break, horse, <sup>1</sup> search</i>	<i>11¾ d per 100 foot</i>
<i>Tore-caulk defective work that search has revealed and pay up seams</i>	<i>11¾ d per 100 foot</i>

Labourers could be employed on measured work:

*Chatham 1744, Bricks landed on wharf to be carted to any part of the yard with assistance of 1 team, 700 per man*

(Presumably a day's work)

1 To 'horse up' is to harden oakum of the seams of vessels. The seams were pay'd with pitch.

## DOCKYARDMEN

In January 1765 a warrant was given for the first of a series of batches of piece work for **joiners** on the **Victory** and other ships.

*By the Principal Officers & Commrs of His Majesty's Navy*

*The Master Shipwright and his assistants having proposed that the following Tasks may be let to the Persons undermentioned viz ...*

*Victory .. 9 joiners, 17 days, to frame and .fix 12 Pilasters, 18 Pannels, 6 Sash Doors, 4 Sashes and 4 Shutters, Doors, Stancions, Stops, Pulley Pieces, Mouldings, and false Beams, etc to the Steerage bulkhead and outsides of the Wing Cabbins on the Quarter deck ..*

*These are to direct and require you to let the said tasks at the rates proposed, if you cannot prevail on the workmen to take it for less. And the Clerk of the Checque is to set off their earnings on the Quarter Books and at the same time let us know the amount of each service.*

*For which shall be your warrant.*

*Dated at the Navy Office, 1st January 1765*

After the Visitation of 1774 it was ordered that joiners and bricklayers were always to be employed on task work.

In 1716 the practice of making sails by Yard employees started; hitherto they had been made by contract from canvas supplied by the Navy Board. Sailmakers worked on piece work for many years, receiving a day's pay for a day's work which was reckoned by a linear measurement of stitching. In 1729 the Navy Board complained:

*At all Yards when the workmen have .finished the number of yards they call a stint or day's work, they idle during the rest of the day, or work for themselves in making breeches which they sell to Shipwrights and seamen.*

The demand for sails during the Seven Years' War (1756/1763) was so great that the Navy Board ordered that sailmakers' work was to be performed by the Great or Task. The rate for seaming, sticking, tabling reefbands and all plain work with waxed twine was 4s 2d per 100 yards, and with dip'd twine 3s 8d per 100 yards. For a day's wages, Is 10d, the sailmaker had to carry out 44 yards of waxed twine work, or 50 yards of dip'd twine work. There were pro rata figures for  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$  and double day's work. (All courses, topsails and lower staysails were made with twine waxed by hand; all other sails with twine dip'd.)

The apprentices who had served one year of their apprenticeship were expected to perform work in proportion to their wages.

Those sailmakers employed by Task or Contract work started at 6 am or when it was light, and worked until 3 pm after staying in the yard during their dinnertime, for a day's work. Others worked an extra 1114 hours for each extra quarter day's pay; and those working a double day left at 8 pm. The sailmakers employed according to this scheme were not required to attend any other call than that of their coming in the morning and leaving in the evening. The Master Sailmaker and the Foreman were allowed additional pay when Task work was ordered.

After a protest the sailmakers were made an allowance for the work they did in rolling or stowing the sails for transport; the allowance for courses was 4 yards. Eventually labourers were employed for this work.

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The sailmakers were allowed to go out of the Yard an hour earlier on Saturdays than on other days provided their Task was completed. If the sailmaker was not feeling well he was allowed to work normally by the day instead of piece work.

Work measurement in some cases proved difficult, especially in the cutting out of sails and repairs:

*... which prevents the said people from performing the number of yards of sewing required by Task ... the said men to be allowed extra in proportion to the people constantly kept to Task work.*

A Navy Board Order of 18 December 1802 increased the amount of work required for a single day's Task: 50 yards per day with waxed twine and 57 yards per day with dip'd twine:

*... and that they may have no reason for slighting their work, the same is not to be performed in less than 5 hours.*

(The number of stitches to each yard in length of seaming varied from 108 to 116. Barge sailmakers used 5 stitches to the inch, and did 15 yards of seaming per hour.)

The families of Dockyard workmen and others in Chatham in 1806 were paid 6d for each hammock made from canvas and from condemned sails supplied by the Yard; in 1809 the price was increased to 9d. (The hammock was 5ft 10in x 4ft 2in) Later in the same year the canvas was cut in the Yard to the proper dimensions and the workers received 7d each for making them.

The Ropery was a production unit which in many ways operated independently of the Yard. The **ropemakers** were paid a day's pay for a measured amount of work and this was generally finished in less than a day. If overtime was not being worked there were disputes over the necessity to stay in the Ropery when the task was completed. Thus in 1663 the Clerk of the Ropeyard at Portsmouth complained to the Navy Commissioners that he had been:

*much obstructed in the discharge of his duty by the mutiny of the workmen.*

By hasty spinning they finished what they called a day's work (to spin 77lbs of yarn) by half an hour after dinnertime and stopped work.<sup>1</sup> The Clerk declared:

*Which time I cannot think a sufficient day's work. Rather than work until 4 of the clock, they will not work at all.*

Next day he reported 3 spinners out of the 25 had turned up, the rest then ... *did go to the Alehouse*. He requested authority to dismiss the ringleaders. The ropemakers in their defence stated that the Clerk had:

*... such malice implacable towards them that they cannot endure it calling them dogs, rebellious rogues and using much other revolting language, causing their creditors in the town not to trust them and bringing in two of his own servants who spoil the hemp in spinning.*

Two of the ringleaders were discharged.

<sup>1</sup> From 1st November to 2nd of February the ropemakers were supposed to spin 70 lbs per day and from that time to the last of October, 77 lbs per day.

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According to W T Vincent in 'Records of the Woolwich District,' the ropemakers were given wage rises in 1649 on condition that a certain standard of production was maintained.

<i>Spinners</i>	18d to 20d a day
<i>Hatchellers</i>	16d to 17d a day
<i>Winders</i>	15d to 16d a day
<i>Labourers</i>	14d to 15d a day

Each spinner had to spin 19 threads a day the whole length of the ropeyard, of total weight 77lbs.

By the end of the 18th century there was a slight alteration in the stints required from the ropemakers. The spinners' rate was 20d a day and for his 'Day's Task' he was given a bundle of hatchelled hemp of weight 65lbs. 2 lbs were allowed for waste and out of the 63lbs he had to produce 18 threads each 170 fathoms long and weighing 3 1/2 lbs each. (20 of these threads were used for a strand of 3 inch rope.) A hatcheller's stint was reckoned in terms of hemp prepared; the layer also worked a stint.

During the War of 1739/48, ropemakers were employed at either 2 or 2 1/2 day's task and could earn up to 4s 2d a day; those who had servants might earn upwards of *two guineys a week* in 1745. In 1808 a spinner producing sail twine in a treble day's work could earn 4s 11 1/2d a day, and the boy to turn the wheel, 6d.

Perhaps the above makes sense of the following:

The Commission of Naval Enquiry of 1803 reported the examination of John Penfold, Master Ropemaker of Plymouth Yard:

*Q. What amount of time are ropemakers obliged to remain in the Yard?*

*A. They are not obliged to remain any number of hours, but leave it when their day's work is finished.*

*Q. How long does it take them to do a day's work?*

*A. Layers can do a day's work in 3 hours, spinners in 3 or 4 hours, and parters in 2 1/2 hours.*

The Board of Admiralty felt they could improve the efficiency of the Yards by the extension of Task or piece work to all trades and the discharge of old men who were retained in employment in the Yards on humane grounds long after they were capable of hard work. (Almost two centuries had to pass before the introduction of Old Age Pensions.)

Although as seen in the foregoing small groups of workers were employed in piece work of various kinds, the main body, the Shipwrights, did not accept this method of working until the last quarter of the 18th century. However the authorities succeeded to a limited extent in reducing the number of old and infirm employees.

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### **Introduction of superannuation benefits to Dockyard workmen<sup>1</sup>**

During his term of office, Lord Egmont, First Lord from 1763-1766, introduced a superannuation scheme for workmen in the Royal Yards. During the Visitation of 1764 the Lords Commissioners had remarked that:

*... there were many aged and infirm men among the Shipwrights and caulkers who could not be discharged without the greatest inhumanity and a manifest discouragement of your Majesty's service, but who are nevertheless a great burthen to the said Yards.*

The Board took steps for the introduction of a superannuation scheme which was authorised by Order in Council of 12 October 1764.

The Order sanctioned yearly superannuation to each common shipwright or caulker not to exceed two thirds of their present pay or £20; to a quarterman, not to exceed £24. The number of persons admitted to superannuation was not to exceed one-fiftieth of the number on the Yard books. None was to have less than 30 years' service as man's time in the Yard excluding apprenticeship time, except those who '...had lost or might lose limbs or are disabled or may hereafter be disabled.' Although there were 105 men ranging in age from 32 to 85 eligible for consideration, only 66 could be pensioned.

Among them was Simon Coward, an 85 year old shipwright, who had served 60 years at Plymouth and was '.. very lame in both legs, eyesight impaired and quite enfeebled.' Another was William Newman, a man of 34 with 9 years' service who had '.. fallen in the stem of the double dock at Plymouth and has ever since been disordered in his senses and is now deprived of reason.'

In November 1771 the Navy Board submitted 118 names, the eldest man being 92 and the youngest, a man blinded by 'a great cold' who was only 26 with three years' service.

The Earl of Sandwich, First Lord from 1771 to 1782, together with members of the Admiralty and Navy Boards, visited the Yards from 1771. The visit usually lasted a fortnight at each Port; the Dockyard, the ships in ordinary, victualling facilities and the Marine Barracks were all seen. Sandwich travelled in the Admiralty Yacht, the members of the Navy Board by coach. The men from the Dockyard and from the Ordinary and the subordinate officers were summoned individually to the Visitors and their physical condition noted. The Board was surprised by the poor appearance of many of the workmen. At this time the Surveyor examined the qualifications of the quartermen and the recently hired Shipwrights.

As a result of this Visitation the privilege of pension was extended by Order in Council of 25 September 1771 to one in forty of those employed and to other trades besides Shipwrights and caulkers. The pensions allotted were:

<i>Those whose pay was £30 a year</i>	<i>the pension was £20</i>
<i>Those whose pay was £20 - £30 a year</i>	<i>the pension was £15</i>
<i>Those whose pay was less than £15 a year</i>	<i>the pension was £10</i>

<sup>1</sup> Provision for the employment of disabled persons in the Yard was not made until the 20th century. The Disabled Persons (Employment) Act 1944 required those who employed 20 or more workers to employ 3% of persons registered with the Ministry of Labour and National Service as disabled persons under the Act. The law did not apply to Departments of the Crown but HM Government agreed to be under the same obligations as other employers.

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The pensions for quartermen<sup>1</sup> were £24;

The pensions of Shipwrights, caulkers, joiners, wheelwrights, blockmakers, plumbers, braziers, locksmiths, armourers were £20;

The pensions of house carpenters, sailmakers, Smiths and bricklayers were £15;

The pensions of pitch heaters, bricklayers' labourers, riggers and labourers were £10.

The establishment was still too small to provide for all deserving men unfit for work and the Board of Admiralty obtained a special Order in Council of 7 December 1792 to award pensions to 314 workmen'. as supernumeraries to the present establishment.' It was hoped that after this clearance the proportion of one in forty would provide for all deserving cases.

The first stage of the French War ended in 1802 and to ease the numbers of unfit workmen the Board asked permission to pension 751 men at once and others that they might see fit to treat similarly in the future, thus abrogating the limitation of numbers imposed by the Orders in Council of 1764 and 1771. The privilege of superannuation was extended to ropemakers<sup>2</sup> and sawyers and the pensions of quartermen were increased from £24 to £28 per annum and for Shipwrights and others in the first class from £20 to £24. This proposal was approved by Order in Council of 6 October 1802. (Note the pension was not much more than one third full pay taking into account the increased earnings of men at this period.)

In 1809 a superannuation scheme was introduced by which the quartermen received a pension which varied with the number of years' service as an officer; one-fifth the annual salary for 15 years' service rising to one-half after 35 years. From 1813, the service as a workman was included and pensions were payable to widows.

In 1814 with peace anticipated, the Board obtained an Order in Council reducing the period of service from 30 to 20 years to qualify for a pension.

The Visitation of 1774 showed that many abuses existed in the Yards. A number of men attached to the ordinary appeared at the muster once a month and followed other occupations in the interval. Persons ' .. of all callings in reduced circumstances' of any age had been entered as Shipwrights with the result that after only a few years many were fit only for superannuation. As a result, an Order was promulgated that no shipwright of more than 35 years was to be entered. The American War of Independence and the resulting demand for Shipwrights compelled the Admiralty to relax this rule in 1778 and raise the age limit to 45.<sup>3</sup> By Navy Board Order of 1772 labourers were not to be entered over 35 years of age. Thus by restricting the age of entry, applying the superannuation scheme and encouraging the entry of apprentices, it was hoped to get a better balance among the age groups in the Dockyards.

After the Visitation of 1767 Chatham Yard had been severely criticised over 'chips' and the 'sloth and inactivity among the people beyond what we observe elsewhere.' Considering the second criticism first; the retention of old men in the Yards was eased by the pension scheme mentioned above; but the inefficiency caused by the indifference of the Dockyard Officers to their responsibilities continued. This indifference came from faded ambitions, from a feeling that preferment to a more responsible post came not from

1 Foremen with 30 or more years of service might be recommended to the Navy Board for annuities which could be as high as £100

2 Initially ropemakers were excluded from the benefits of superannuation. The reason given was their work was mainly piece work and they could finish a day's work by 11 am and then either earn overtime or work elsewhere. They were allowed to keep public houses, a privilege forbidden to other dockyard workmen.

3 There was no pressing of Dockyardmen

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industry but from influential friends, and from sickness and old age. This lack of spirit was made possible by the confidence that a Dockyard Officer's place was one which only death could legitimately take from him. The superannuation of an Officer was rarely put into effect until he had become a permanent invalid.

During the Visitations the question of 'chips' was repeatedly raised. In 1764 the Navy Board told Admiralty that the men cut up good timber for 'chips' in working time, concealed small articles in their bundles and that to allow the poor to enter the Yards twice a week to collect 'chips' was equally prejudicial from the point of view of theft. In 1767 the Visitors noted that the men at Chatham sold their 'chips' near the Dockyard gate. The Commissioner at Chatham repeated the suggestion of making a money allowance for 'chips;' The Commission of Fees and Gratuities made the same proposal in 1788, but their suggestions were not adopted until 1801.

### **Introduction of Task or Piece Work to Shipwrights**

During the administration of the Earl of Sandwich (1771-1782), Task or Piece work in shipbuilding and ship repairing was introduced into the Royal Yards. Mention has already been made of the operation of piece work for Sawyers, Sailmakers and Ropemakers in the Yard. Earlier attempts had failed because of the opposition of the Navy Board and the Yard Officers. Experiments in Task work were tried in 1756 and gradually became an established practice in certain trades including those of joiners and house carpenters. With the assistance of Palliser, Comptroller of the Navy, and the co-operation of Sir John Williams, the Surveyor, and the Master Shipwrights of Deptford, Portsmouth and Plymouth, Task work was introduced in 1775 to expedite the building of ships. Each class of ship was divided into parts for each of which was established an overall labour price based on an estimate of the time taken for the completion of the work. The Shipwrights worked in gangs of 20 to 25 men and apprentices, each in charge of a Quartermaster. A man called a Runner provided stores and timber and looked after ironwork in the Smithery. The gangs worked from start to finish on a job and the labour price was divided among the men. The plan was drawn up by the Surveyor who produced the scheme of prices for the 25 articles or sections in which ships of every class were divided from the laying of their keel to their launching.

By June 1775 Task gangs of 20 Shipwrights had been formed in all the Yards: Chatham, 20; Portsmouth, 21; Plymouth, 26; Deptford, 14; Woolwich, 10; Sheerness, 4. Of the 3232 Shipwrights in the Yards, 1908 (62%) were put into Task gangs.

Elaborate safeguards were taken to guard against hurried and defective work; the work had to be certified by the Master Shipwright and a record kept of the work of each man so that defective workmanship could be traced to the one responsible. When Task work was introduced the men found ways of speeding up construction; joints were badly made; the holes for bolts were drilled too large so that the bolts could be hammered through quickly etc. This was remedied to some extent by using specialists to bore holes, and by insisting that caulkers only did caulking, so that shoddy Shipwrights' work would not be covered up.

The Shipwrights were shoaled (distributed) so that the gangs were roughly equal and Task work was to be rotated as equally as possible among the gangs. Day gangs engaged on repair work, etc, were to have overtime when required and the old, injured and infirm were to be employed on this day work.

There were also Shipwrights employed as single station men and these were not actively engaged on shipbuilding and repairing: cabin keepers, modellers, timber testers, etc. Others, not in gangs, worked in the mast and boathouses, etc.

It was considered that Task work would eliminate the bad practices of Dockyard Officers



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such as the overlooking of deficiencies in work, favouritism, etc, and of clerks in the Yard taking bribes from the men for overlooking absence from work, etc.

Soon after the scheme started in May 1775, the first signs of trouble appeared. On 5th May the Navy Board wrote to Chatham Yard complaining that some Shipwrights working on the **Formidable** had taken Saturday afternoon off and asked that they might have this indulgence in the future. The Board disapproved of this step, but agreed that if the men completed any article (section of the work) in the middle of the latter part of the afternoon they could leave the Yard for the remainder of the day. Quartermen were instructed to issue these orders to the men, but the same four gangs working on the bottom of the **Formidable** again absented themselves on Saturday afternoon. Instructions were issued that if any of the men of the four gangs repeated this offence they were to be discharged from the Yard. The next letter from the Navy Board complained that the Dockyard had merely reported that the 7th article of the General Scheme of Task Work was finished on the **Formidable** without mentioning the conduct of the Shipwrights.

On 5 June 1775, Sandwich, Palliser and four Commissioners of the Navy began their Visitation at Chatham where they found the men happy with average daily earnings of 4s 2d; the Visitation of Sheerness was equally satisfactory. As he prepared for the Visitation of Portsmouth on the morning of Wednesday, 14 June, Sandwich was informed that 315 Task workmen out of a total of 422 had struck over Task work. They returned to work eight days later when the Navy Board informed the Shipwrights that Task work during the winter months, when earnings would be reduced owing to the short days, was to be optional. On 28 June 1775, the Shipwrights of Portsmouth again struck, demanding that Task work should be completely abolished and their pay increased to 2s 6d a day. They also demanded that the men who had been discharged should be reinstated. They issued a proclamation detailing their grievances, and ended by an appeal:

*And it is humbly hoped that the worthy inhabitants will assist in supporting us and our families till relief is obtained, when it is hoped we shall be enabled to make our most grateful acknowledgements to each benefactor, with a return agreeable to his contribution.*

The strikers, however, received little support.

The strike over Task work and wages spread to Plymouth on 20 June, to Chatham on the 5 July and to Woolwich on the 6 July. At Chatham there were 657 Shipwrights, 402 in Task gangs, and 249 men struck. At Deptford and Sheerness the men kept at work; at the latter Yard the men were fearful of being evicted from their rent-free lodgings. An inducement to attract workers to Sheerness was the provision of free lodgings in either houses or in the cabins of the hulks serving as a breakwater.

By 6 July the Navy Board announced that Task work was to be optional and that during the summer months men employed on Day work were to be employed one tide extra.

The strike soon began to fail; the men lost heart and returned to work. Twelve of the ringleaders at Woolwich were charged at Maidstone with having 'unlawfully conspired and combined together' to procure an increase of wages, a common law offence. Sandwich wrote on 12 August 1775:

*For Portsmouth is the first dock which sees return to duty ... 21 Shipwrights having set an example there will not be want of hands in that dock in a very few days which will bring the others to their senses.*

The Yards capitulated one by one, Chatham being the last to return on 21 August. At its peak there were 1450 Shipwrights on strike out of a total of 3221.

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On 15 August the Navy Board issued orders about the re-entry of striking Shipwrights. With few exceptions all without servants belonging to Task gangs were re-engaged; but those over 40 and those with servants employed in Day gangs were discharged. 129 Shipwrights and their apprentices were discharged from all the Yards. At Chatham, 5 ringleaders, 23 men over 40 and 8 men with servants were discharged and 12 left to seek work in private yards.

The war with America had started and American agents may have induced some of those discharged to emigrate to the Colonies where their skill was appreciated. A L Rowse in an article 'The Cornish in America' in 'The Listener' of 4 November 1965, stated that one of the two ship designers who built the American Revolutionary Navy was a Cornish Quaker, Josiah Fox, trained in Devonport Dockyard.

Notwithstanding the failure of the strike the Shipwrights gained their way over Piece work and wartime was not a fitting time to risk further trouble. The Board pressed the Yard Officers to see that the men worked properly at Day work; they realised that keeping workmen to the mark depended on the quality of supervision exercised by the Quartermen and Foremen who were often slack themselves.

At this period the shipwright on Day work earned 2s 1d for a 12 hour day. During the summer months he earned an extra 7li2d for a tide. Because of the emergency he might work two tides a day extra, and in special cases, a double tide, a period of 17 hours for his 4s 2d. The earnings for work seemed to fall within a range of 3s 8d to 4s 5d a 12 hour day; an average figure of 3s 10 1/2d has been quoted.

Why in view of the better pay did the strikes take place? In an article in the 'Gentleman's Magazine' of July 1775, Mr Urban wrote:

*While some favourites could earn 4s a day, the main body with difficulty earned 1s. The choice of timber was not properly and carefully attended to. Superintendents found fault with work put together and this work was condemned.*

In the August edition Bystander wrote:

*Some Shipwrights earned 4s 5d and others not less than 3s 8d a day. The men wanted a rise of Day pay from 2s 1d to 2s 6d a day.*

There was no doubt that the inefficiency of the Yards and the conduct of the Officers contributed towards the unsettled conditions in the Yards. The men complained that they were given timber not ready for use or defective and that they were kept waiting for accessories, such as bolts, trenails and fittings. The men were expected to make good at their own expense defects due to defective timber.

One immediate cause of a stoppage in May 1775 at Chatham was that the men were stopped by the Master Shipwright, Israel Pownall, from working in their dinner time. A piece of timber which had been bent by heating was being laid when the dinner bell rang and the men were made to stop immediately. The timber cooled and the heating had to be done again at the men's expense.

Probably the main reasons are that the men found that they had to work much harder than hitherto for earnings not much greater than those of the Day gangs; and that the earnings on Task varied from gang to gang because of defects in the Schedule of Prices. They were worried about redundancies and the effect of the shorter daylight hours in the winter.

The Dockyardmen wanted a rise in basic rates of wages; they were still paid at rates established 85 years before. From 1700 to 1735 there was a gradual decline in consumer prices followed by a period of little change. From 1760 there was a rise in the price of

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cereals, meat and dairy products; from 1770 to 1775 when the price of wheat rose sharply, foodstuffs were especially dear.

Generally speaking, it would appear that the Thames Yards, Deptford, Woolwich and Sheerness, were prepared to adopt the new system but the others, including Chatham, bitterly opposed it. After the strike the 'Schedule of Prices' was altered and grievances over defective timber, etc redressed; as a result average Task work earnings were increased from 3s 10<sup>1</sup>/<sub>2</sub>d for a 12 hour day to 5s 3d as against the 4s 2d earned by men in Day gangs working double tides (17 hours) day and a night.

In 1779 a fresh attempt was made to introduce general Piece work; the majority of the men at Portsmouth, Plymouth and Chatham refused the terms, and were kept on Day work. When peace came and overtime ceased, wages of the Day gangs fell to 2s 1d a day; the Shipwrights and caulkers then petitioned to be allowed Piece work. This was acceded to as far as the work to be done was capable of being priced on Piece work schemes. The earnings of the men were later limited to 2s 8<sup>1</sup>/<sub>2</sub>d a day in winter and 3s 4d in summer. By 1788 Piece work had become general on new construction, Task work, and in 1798 on repairs, Job work.

It was ordered that Job work for repairing ships was to be introduced in the Dockyards in 1784. This was opposed by the men and was not fully carried into effect until 1798 when the **Gibraltar** at Plymouth was said to be the first ship repaired under this system. A scheme of prices for Job work was not drawn up until 1802. The practice was for the professional officers to estimate the value of the work to be done, to send an estimate to the Navy Board and when this was approved to pay the men accordingly. Out of such estimates a scheme of Job prices was gradually worked up. The work was measured by a class of workmen termed 'Measurers.'

The authorities were convinced that output was increased for a given labour force by the Piece work system. The First Lord told the House of Commons in 1781 that the system saved more than one-third of the time and one-half of the expense.

*The **Blenheim** and the **Atlas** of 98, the one building, the other undergoing a thorough repair at Chatham have been brought forward at least 8 months by the use of Task Work.<sup>1</sup>*

3rd May 1776

New scheme of task work for Shipwrights transmitted; details not copied; totals as follows:

100 guns	2164 tons	£3 1ston	Total	£6,600 4s
90 guns	1931 tons	£3 1s ton	Total	5,889 11s
80 guns	1615 tons	£3 1s ton	Total	4,925 15s
74 guns	1620 tons	£2 14s ton	Total	4,374 0s
64 guns	1369 tons	£2 14s ton	Total	3,696 0s
60 guns	1285 tons	£2 13s ton	Total	3,405 0s
50 guns	1044 tons	£2 12s ton	Total	2,714 0s
44 guns	879 tons	£2 9ston	Total	2,153 11
32 guns	678 tons	£2 8ston	Total	1,627 4s
28 guns	429 tons	£2 7ston	Total	1,410 15s
20 guns	594tons	£2 7s6d	Total	1,008 3s
Sloop	300 tons	£2 5s6d	Total	682 10s

<sup>1</sup> An excellent account of the introduction of Task Work is given by James M Haas in 'Journal of British Studies,' 'The Introduction of Task Work into the Royal Dockyards, 1775.'

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As mentioned earlier Dockyardmen had frequently complained of the payment of their wages in arrears. In 1767, Admiralty promised to redress their grievances and approached the Treasury on this matter. However, in 1772, the Shipwrights were again complaining that:

*Among other hardships the necessity they are under of taking Money upon their Pay at a great discount for the support of themselves and their families as the Yards seldom pay a half a year's wages until three quarters are due.*

This time the Treasury agreed:

*... to issue the Half Year's wages due to the Yards at the end of last year as soon as may be, and that afterwards they may be paid quarterly.*

It was estimated that the discount would be reduced from 1s to 6d in the £, if indeed it was not entirely eliminated:

*... which besides the charge of assignment they are obliged to make to their creditors half yearly, which together will be an annual gain to each man of between 20s and 30s.*

After this, compared with former times, wages were paid fairly promptly, even within six weeks of the expiration of each quarter.

### System of Meritocracy

In earlier paragraphs there have been some criticisms of the Dockyard Officers, many of whom were not very helpful in the transition from Day to Task Work. Middleton, the Comptroller from 1778 to 1790, attempted to introduce a system of meritocracy into the promotion of the lower ranks of Dockyard Officers appointed by the Navy Board. Posts below the rank of Master, e.g., Foreman, Quarterman, etc were appointed by the Navy Board, higher posts by the Board of Admiralty. In 1781 it was ordered that no one was to be recommended as acting Quarterman unless he had been out of his time for more than 4 years. In the following year, quarterly lists had to be submitted by the Yard Officers with information on time lost during the past 4 years, and the performance and character of the men.

In September 1782, printed forms were sent to the Yards asking for information of those who wished to be and also of those already promoted to Quartermen. Politics played a great part in Dockyard appointments and promotion, and the Comptroller complained that the appointment of Yard Officers, a prerogative of Admiralty, showed disregard of the Navy Board recommendations. In 1786, Middleton wrote to Pitt that the:

*Dockyards were without discipline or method, and the Board without decision or control ... the public suffers in thousands for a trifling gratuity received by a Yard Officer, but as their appointments were due to interest at the Admiralty they were indifferent to censure or criticism.*

In the mid-19th century the question of political jobbery in Yard appointments gave rise to a thorough investigation by a Parliamentary Committee (Parliamentary papers 1852-3 XXV). Until 1847 there was no regular system of promotion but the old practices were not easily rooted out; in fact one cure suggested a decade later was to disfranchise the Dockyard workmen. In the 18th century, it should be noted that many of the Dockyard workmen, especially the Shipwrights, were interrelated by blood to a large degree, and nepotism was rife.

It was suspected that the Master Shipwrights were not above taking fees for entering apprentices and of taking a percentage of their wages. Although compassion was shown

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towards old and infirm workmen there was always the chance that the latter had a parliamentary vote or had a relative with a vote or were relatives of a Dockyard Officer.

In the last quarter of the 18th century efforts were made to tighten up the discipline of the Dockyard. A Navy Board Order dated 30 December 1778 directed:

*Workmen who keep public houses or are concerned therein are to be discharged Lady Day next.*

It would appear that many kept them and the Navy Board was convinced that the receiving of stolen goods went hand in hand with the keeping of public houses. An Admiralty Circular of 25 August 1834 repeated the instruction prohibiting the keeping of public houses by Yard employees. 'Chatham News' of 19 September 1874 stated that the regulations against Dockyard workmen keeping public houses, beerhouses, marine stores, shops and tool shops was to be firmly enforced.

After the American War of Independence, a 'Black List' was introduced, of which a copy was kept at each Yard containing descriptions of Officers and men discharged from the service. There had previously been orders that men dismissed from one Yard should not be employed at another, but this was the first serious attempt to enforce the rule.

To reduce theft the Navy Board ordered on 4 August 1783:

*You are to suffer no person to pass out of the Dock Gate with great coats, large trousers or any other dress that can conceal stores of any kind. No person is to be suffered to work in great coats at any time over any account. No trousers are to be used by the labourers employed in storehouses and if anyone persists in such a custom, he is to be discharged the Yard.*

### The establishment of Chatham Yard on 14 September 1786 (peace time) .

Shipwrights	604	Riggers	56
Quarter Boys	12	Riggers' Labourers	32
Caulkers	90	Labourers	240
Ocum Boys	26	Blockmakers	2
Joyners	40	Brazier	1
House Carpenters	80	Locksmiths	2
Wheelwrights	2	Teams	14
Plumbers	1	Sawyers	104
Pitch heaters	2	<i>Ropeyard</i>	
Bricklayers	32	Foremen	2
Bricklayers' Labourers	33	Spinners	84
Sailmakers	31	Labourers	8
Smiths	66	Hatchellers	17
Scavelmen	60	Boys	6

Totals at Chatham: 1.647                      (In 1792 the total at Chatham was 1633)

### Totals at other Yards

<i>Deptford</i>	1093		
<i>Portsmouth</i>	2127	<i>Sheerness</i>	568
<i>Plymouth</i>	2159	<i>Woolwich</i>	972

Totals in all Yards. 8,566

A return in the House of Commons in April 1804 showed that 3,300 Shipwrights were employed in the Royal Yards and 5,100 throughout the rest of the British Isles.

## DOCKYARDMEN

### Strikes

Strikes, principally over issues of work demarcation, occurred in the opening years of the French Wars. In March 1795 a dispute arose over the employment of House Carpenters brought in to expedite the finishing of ships. Sir John Henslow, the Surveyor of the Navy, explained that the urgent necessity for the speedy refitting of ships caused the navy board to employ outside House Carpenters on cabin work. 300 Shipwrights left work; their rendezvous was the 'Star Inn' on Chatham Hill. Special messengers were sent to the 'Star' but the strikers refused to return until the House Carpenters were taken off their work. The strikers' picketed the Dock Gates and Admiralty arranged with the Secretary of War to station a military guard at Chatham to assist the Officers of the Dockyard in preserving order, and in repelling any attempts which might be made by the Shipwrights on strike from preventing those willing to work in the Yard. Shipwrights were drafted in from Sheerness but these joined the Chatham strikers. Shipwrights at Deptford struck in sympathy. A settlement was achieved through the agency of William Dann, High Constable of Gillingham, and the decision to return to work was taken by the strikers on 16 April. On the following day, work people headed by a band and carrying flags went in procession to William Dann's house, Gillingham House, now demolished, to thank him for his friendly offices.

The truce was only temporary, for on 15 June, the Shipwrights again assembled before the Commissioner's House and demanded the removal of the House Carpenters working on the **San Fiorenzo**. He complied with this and got in touch with the Navy Board who sent an order on 17 June to discharge the ringleaders of the strike; 40 men were dismissed.<sup>1</sup>

In 1800 four Shipwrights were flogged publicly between Chatham Dockyard Gate and the Marine Barracks for 'disorderly conduct' and the Commissioner of the Yard fixed the time of punishment in order that it might be witnessed by Dockyardmen leaving work for dinner.

There is a picture of the situation in the diary of J Beaumont of Gillingham:

*Friday March 27 1795: The Shipwrights stride out*

*Wednesday April 15: Come into the Dockyard again and turned out the House Carpenters' Chestes out of the ship twice.*

*Tuesday April 20: The Navy Board settled the affair and gave the Shipwrights a half day Holladay and the Shipwrights got the day.*

According to this diary the Shipwrights a little earlier had been exerting pressure on Yard Officers:

*4th September 1793: A wensday morning about nine o'clock the Shipwrights surrounded Mr Pollard Master Shipwright for the advances to tide to our Dubble days (two tides to double day) and it was granted and then the request was for the house men to have the same liberty to go home the same as the Yard people did that worked alongside the ships and to have the same indulgences, and all granted and with three cheers. Everyman whent to his work*

A minor tragedy was reported in the diary:

*29th October 1791: The Tap House had no beer in the Seller in Chatham Tap House for to serve the Dock people with.*

<sup>1</sup> Other sources state that 407 men were discharged in the March strike and 14 in the June strike. (There was another petition from the Shipwrights in March 1898 over the employment of House Carpenters on their work)

## DOCKYARDMEN

### Reforms at the turn of the century

In the last quarter of the 18th century Parliament began to take an interest in the civil administration of the Navy. A commission of Enquiry was appointed to enquire into the:

*Fees, Gratuities, Perquisites and Emoluments which are, or have been lately received in the several public offices therein mentioned [25 George III C 19]*

Many abuses were practised on the clerical side of the Yard. The Commission found that Officers received large premiums, amounting sometimes to hundreds of pounds for the appointment of their clerks. The clerks, to recoup themselves, took bribes in money and kind from the contractors, and from workmen for stamping and signing their documents. If the entrant could not pay his premium direct, say 150 guineas or more, he would pay the amount out of his salary over a period of years.

The Commission investigated the problem of 'chips' and the earnings of Dockyard apprentices and recommended changes.

By an Order in Council of 21 May 1801, the perquisite of 'chips' allowed to artificers was abolished as from 1 June 1801 and an allowance paid quarterly was made in lieu. This varied from 6d a day to Shipwrights to 3d a day for labourers. This concession was lost in 1830. The men regarded the compensation as inadequate, for bundles of chips were valued by them at between 8d and 12d.

Inferior Officers did not receive 'chip' money. The others were paid as follows: Shipwrights and Blacksmiths 6d; Caulkers, Joiners, Coopers and House Carpenters all received 4d; Scavelmen, Labourers and Riggers 3d.

By an Order in Council of 17 June 1801, no officer receiving a salary was to be allowed the benefit of an apprentice. From December 1802, all apprentices were re-bound to the Principal Officer in their Department and allotted to workmen who were termed Instructors. Apprentices' earnings were limited to single day's pay even when working 'piece' or overtime. Their earnings were divided between the Instructor, two-thirds, and the parent or guardian, one-third.

Thus officers receiving a salary were deprived of apprentices' earnings and premiums. This not only affected officers' incomes but also that of artificers who worked in gangs with these apprentices, for the officers often arranged that the gangs in which their apprentices worked were the best paid. Again workmen who were formerly masters became instructors to their apprentices with a considerable loss of income. It was estimated that before the change, a workman with an apprentice added about £70 to his wage: after 1802 this was reduced to £16.

Workmen still retained other allowances: the traditional lodging allowance of 2s 6d a week was continued until 1812. Smiths received their beer allowance and from 1813 scavelmen received an allowance of £2 a year for boots.

Reforms had been implemented in the Navy Office in 1796.

### Industrial action at the beginning of the 19th century

There had been harvest failures in 1799 and 1800 and this had raised the price of bread to a level double that of 1795. The introduction of Task and Job work permitted men to earn two day's pay or more for a day's work, but this gain was absorbed by the increased cost of living. A handbill posted outside Chatham Yard gates in April 1801 emphasised that the cost of keeping a family of two adults and six children in bare necessities almost doubled in the twenty years before 1795 and tripled in the six years after that.

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The men began to combine to appeal for an increase in basic pay. The Baltic Fleet of 1801 was in preparation and the Shipwrights thought it a good opportunity to coerce the authorities into granting an increase in wages. Unfortunately for them, Lord St Vincent became First Lord in February 1801; a man with a fearsome reputation in the Fleet and to whom compromise was abhorrent<sup>1</sup>

Delegates from the Dockyards, led by John Gast of Deptford Yard, came to London to present their demands to the Board of Admiralty for an increase in wages. The Comptroller who chaired the Navy Board was concerned with maintaining an adequate labour force in the Yards and was aware of the power of the Shipwrights. He persuaded St Vincent to offer the men an extra temporary ration of between 4½d and a shilling a day according to the size of their family. (Those with four children, 1s a day; not exceeding three 9d; without children 6d etc.) This offer was made in London on the 1st April 1801 and was rejected by the delegates who wanted an increase in basic pay. The view of the official side was that a Yard shipwright's average wage was about £1.18s and this topped the current wages of skilled labour outside by nearly 12s a week. However, many Shipwrights in merchant yards were earning over 10s a day.

The organisation of the Dockyardmen was difficult to counter, for only when a strike was threatened could men be prosecuted under the Combination Laws of 1799/1800. Each Yard had its own committee drawn from each department, its own money collectors, and it financed its own delegates to stay in London during the negotiations. The men were within their rights to petition the Board of Admiralty.

There were disturbances at Plymouth and Sheerness Yards; men in these Yards rescued those under arrest but there was no strike. The Treasury Solicitor was ordered to prepare measures against the rioters and the Commissioners at the two Yards were ordered to discharge the ringleaders of any further rioting or absence from work. The Commissioner was empowered by the Act of 1715 (1 Geo I c 25) to act as a magistrate and deal with problems of this order.

On 29 April 1801 St Vincent ordered a Committee of the Navy Board to tour the Yards and to discharge the men who had been 'active in the disorders.' During May 1801 a hundred and twenty eight men were discharged from the six Yards. Most were reinstated later when Lord Melville became First Lord.

The disturbances ceased because of the division of the men caused by the payment of the extra allowance, in spite of the disturbances and the Yard Commissioners' directions to discharge workmen. Another factor was the drop in bread prices throughout the southern counties by April 1801.

In January 1802 St Vincent sent a confidential letter to the Commissioner of each Yard telling him to hold the notes issued for extra stores from the commencement of the war until 31 December 1801. In the following months the Commissioners were ordered to secure the books of the Principal Officers of the Yards together with the Quarter Books and Call Books between 1793 and 1801. All these documents were to be produced when required. In February 1802 the Navy Board reported to Admiralty a case of deception practised at Plymouth Yard. A Foreman had fraudulently produced extra notes for sleeping afloat and these had been passed by the Master Shipwright and the Clerk of the Cheque. This sort of offence had been committed in the Yards throughout their history and the Yard Officers overburdened by paper work had always to trust their subordinates to check for discrepancies in such notes.

From August 1802 onwards the Yards were visited by a Committee consisting of members of the Board of Admiralty, the Comptroller and members of the Navy Board. On Sunday evening, 12 September 1802, St Vincent and his party arrived at Chatham to

<sup>1</sup> See Administration of Navy in chapter 23  
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begin the inspection on Monday. On the evening of that day he wrote from Rochester to the Secretary of the Admiralty:

*I'm sorry to tell you that Chatham Dockyard appears by what we have seen to-day, a viler sink of corruption than my imagination ever formed. Plymouth was bad enough but this beggars all description.*

On 19th September 1802, he wrote from Sittingbourne:

*The combination entered into between the caulkers of Chatham and Sheerness with those in the merchant builders of the Thames having occasioned the discharge of a number of the former there is room for a hundred young men in the two Yards of which I give you the earliest notice that any of the young men of good character who have served their apprenticeship regularly in Yarmouth may profit by these circumstances. They must be under 28 years and able to produce their indentures. To accommodate them a sloop of war or gun brig shall convey them to Chatham. The caulkers to the King's Yard during peace time work two for one and have 'chip' money.*

There were a number of labour problems in the years 1801 and 1802 in the private yards. According to Philip Banbury, 'Shipbuilders of the Thames & Medway,' Dudman & Co of Deptford ran into labour trouble when building the East Indiaman **Lord Melville**. Shipwrights and caulkers were sent up from Chatham under escort to finish the ship on time.

In 1802 the caulkers in the private yards on the Thames went on strike against a reduction in wages and men were sent from the Royal Yards to finish the Admiralty contracts. Many refused to go and large numbers were consequently discharged from Portsmouth, Chatham and Sheerness.

In March 1802, in view of the peace, the Shipwrights in the Thames yards proposed their wages should be stabilised at 5s a day; during the war their wages had been raised from 3s 6d to 5s a day. On the 3rd of May the men were offered 4s 11½d a day and they struck. There were no volunteers from the Royal Yards and carpenters of ships in the ordinary at Deptford, Woolwich and Chatham were ordered to work in private yards on the penalty of losing their warrants. This led to disturbances, several of the yards closed, the Riot Act read and soldiers sent for. Finally the private builders agreed to pay their men 5s a day and the ships' carpenters were dismissed.

St Vincent had ordered an unusually large reduction in the numbers in the Yards after the Treaty of Amiens. In the first year of the peace, the work force in all Yards was reduced from 10,736 to 7,802 men. The old and infirm were discharged or superannuated and the age limit on entry was lowered to 28, in all 177 Shipwrights were discharged from Chatham. (The proposed numbers for Chatham, excluding Ropery staff, in 1802, were 1,446; Portsmouth 2,108, and Plymouth 1,881.)

Perhaps the Board of Admiralty ignored the possibility of resumption of hostilities (May 1803), but with hindsight this drastic reduction of the number of Shipwrights employed in the Yards was a mistake. There were in the UK about 8,000 Shipwrights and the Royal Yards needed about 3,000 or more of them. In March 1802 it was necessary to raise the age limits for Shipwrights to 35, and for others in March 1803. When Melville succeeded St Vincent in May 1804 the age limit was further raised to 45. By February 1805 the Yards carried 10,044 men and to raise the establishment still further against the competition of merchant yards, Lord Barham, who succeeded Melville, lifted the age limit completely in August 1805. After the retirement of St Vincent, the Admiralty and Navy Boards adopted a more conciliatory attitude and the Yards were free from labour troubles.

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### **Changes in the method of payment of men after 1805**

In August 1805 an improvement was made in the paying of wages. Hitherto wages were paid quarterly and a quarter's pay was kept in hand so that new entries might have to wait six months for their first pay packets. This practice of 'long pays' was prevalent in many sections of business until the mid-19th century and was based on the belief that it helped to keep the men well behaved until pay day. (The Midsummer Quarter would be paid in early October.)

This led, in the case of Dockyard workmen, to their borrowing money or obtaining credit giving as security the power to draw their wages at the end of the quarter. In addition many men had to pay a clerk in the office of the Clerk of the Checque for a note confirming their employment in the Yard before they could obtain a loan. (As we have seen this practice was stopped in 1801.) The men had to pay interest but sometimes the loan was furnished in the form of goods. An instance occurred where the advance was in boots and bread. The boots did not fit members of the family and the new bread, in excessive quantity became stale and mouldy. It has been estimated that some of the poorer men lost half their wages in this manner. A figure quoted for the average loss sustained by Dockyard workers is 15%.

A weekly payment of a proportion of their earnings known as 'subsistence' money, about three quarters to seven eighths of their weekly wage, was advanced to the men; the remainder was paid at the end of the quarter. This change was precipitated by the failure of a Chatham bank in April 1805 and many money lenders with it. In the years 1813 and 1814, quarterly payments were abandoned and weekly wages instituted. The salaries of Dockyard Officers were still paid quarterly. In 1812 it had been pointed out that as the Master Measurer's Department had been established, complete weekly earnings could be paid as easily as subsistence money and furthermore the quarter day pay holidays would be rendered unnecessary.

### **Piece work earnings**

After the outbreak of war in 1793 there was a great demand for shipbuilding labour and a rapid increase in the cost of living followed by an increase in wages for the trades most in demand. The Navy Board met the situation by allowing the limit of earnings by piece work to rise as the cost of living increased. In 1793 the Board fixed the maximum earnings as double day pay, 4s 2d a day (the rate of pay for workmen was virtually unchanged from the end of the 17th century to 1812). Initially dinnertime had to be worked before this maximum rate could be given, a condition removed in 1794.

In 1797, Shipwrights working on Job work were allowed to earn double day pay and two tides in addition, 5s 5d for working ordinary hours and dinnertime. If they worked in addition a night, 5 hours overtime, their pay rose to 7s 6d a day. In 1798, the Board directed that workmen were to be employed three hours extra after bell-ringing (6 pm in summer) and in 1802 that they should get 5 hours extra pay plus double pay, 6s 3d for working ordinary hours. The Dockyard Officers paid the men to the limit to encourage them to give of their best. In reckoning the cost of the work Shipwrights were shown as working double days and getting 4s 2d, whereas in fact they were getting 6s 3d. No accounts were kept by which the value of the work done outside working hours could be calculated.

When peace occurred in 1801 overtime was stopped. In 1802 a new scheme of prices for Job work was fixed but it was unsatisfactory and not worked to. On some articles a man could earn from 7s to 8s a day and on others not more than 3s 4d.

To increase the output of repair work the ceiling of earnings by Job was lifted completely from March 1803. In 1805 Shipwrights working by Task had their prices increased by 20% to 25%. As we have seen the Scheme of Prices was reviewed in 1811.

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By 1797 the Quarterman whose normal rate was 2s 6d a day and the wages of an apprentice, was allowed the same extra as the men. He stood to gain by his own estimate of his gang's earnings. The earnings of the apprentice were also allowed to vary with those of the men to the benefit of the Quarterman.

Foremen were in a similar position until 1802 as their wages expanded with those of the men and were increased by the wages of two apprentices. In 1802, the Foreman was put on salary, as were other subordinate officers in 1804, and this perquisite was stopped. Before 1801 the Master Shipwright with 5 apprentices and his Assistant with 3 apprentices also profited by high earnings. The artificers involved in the calculation of wages were put on a fixed rate of pay in 1803.

Samuel Bentham, the Inspector General of Naval Works, noted that at Portsmouth Yard, although most of the men were on Job work, only 4 gangs out of 43 were employed on Task work, they all earned the same apart from deductions for absence. Their earnings, the maximum allowed at that time, 4s 2d a day, never varied in summer or winter and whatever the type of work; in other words the Pay books were cooked.

The Commissioners on Civil Affairs of the Navy in their Third Report issued in 1806, found that the Scheme of Prices by Task was defective and that the distribution of Task work earnings varied from Yard to Yard. At Chatham the earnings were divided among all the gangs of Shipwrights employed on the same ship, for individual piece work was not possible. They found that the prices varied with the size of the ship and they were too high for a large ship and too low for a small ship. They proposed that prices should be fixed so that an industrious workman could earn more than 50% above time rates as had been suggested by 'a very intelligent Civil Engineer, Mr Rennie.' The Commissioners requested Mr Parkin, then AMS Sheerness, to prepare a Scheme of Prices, both for Task and Job work, for shipbuilding and ship repairing respectively.

The Commission generally approved the schemes of Task and Job work and recommended the appointment of a class of Measurers; a Master Measurer of the same status as a Foreman and Sub-Measurers equivalent to Quartermen who would keep distinct and separate accounts of the work performed by each gang of Shipwrights. The sub-Measurer would once a month, at least, remeasure the work contained in one of these accounts. He would then insert the Scheme prices, the shipwright officers proposing new prices for work that had not been scheduled. Once a month the Master Measurer would send the complete cards to the Clerk of the Checque to calculate the daily earnings of the men on the job. The Board of Admiralty, in 1809, obtained an Order in Council to carry out these recommendations with others on Task and Job work, including raising the earnings by these schemes. By 1813 the accounting of work performed by the men had been transferred from the Inferior Officers to the Master Measurer's Department.<sup>1</sup>

The Commission proposed that the men were to be told the prices and there were to be unlimited earnings. This proposal was not carried out and it was only in 1919 in 'Replies to Petitions' that Admiralty definitely undertook to inform men of the prices fixed by the various schemes. There was a tendency for the authorities to regard the Scheme of Prices as a scale to assist them in giving a bonus to deserving workmen who were substantively time workers, rather than a series of wage contracts. Not until 1923 were Schemes of Prices drawn up by the representatives of the Admiralty in consultation with the representatives of the men concerned.

Bentham had suggested that Shipwrights should be classified and paid at different rates, a proposal resisted by the Comptroller who maintained that was unnecessary when work was carried out Task and Job, and by the Shipwrights themselves.

<sup>1</sup> Master Measurers- William Manclark c.1810-1820; John Brooman 1820-1829 (in office)

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The Eighth Report of the Commission dealt with time rates. These took account of the rates paid outside the Royal Yards, deducting a tenth on account of the advantages enjoyed by Dockyardmen such as (a) constant employment, (b) attendance of the surgeon when men were hurt, (c) allowance of half pay to men on the Hurt list, and (d) superannuation. Adopting Bentham's suggestion they recommended classification with three classes of workmen with wages, as shown below:

Peace	Summer & chip money	Winter & chip money	Extra per hour
1st class	4s 2d + 6d = 4s 8d	3s 4d + 6d = 3s 10d	5d
2nd class	3s 8d + 6d = 4s 2d	2s 11d + 6d = 3s 5d	4 <sup>1</sup> / <sub>2</sub> d
3rd class	3s 2d + 6d = 3s 8d	2s 6d + 6d = 3s 0d	4d
War			
1st class	4s 6d + 6d = 5s 0d	3s 7d + 6d = 4s 1d	5 <sup>1</sup> / <sub>2</sub> d
2nd class	4s 0d + 6d = 4s 6d	3s 2d + 6d = 3s 8d	5d
3rd class	3s 6d + 6d = 4s 0d	2s 9d + 6d = 3s 3d	4 <sup>1</sup> / <sub>2</sub> d

### Chatham work force on 26 March 1814

Blockmakers	4	<i>Rope Yards</i>	
Braziers	2		
Bricklayers	38	Boys	48
Bricklayers' Labourers	27	Foremen	4
Carvers	1	Hemp dressers	13
Caulkers	67	Labourers	84
Coopers	1	Layers	4
Glaziers	1	Lime & twine spinners	6
House Carpenters	110	Messengers	1
Joiners	76	Spinners	210
Locksmiths	2	Wheelboys	13
Masons	5	Yarn knotters	19
Messengers	10		
Oakum boys	21		
Oarmakers	1	<u>Total work force</u>	<u>2672</u>
Painters	15		
Pitch heaters	1		
Plumbers	4		
Riggers	108		
Sailmakers	52		
Sawyers	167		
Scavelmen	90		
Shipwrights	783		
Smiths	120		
Teams	22		
Warders	20		
Wheelwrights	2		
Yard labourers	520		

[Account includes inferior officers, cabinkeepers and apprentices]

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In 1809, the Board of Admiralty obtained an Order in Council empowering them to carry out the recommendations of the Commission with the exception, mentioned before, of those regarding piece work prices. The actual changes did not become operative until 1812, especially classification, which was disliked by the men. In view of the war with France, by Admiralty Order of 11 October 1809, all Shipwrights were placed on the first-class list.

On 16 March 1811 the Dockyardmen were granted a concession:

*We direct and require you to allow 1113th in addition to the said prices for all works to be performed by Task or Job during the War agreeably to the regulations laid down in Third part of the Eighth Report, page 21.*

The actual wages earned at Chatham during this period are difficult to estimate for there was so much piece work and overtime worked. In 1801, the average earnings of Shipwrights at Chatham taken from the last Christmas Quarter from the figures for 20 men shows £13 13s 4i2d for the quarter. However, according to the Navy Office the average yearly earnings were £93 4s 8li4d. In May 1803, a petition by the cabinkeepers of Shipwrights, caulkers, joiners, house carpenters, etc of Chatham to earn two days and two tides, the earnings of the respective artificers for which they were employed (while the earnings of the petitioners were only one day and two tides), was turned down.

Despite the high earnings in the Yard, the poverty existing at this time was revealed by enquiries following the Fire of Chatham in 1800. The pawnshop of Mr Frid was burnt out and the loss, for which he was not responsible, amounted to £780. The unfortunates benefited from the Relief Subscription of £2,107, of which £162 7s 6d was collected in Chatham Yard. In 1820, a second fire occurred and again the pawn shops of Mr Frid and Mr Cohen were burnt down. There were 203 claims involving Mr Frid's business and 864 involving that of Mr Cohen. A sum of £2,092 2s 6d was subscribed for the relief of the sufferers and again those who had pawned their goods received some aid; this time the Yard collected £144 1s.

### **Conditions after conclusion of Napoleonic War**

In 1816 the Yards were reduced to a peace footing. An account of the changes in Portsmouth Yard is given in 'Portsmouth' by A Temple Patterson. A similar pattern occurred in other Yards.

During the war, at Portsmouth, more than 4,000 men were employed in the Yard; 36% of the estimated labour force of the Borough. With peace came redundancies; this was due not to the curtailment of shipbuilding but to a severe cutback in repairs and refits. In the war years these had been more important than shipbuilding for which the Admiralty turned to merchant and private yards.

In March 1816, 300 mechanics at Portsmouth were dismissed with one week's pay and over 50 labourers left with them. Two months later, 90 of the oldest mechanics, some with 50 years' service in the Yard, were superannuated on bounties of from £14 to £24 per annum.

To lessen the number of discharges the hours of work were shortened: 8 am in summer and 8.30 am in winter, until 5 pm in summer and 4 pm in winter. Allowing for meal breaks the actual working hours were seven in summer and six in winter with the resultant pay reductions. Shipwrights on day pay had their pay reduced to that of the third class as fixed in 1812. Those on piece work had their earnings limited to 4s 6d a day.

In 1817, a further reduction in the number of hours took place: 8.30 am in summer and winter, to 5 pm in summer and to 4 pm in winter. The actual working day was 6<sup>1</sup>/<sub>4</sub> hours

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in summer and 6 hours in winter. The day rates were unaltered but the limitation on earnings was lowered to 4s. In 1818 there was a reversion, as far as working hours and earnings limit, to the 1816 conditions.

In 1822, working hours were increased to the normal level, 10 per day in summer and eight per day in winter, except for three weeks before and three weeks after the winter solstice, i.e., 7 hours a day for six weeks in mid-winter. Whilst a reduction was made in piece rates, the limit of earnings was raised to 5s a day and 'chip' money. However, the working week was fixed at 5 days between 1821 and 1825, and subsequently between 1827 and 1837. In fact in the last period the working week was decreased to 4 1/2 days at one time. The 6 day week was reintroduced in July 1837 and weekly earnings increased by 20%.

'Chip' money was abolished in 1830 when the establishment at Portsmouth was reduced to 2,000. By Order in Council of 18 July 1833, Day work was substituted for Piece work.

Annual daily earnings at Portsmouth. (Parliamentary Paper No XIII 1823 QQ 18819) No 'chip' money

Shipwrights	Day		Task		Labourers	Day		Task	
1790	4s	7d*	4s	4d		2s	2d		
1791	3s	4d	4s	3d		1s	8d		
1792	3s	4d	4s	2d		1s	10d	Not	
1793	4s	2d	5s	6d		2s	2d	employed	
1794	5s	3d	5s	10d		2s	2d	on Task	
1795	4s	9d	5s	5d		2s	5d	work	
17%	4s	9d	5s	5d		2s	5d		
1797	4s	9d	5s	5d		2s	5d		
1798	4s	9d	5s	5d		2s	5d		
1799	5s	5d	6s	0d		2s	5d		
1800	5s	5d	6s	1d		2s	5d		
'Chip' money granted									
1801	6s	3d	6s	3d		2s	11d		
1802	4s	2d	5s	2d		2s	2d		
1803	5s	5d	6s	6d		2s	5d		
1804	5s	5d	6s	5d		2s	5d		
1805	5s	5d	6s	9d		2s	5d	2s	4d
1806	4s	9d	6s	10d		2s	5d	3s	0d
1807	4s	9d	6s	5d		2s	5d	3s	8d
1808	4s	9d	6s	8d		2s	5d	3s	9d
1809	4s	9d	7s	1d		2s	5d	3s	3d
1810	4s	9d	6s	9d		2s	5d	3s	7d
1811	4s	2d	6s	4d		2s	2d	3s	2d

\* It is assumed that Day rates included Job rates on a time basis; this figure implies that a shipwright worked 6 hours overtime a day during the whole year. The majority of Shipwrights were on piece work. Earnings in private yards were much higher but the conditions of employment in them were much more onerous.

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Annual daily earnings at Portsmouth. (Parliamentary Paper No XIII 1823 pp 188/9)

Shipwrights	Day		Task		Labourers		Day		Task	
	Summer	Winter			Summer	Winter				
1812	5s 0d	4s 0d	7s	7d	2s	7d	2s	1d	3s	7d
1813	5s 0d	4s 0d	7s	3d	2s	7d	2s	1d	3s	5d
1814	5s 0d	4s 0d	7s	2d	2s	7d	2s	1d	3s	10d
1815	5s 0d	4s 0d	6s	6d	2s	7d	2s	1d	3s	4d
<u>Peace (hours of labour reduced)</u>										
1816	3s 6d	2s 9d	4s	2d	1s	10d	1s	6d	2s	3d
1817	3s 6d	2s 9d	3s	10d	1s	10d	1s	6d	2s	0d
1818	3s 6d	2s 9d	4s	4d	1s	10d	1s	6d	2s	3d
1819	3s 6d	2s 9d	4s	2d	1s	10d	1s	6d	2s	4d
1820	3s 6d	2s 9d	4s	2d	1s	10d	1s	6d	2s	4d
1821	3s 6d	2s 9d	3s	11d	1s	10d	1s	6d	2s	4d
1822	3s 6d	2s 9d	4s	0d	1s	10d	1s	6d	2s	4d

At this time the hours of labour were increased:

1823	4s 1d	3s 3d	4s 10d	2s	0d	1s 7d	2s 11d
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Between 1823 and 1833 the daily rate did not alter but the working week varied from 4½ to 6 days.

Labourers were not employed by task until 1805, caulkers not until 1811, and riggers not at all.

At Plymouth the average daily earnings (for Michaelmas Quarter) without distinguishing between Time and Piece work were:

1790	3s 2½d	1793	4s .5¾d
1797	5s 2d	1801	5s 5½d
1803	6s 6d		

During the war the Shipwrights were not particularly hard hit. The population of Chatham rose very rapidly in George III's reign. In 1760 the number of rateable properties had been 1204, and by 1819 this had risen to 2648.

Bentham noted that the daughters of Dockyardmen were not in the habit of going to work. He had suggested that work should be found for them in the Yard. This showed that the workmen were able, out of their earnings, to maintain their families in the way of life to which they were accustomed. The girls would probably have found work in domestic service had the workmen's wages been insufficient.

In 1825, Sir G Clark, a member of the Board, stated in the House of Commons that at the end of the war the policy of the Admiralty had been to retain the maximum number of men and to meet the cost by lowering wages.

The period of depression in private trade lasted for about ten years after the wars; the period 1815-1833 was exceptionally unfavourable for Shipwrights.

In 1825 there was a Shipwrights' strike on the Thames. The strike was ordered by the Shipwrights' Provident Union of the Port of London, (formed on 16th August 1824 on the repeal of the Combination Laws). Union demands included; limitation of hours from

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6 am to 6 pm; insistence on apprenticeship for all masters; a boycott against masters who had no regular yard but worked on '.. canals and afloat' and recognition of 7 years' apprenticeship. The strike lasted two months and ended in victory for the Union after the masters had unsuccessfully tried to import blacklegs from Portsmouth and Plymouth. It was said that grass grew on the building slips at Blackwall and the foreman and apprentices worked together doing odd jobs.

John Barrow, second Secretary of the Admiralty, wrote a memo about piece work before the Graham Report of 1832:

*6,500 men were constantly employed on what is called Task and Job Work (which implies more work done in a day than an ordinary day's work) and yet there were so many more men in the Yards than were required for the work to be done that they were allowed to work only 5 days a week. Another absurdity was that the earnings of the very best artificers were limited to a small sum, say 5s a day, although they were supposed to be working by Task, which implied the work of a day and a half done in a day. The Consequence was that every man got his 5s within a penny or two, whatever his abilities, or want of them, may have been. This glaring inconsistency had frequently been pointed out by the Board of Admiralty but, so strong was the opposition to altering it, that the farce was kept up of measuring this work, by a number of officers called 'Measurers' with salaries of £180 each, who had no other merit than the ingenuity of that wonderful contrivance, by which the earnings of good and bad workmen were brought out to be as nearly possible the same.*

The intentions of Admiralty appeared in an Order in Council, 18 July 1833, which substituted Day Work for Piece Work.

*Task and Job work should for the present and until further order be suspended. Task Work implying in fact the performance of more than a day's work in each day and paying for it accordingly, such a practice was not only unnecessary to be continued in time of peace but was moreover liable to considerable abuse and extravagance both as to Wages & Materials.*

The Navy Estimates for Chatham in 1822 were: £34, 780; for Portsmouth and Plymouth £48,083 and £42,241, respectively. In that year many of the ancient offices were abolished including Clerk of the Survey, Clerk of the Ropeyard, Master Mastmaker, Master Boatbuilder, Master Carpenter, Master Joiner and Quartermen. The Quartermen, a salaried officer, was replaced by the Leading Man, a workman with a supervisory allowance.

With the disappearance of the Piece work system in 1833, the office of Measurer was abolished, and the supervisory staff was strengthened by the appointment of a new class of officer, the Inspector. The labour force in each Yard was divided into gangs of fifteen under a Leading Man and divisions of thirty, each division being placed under an Inspector. The size of the gangs and the number under each Inspector were later increased.

In the Report of the Admiralty visitation of September to October 1835 appeared:

*The reduction in the numbers employed in the Dockyards had begun before 1830. From 1st of July 1833, Day Pay was given to all inferior officers, artificers and labourers .. It meant that more men could be borne on Dockyard books, as Day Pay was less expensive than payment by Task and Job. The working week was reduced to 5 days so that the Dockyard labour force could be maintained at 6,000.*



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At Portsmouth the contract for horses was cancelled and the work transferred to convicts. More than 600 convicts were employed at Portsmouth Yard and the people of Portsmouth had petitioned Admiralty to stop employing convict labour in the Yard on an earlier occasion when Dockyardmen were discharged.

In 1833, the Board of Admiralty made enquiries into the rates paid by private shipyards and based their new rates on them. The weekly rates were not the same as those of the average man in private yards, for those in the Royal Yards were working only 5 days a week.

To ensure that the men worked well without the incentive of piece work, the Shipwrights were graded into three classes: the new rates being 4s 6d, 4s 0d and 3s 6d a day; 'chip' money was no longer paid<sup>1</sup>. The men strongly objected to grading, for they normally graded themselves; the best men on the stem stages, the second class on the bow stages, and the remainder amidships. In consequence of their objections the grading was abolished in 1841, and all were given second class rates of pay. The experiment of grading was tried again in 1891-4 but was abandoned.

When carpenters of the Department of the Environment renewed the timbers in the old Pattern Shop in December 1971, they found a complaint about classification written by Shipwrights who laid a new upper floor in the shop in 1835.<sup>2</sup> Two of these Shipwrights, J Morris and George Pike, signed their names on pieces of yellow pine wood and on a third piece, one wrote:

*This floor was layed August 1835 by Shipwrights under the disgraceful system of classification and at the time when that valuable body of men laboured under so many grievances. Ere this is found may that diabolical treatment be confounded, and all promoters of it. The day pay was at this time 4s 6d, 4s and 3s 6d .only. Every gang was 15 men, three of whom had 4s 6d, the others 4s and 3s 6d. · Reader, pause and think seriously of the sufferance of your forefathers. Fare these well.*

(‘Periscope’ January 1972)

The writers might also have observed that Shipwrights were employed on the repair of Dockyard buildings, thus economising on the wages of house carpenters. In 1835 it was forbidden to fill the vacancies of ropemakers, as the number of men borne on the 1st of March was 87 over the establishment. It was held that ropemakers were constantly employed performing work normally done by labourers and their assistance was to be rendered by surplus labourers, convicts and others.

The Shipwrights complained of their wages but contrast them with the Tolpuddle Martyrs. In 1830 farm labourers' wages were 9s per week; in succeeding years this was reduced to 8s and then 7s, and in 1834 farm workers were threatened with a further reduction to 6s per week. The men in Tolpuddle eventually turned for advice to the Grand National Consolidated Union. The delegates of this union came to Tolpuddle and as a result the Friendly Society of Agricultural Labourers was formed. At this eruption of Trade Unionism, the six labourers, under the leadership of George Lovelace, were sentenced to seven years' transportation.

By an Order of 25 October 1834, Yard Officers were not to allow time in lieu for extra work but to pay the men so employed. Within a month a further instruction was issued to limit extra work to avoid the necessity of recalling the Order of 25 October 1834. In the following month it was ordered that men employed in their dinner hour were to be

<sup>1</sup> During the building of St John's Church, Chatham, c 1820, Thomas Jarvis of Brompton paid his bricklayer £1 per week and his labourers, 13s 6d. Siddens, the builders, paid the house carpenter 24s per week.

<sup>2</sup> See Development in chapter 1

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allowed to go home an hour earlier to avoid extra payment. Workmen employed at night were to be given a day's pay when they actually worked, but 1s 6d if they were merely employed watching.

In July 1834 the proposed establishment of Chatham Yard shows a reduction in the number of workmen employed from 1,150 to 1,000.

	Proposed Establishment	1833 Establishment
Shipwrights and apprentices	400	500
Blockmakers <sup>1</sup>	2	2
Treenail and Coakmakers <sup>2</sup>	5	7
Oar makers	1	1
Caulkers and apprentices	25	30
Pitch heaters	1	1
Oakum boys	3	3
Joiners and apprentices	60	75
Turners	1	1
Wheelwrights	2	2
Coopers	2	2
Smiths and apprentices	85	100
Millwrights	5	5
Engine Keepers	3	3
Locksmiths	2	2
Braziers and Tin men	3	3
Plumbers	4	4
Bricklayers	4	4
Masons	2	2
Painters, Glaziers & Grinders	11	11
Sawyers	70	70
Paviors	2	2
Yard Labourers (see next page*)	31	72
Total of Master Shipwright's Dept	724	902
Sailmakers	20	25
Riggers	25	25
Riggers 3rd class (Boats' crews)	15	15
Tailor	1	1
Spinners	129	129
Key Bearer	1	1
House Boys	15	18
Total of Master Attendant's Dept	206	214
Storehouse Labourers	17	17
Messengers	6	7
Police Force <sup>3</sup>	47	10 warders
Total	703	4

1 The craft of blockmaker was absorbed in that of the shipwright in 1945; the last blockmaker apprentice was entered at Portsmouth in that year.

2 'coak' means dowel

3 The amended establishment included the police force. See Security of Yard in chapter 15

\*Yard Labourers (from previous page)

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In 1838 the establishment of Labourers was ordered to be:

	<i>with convicts as at present <sup>1</sup></i>	<i>if convicts should be withdrawn</i>
Leading Men	4	12
1st class	29	18
2nd class	28	48
Ordinary Labourers		172
Total	61	250

By an Order of 28 October 1834 the establishment of Sawyers and Spinners was to be completed from Yard Labourers.

The daily pay scale of Labourers was:

1st class 2s 9d; 2nd class, 2s 3d; ordinary labourers, 2s. The wages of all hired or extra labourers were to be reduced from 2s 6d to 2s a day.

In Gillingham in 1840, Mr Stedman, Miller and Engineer, was paying his artificers 6s a day and his labourers 4s a day.

Certain labourers with special skills, the counterpart of the modern skilled labourer, appeared to have received higher rates. This seemed particularly to apply to single-stationed labourers. A list applying to 1847 is given below:

		No
Writer to Boatswain	3s	1
Water Bailiff	3s	1
Attending Supplying Kilns	3s for 7 days	2
Making and repairing fire engine gear	3s 6d	2
Strapping Blocks & keeping tackles in order	3s	1
Attending at Mould Loft	2s 6d	1
Burnetizing <sup>2</sup> timber	3s	1
Gardener	3s	1
Messenger at School room and Measurer's office	2s 9d	1
Surgery Messenger	3s 6d for 7 days.	

By 1861 the wages of labourers were 13s and 14s a week.

Owing to economies practised by successive governments a deficiency of converted stores appeared and in 1837 the total number of ropemakers in all Yards was increased from 505 to 555, and of sailmakers from 131 to 186.

In 1839 Admiralty attempted to enforce the calling of rolls in Dockyardmen's time and to reduce by 15 minutes the time allowed Smiths for putting out fires and washing; this led to a strike at Portsmouth.

In March 1837, the 5 1/2 day week was started but in the July of that year a 6 day week was ordered for all artificers with proportionate increase of pay. It was directed that there should be a breakfast allowance in the hours of the Yard. The workmen were supposed to leave on Saturdays at the same time as the other days of the week, but it is doubtful if this

<sup>1</sup> See Hulks, etc moored on the Medway in the 19th century in chapter 18

<sup>2</sup> Burnetizing was the preservation of timber from the ravages of dry rot by immersion in Sir William Burnett's fluid, zinc chloride. The burnetizing tank is shown on the 1858 Map of the Yard

## DOCKYARDMEN

was put into effect. In Hobbes' 'Reminiscences' Vol2, page 27, appears: 'At Sheerness work stopped at 4 pm in 1846.' Winter attendance commenced 9 November and ended on 1 February.

It was ordered on 25 May 1839 that the working hours for the summer months, from the first Monday in March and ending on the first Saturday in October were to be 9½ hours a day. In winter a 7¼ hour day was to be worked. On Saturdays work was to cease one hour earlier in the evening.

By 1846, the daily working hours of the Yard were ten in the summer and eight in the winter, except between 11 November and 31st January when there were only seven; Saturday work ceased at 4 pm. Men breakfasted before going into work and were allowed 1½ hours for dinner in the summer and 1 hour in the winter. Extra time was worked at the rate of one-eighth of a day's pay per hour. The wages of the men were paid at noon on Fridays, the payment being distributed by the Leading Men. The salaries of officers were paid quarterly, as were Dockyard pensioners.

The Tap Houses in the Yard were closed in 1833 and the sale of beer stopped. Smiths forging anchors were allowed 3d a day beer money in lieu of the beer ration.

Most of the men worked in gangs of about fifteen under a Leading Man,<sup>1</sup> and over the gangs was an Inspector. The latter attended the Dockyard Gate or Muster Office to see his men come into the Yard. At Bell-ringing the men took their tickets and proceeded to their shops or posts where the Leading Man took the men's tickets and locked them up. A little before noon the men were given their tickets and at noon Bell-ringing went out to dinner. The tickets were hung on a numbered board by the Storekeeper's clerk; the clerks came in earlier on a rota system to attend to the Muster. Each ticket had a number by which the owner was distinguished in the Muster Book. This method of muster by tickets superseded the older Roll Call when the men were mustered at the Clerk of the Checque's office as they entered and left the Yard.<sup>2</sup> There were four 'calls' during the working day.

Details of holidays given to men in the Yard up to this date have already been given. The holidays were revised in 1833: Dockyard holidays were the birthdays of the King and Queen, Coronation Day, Good Friday and Christmas Day. The first three were really half-day holidays, the men leaving the Yard at noon; the last two were whole days. The accession of Queen Victoria deprived the Dockyardmen of one of the half days. In 1844, the holidays were reduced to four but were whole days. A half-day's holiday was given on the annual Admiralty Visit to the Yard and on days of Parliamentary nomination and election. On launch days the workmen might be allowed time off. Workmen could be granted leave without pay by permission of their superior officers.

1 From evidence given to the Committee on Dockyard Economy of 1858 \* the Leading Man of Shipwrights was paid 5s 6d a day. The day pay of the shipwright was raised to 4s 6d in 1857 and the Leading Man received 1s a day supervisory money. When employed on Task & Job (Task & Job work had been reintroduced on the outbreak of the Crimean War in 1854) he took the workman's share of the earnings of the gang and 6d a day supervisory money. The Shipwrights were formed into gangs of 20 in each, including the Leading Man and apprentices; this was considered quite as many as one person could satisfactorily look after.

Under the arrangement at the time of this evidence three gangs formed a company which was placed in charge of an Inspector.

\*Two investigations of the Dockyards were made at this period: in 1858 Admiralty appointed a Committee headed by Admiral Smart to deal with Dockyard Economy; in 1860 the Government appointed a Royal Commission headed by Rt Hon Frederick Peel, MP, to enquire into the control and management of the Royal Yards.

2 The Clerk of the Checque's office in the northern range of the old buildings was pulled down after 1700 and the Map of 1755 shows the Check office marked 'Q'

## DOCKYARDMEN

### Establishment of Officers and Men, 1 April 1849

<i>Officers:</i>	Superintendent, Master Attendant, Master Shipwright, Storekeeper, Store Receiver, Chief Engineer, Inspector of Steam Machinery.	
	Lieutenant Director of Police	1
	Timber Inspector	1
	Assistant Master Shipwrights	2
	Foremen of the Yard	5
	First Converter	1
	Second Converter	1
	Measurers	4
	Inspector of Shipwrights, 2nd class	7
	Boatswain, Master Smith, Master Ropemaker, Master Rigger and Master Sailmaker, Foreman of Joiners, Foreman of Smiths, Foreman of Ropemakers, Foreman of Painters, Inspector of Caulkers, Inspector of Joiners	
	Conductor of Metal Mills	1
	Foreman of Millwrights	1
	Layers in Ropeyards	3
	Leading Men of Storehouses	3
	Chaplain, Surgeon, Assistant Surgeon, Schoolmaster for apprentices.	

<i>Workmen:</i>	<i>Leading Men</i>	<i>Workmen</i>	<i>Apprentices</i>	<i>Total</i>
Shipwrights	22			
Shipwrights (single stationed)	12	350	76	460
Treenail and Lock makers				5
Blockmakers				2
Oar makers				1
Caulkers	3	35	8	46
Pitch heaters				1
Oakum boys				3
Joiners	5	65		70
Turner				1
Wheelwrights				2
Coopers				2
Smiths				96
Millwrights				26
Workmen at Millwrights shop				35
Workmen at Metal Mills				72
Braziers and Tinmen				2
Founders and Locksmiths		2	4	6
Plumbers				10
Engine Keepers				7
Stokers				6
Workmen at the Saw Mills				28
Bricklayer				1
Mason				1
Paviors				2
Painters, Glaziers and Grinders				11
Sawyers, Topmen and Pitmen				44
Labourers, Established				200
Labourers, Day				130
Labourers, Boys				<u>20</u>
Total of Master Shipwright's Department				<u>1290</u>

## DOCKYARDMEN

*Establishment of Workmen (continued)*

*Workmen*

Riggers including Boats' crews	40
Seamen for Yard service	75
Single-stationed men under Storekeeper	9
Single-stationed men under Timber Inspector	7
Sailmakers	23
Tailor	1
Spinners	126
Key Bearer at Ropeyard	1
House Boys	20
Storehousemen	16
Messengers	6
<u>Total</u>	<u>324</u>
Police	51
Teams of horses (4 in number)	9

An attempt to form a Naval Reserve was made about 1844. Ex-Petty Officers and AB's were encouraged to enter the Yard in place of hired labourers and an Admiralty Order of 20 September 1844 provided that these entrants were to be liable for sea service at all times. At Chatham, vacancies for 100 existed but by the end of 1847 no more than 42 posts had been filled.

The Parliamentary Wages Vote was prepared by the Surveyor of the Navy and approved by the Board of Admiralty. The programmes of Work of the Yard were prepared with the number of Shipwrights to be employed and the system of pay to be used: Day pay or Task and Job. The number of other tradesmen to be engaged was governed by the number of Shipwrights employed.

### **Task & Job Check system**

In 1847 Day work and check measurement was tried. By this system each man's work was measured as if it had been done on a piece work system and if it failed to reach the given standard of quality or quantity a deduction was made from the man's wages. However, if his work was above standard his wages were not increased.

In evidence to the Dockyard Enquiry of 1858, Ebenezer Clatworthy, Accountant at Chatham Yard stated that by check measurement it was found generally that the men made a percentage over Day pay which, had they been paid Task and Job, would have been lost to the Crown.

With the outbreak of the Crimean War in 1854, Task and Job Work was introduced. Apart from an interval, 1857/8, when time and check measurement was again adopted, the second piece work experiment lasted until 1864. When the piece work system was reintroduced in 1854, the Day pay of the Shipwright was 4s; in 1857 it was raised to 4s 6d. In 1858 the pay of the Joiner was raised from 3s 6d to 3s 10d a day.

The rates for piece workers were regulated by fixed tables, termed Schemes of Prices, and Task and Job was administered by Measurers. The Scheme of Prices was so formed that men might earn 33 1/3% more than Day pay without extraordinary exertion. The men declared that the percentage was nearer 20/25%.

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The average daily earnings for a shipwright for all the Yards during the piece work period of 1854/64 was considerably higher than Day pay, 4s 6d during most of this period

1854	6s 0 <sup>1</sup> / <sub>4</sub> d
1855	5s 10 <sup>1</sup> / <sub>4</sub> d
1856	5s 11d
1858	5s 9 <sup>1</sup> / <sub>2</sub> d

The rates in private yards during this period were not less than 7s a day. (Hansard 14 March 1864)

George Roome, Master Sailmaker at Chatham, stated in evidence given at the Enquiry of 1858 that on Task and Job the average earnings of his men over four months was 5s 1d a day.

Task and Job work was used when circumstances required. An Instruction dated 7 May 1858 ordered:

*After Monday the 10th instant you will cause all Artificers that can be paid by Task and Job to be so employed and such of the Labourers and other Workmen whose weekly wages do not exceed 14s a week to be granted exertion money of 1s a week.*

The labourers lost their 1s exertion money when Task and Job work ceased in February 1861 -their rate of 13s a week was about that of a farm worker.

Another mention was made of exertion money in 'Chatham News' of 16 April 1864 which reported:

*In order to expedite the building of the steam ram **Lord Warden** now under construction on No 7 Slip, and the repairs to the screw corvette **Cadmus**, 21, the Lords of the Admiralty have granted 6d a day extra exertion money to Shipwrights employed on these vessels. In addition the hands are working one hour a day overtime for which they are paid 7<sup>1</sup>/<sub>2</sub>d so that each workman is paid 1s 1<sup>1</sup>/<sub>2</sub>d a day in excess of the usual rate, 4s 6d a day.*

In the next week's edition of this paper it was reported that men working in the Millwrights' Shop and the Smithery were applying for exertion money.

After 1864 Time work with a certain amount of check measurement became the rule but Piece work was used when circumstances required. In March 1860 the Shipwrights of Woolwich Yard, 400 in number, had met to protest against the Task and Job system. There was a limit to piece work earnings of one third more than Day pay; this limit was abolished in 1891.

'Chatham News' of 21 September 1872 reported that the check system had been reintroduced into the Dockyard. Thirty Shipwrights had been stopped from 3s to 3s 10d each by this system. In October the same paper referred again to the check system, mentioning that it had been introduced eighteen years before, when a staff of Measurers was appointed. The grievance of the men was that they could not find out the prices of the work.

In 1873 it was ordered that the following percentages were in future to be added to the earnings of the several grades of workmen employed on Task Work and Check Measurement after the work had been valued by the several Schemes of Prices:

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### *Percentages to be added to Task Work earnings*

Shipwrights	11%	Smiths' work (1857 Scheme)	9%
Oar makers	11%	Sailmakers	9%
Boatbuilders	11%	Painters & Glaziers	7%
Caulkers	11%	Sawyers	10%
Joiners	12 <sup>1</sup> / <sub>2</sub> %	Sawmills	8%
Wheelwrights	7%	Metal Mills	7%
Ropemakers	7%	Hosemakers	12 <sup>1</sup> / <sub>2</sub> %
Spinning Machinists	10%	Smiths' work (1872 Scheme)	9%
Labourers' work	10%	Labourers' coaling	10%
riveting, drilling and caulking by hand			10%
Drilling, countersinking by machine			9%

There was an increase of pay for Shipwrights in 1873: the established men received 5s a day, the hired men, 4s to 5s 4d a day. The established men had job security in the service and were eligible for the benefit of superannuation. Hired men could be discharged when their services were no longer required. By the use of hired men, Admiralty had control over the numbers employed in the Yard.

In 1872 the Ropery was put on unlimited Task and Job work, payment being made according to a Scheme of Prices produced by the Foremen of Devonport and Chatham Yards. Initially there were protests against loss of earnings. By 1874, in the Spinning Department, Task and Job earnings were estimated at 14.9% over Day pay, and in the Laying Department, 20.4% over Day pay. For check measurement there were two Writers, an established Writer paid 7s 9d a day, and an assistant paid at 5s 9d a day.

(1873, Charles Bonny, first class Ropemaker, was to be paid 5s 9d a day for acting as Writer)

In 1875 it was ordered for the Ropery that:

*.. when working Task & Job the minimum day pay of Leading Men exclusive of increment for servitude shall always exceed by 4d a day the highest rate for workmen, except in cases where the rate would be less than the ordinary day's pay and in such cases they are to be paid the ordinary Day pay for Leading Men*

At this date three men were employed for the measurement of the work: an established Writer, an Assistant Writer and an acting Leading Man of the Spinning Room, who were, in 1876, paid 8s, 6s and 5s 2d a day respectively. By 1877, the money was running out, and the system of Day pay with check measurement was reintroduced.

In 1888, Job & Check work was in force in the Smithery. Recorders of work were appointed from the workmen to assist the Inspectors - 15 in number. In reply to a question asked in Parliament concerning Job and Check work, the answer given was that this was a system to enable the authorities to test whether men on Day payment earned generally the wages actually received in prices fixed by Admiralty for Task & Job work. The term 'Task & Job' was replaced by 'Piecework' by 1894.

There were continuous complaints about piecework rates. 'Chatham News' of 3 September 1892 had an article on the grievances of the Dockyardmen. The men declared that they were never paid more than 5% in excess of Day earnings, and that before starting a job they were uncertain of the rate of pay. The same paper, in November, carried another report that piece work earnings had been reduced by 12112%, the increase given in April 1891. The official reason for the reduction was to make the money voted last out to avoid dismissals from the Yard. By 1898 the Scheme of Prices for piecework allowed men to earn at least 30% above Day pay.



## DOCKYARDMEN

### Numbers employed in the Yard

In 1860, additional labour was engaged in the Yard, particularly angle iron Smiths and platers, in preparation for the building of the 'Iron cased frigate, Achilles.' However, by February 1861 orders were issued for 800 men to be discharged including 340 hired Shipwrights. Each man to be discharged was to receive a month's notice and given railway fare for himself, not his family, to the town where he belonged. This order for the discharge of the woodworkers was largely rescinded because of the strike of the iron workers. (see later)

The Extension Scheme for Chatham Yard was under way by the early 1860's and the convicts were drafted from the Yard to St Mary's Island for construction excavation and brickmaking. In June 1861, 250 labourers were entered to replace the convicts. Again in December 1861 when there was a threat of war with America, authority was given for the entry of 110 hired hands, 50 Shipwrights, 20 Smiths, 20 joiners and 20 painters. As mentioned earlier the increased use of hired labour in the Yards facilitated this variation of the numbers of men employed.

After the completion of the Extension Works, the convicts were then employed in the Yard.<sup>1</sup> This caused a reduction of the force of labourers in the Yard and tended to inhibit wage rises for them. The convicts were employed on such tasks as carrying timber to and from the Mast Pond, keeping the Yard tidy, and clearing grass and weeds between the cobble-stones. High wooden platforms stood at intervals along the river for some distance and these were manned by guards with rifles to prevent any convict escaping into the river.

In 1860 there were 2,782 in the Yard including 1,000 Shipwrights and 605 labourers; 1,735 of these were established. In September 1863, 'Chatham News' reported a rumour of a threatened reduction of 1,100 men at Chatham, about a quarter of the establishment- this was actually reduced to about 200. In 1866 there were 3,335 men in the Yard; 1,532 established mechanics and labourers and 1,803 hired hands.

### Pay of Dockyardmen in the last quarter of the 19th century

The pay of the Dockyardmen was made public when they ran into debt. It was usual to seek an Administration Order at the County Court, i.e., for the debtor to make weekly payments to the Court. The debtor revealed his earnings in order that the Judge might fix the weekly payment. Thus in 1877, a coppersmith declared £1 16s a week; a fitter, £1 13s a week; a shipwright, acting as a Draughtsman, £1 10s a week; and a hammerman, £1 2s a week.

In 'The Wheelwright's Shop' by George Sturt, details are given of the wages and conditions in a wheelwright's shop at Farnham, Surrey. Before 1885 the hours in the shop were from 6 am to 6 pm on weekdays and from 6 am to 4 pm on Saturdays. In 1885 work stopped at 1 o'clock on Saturdays and about this time 5.30 pm was substituted for 6 pm for stopping time. If overtime was worked the men took half an hour for tea and worked from 6 to 8 pm. Mealtimes were: Breakfast 8 to 8.30 am; Dinner 1 to 2 pm. The rate was 24s a week with overtime paid at 6d an hour.

(By the 1873 Pay award the Dockyard wheelwrights were paid between 25s 6d and 28s a week, a rise of 2s a week.)

Jobs for Shipwrights were being advertised in the local press. In 'Chatham News' of 3 March 1866 appeared the following advertisement:

*300 mechanics wanted to work at barge building and repairing work for Master Boatbuilder in the Port of London.*

<sup>1</sup> The prison closed in the 1890's and the staff and inmates were transferred.

## DOCKYARDMEN

The pay offered was 6s a day of ten hours. Similarly in 1865 an advertisement for Shipwrights required at Liverpool for woodwork in an iron ship had offered a rate of 6s a day.

Details of the scales of pay in 1873 are given below. Prior to this no difference was made in the pay of hired and established men in the same trade. For instance, all Shipwrights up to 1873 received the same rate of pay. In 1873 the established rate was fixed at 5s day whilst the hired rates varied from 4s to 5s 4d a day.

In 1891, the system of grading some tradesmen was reintroduced: e.g., established Shipwrights, 31s to 33s per week; hired men, 31s to 34s per week. The Shipwrights resented grading, but accepted the differential between hired and established rates of pay. In 1893, a start was made on the abolition of grading and the rates were: Established men, 31s 6d a week; Hired men, 33s a week. Men in receipt of the higher wages retained them so that classification continued. In 1896, both classes were given an increase of 6d per week. The wages of the hired men were roughly the same as those in private yards taking into account the length of the working week.

In 1891, the average working week for all the Royal Yards was just under 51 hours, whereas in private yards the average week was of the order of 53-54 hours. In 1894, Admiralty introduced an average working week of 48 hours although the working hours were already shorter than those in private yards.

(The 1897 lockout of engineering workers was precipitated by union demands for a 48 hour week.)

After 1894 the rate of pay was based on a week's work, the length of the working week being fixed by Admiralty. Some mechanics had claimed compensation for hours worked over 48 since the introduction of the 48 hour week.

A survey published in 1893 showed that the majority of Dockyard employees earned between 32s 6d and 35s per week and only eleven earned under 15s a week. In addition, some were entitled to pensions and others to gratuities.

In 1889 a comparison was made between the rates of pay in Royal and private Yards:

	Royal Yard	Private Yard		Royal Yard	Private Yard
Fitter	5s 6d	6s 0d	Caulker	5s 0d	6s 0d
Skilled Labourer	3s 2d	4s 0d	Riveter	4s 0d	5s 6d
Labourer	2s 8d	3s 6d	Driller	3s 6d	4s 0d
Pattern Maker	6s 0d	6s 4d	Joiner	4s 6d	6s 0d
Moulder	5s 10d	6s 0d	Boilermaker	6s 0d	6s 0d
Coppersmith	5s 0d	6s 4d	Shipwright	5s 0d	7s 6d

### Rates of Day pay after April 1873

#### *Established employees*

Blockmakers 1st Class	5s 3d
Blockmakers 2nd Class	4s 9d
Braziers & tinmen	4s 9d
Caulkers: Leading Men	6s 6d to 7s 0d
Caulkers: Workmen	5s 0d
Coopers	4s 2d
Coppersmiths	5s 3d
Engine Keepers	4s 3d for 6 or 7 days for all hours
Hosemakers	3s 9d

## DOCKYARDMEN

### Rates of Day pay after April 1873 (continued)

*Established employees*

Joiners:	Single stationed men	5s 0d to 5s 6d
	Leading men	6s 0d to 6s 6d
	Workmen	4s 6d
Labourers under Boatswain:		
	Writer to Boatswain	3s 10d to 5s 0d
	Leading Men 5s 0d (special)	3s 9d
	Single stationed men	3s 2d to 3s 6d
	Labourers	2s 9d
	Skilled Labourers	3s 3d
	Locksmiths	4s 9d
	Messengers	3s 9d for 7 days a week (no overtime)
Oar machines:	Oar makers	5s 6d
	Oar finishers	5s 6d 4s 6d
Saw sharpeners		4s 0d
Machine labourers		3s 3d
Labourers		2s 9d
Packing case makers		4s 9d
Painters, glaziers & grinders:	Single stationed men	5s 2d
	Leading men, 1st class	7s 2d 2nd class 5s 2d to 6s 2d
	Workmen, 1st class	4s 6d 2nd class 4s 2d
Plumbers:	Leading men	5s 9d to 6s 3d
	Workmen	4s 9d
Riggers:	Coxswain to Master Attendant	4s 0d
	Signal & look-out men	3s 0d and 2s 6d for 7 days
	Leading Men	5s 6d
	Workmen	4s 0d
Ropemakers:	Writer	5s 9d to 7s 9ds
	Leading Men	5s 2d to 5s 8d
	Workmen 1st class	4s 6d 2nd class 4s 2d
	Keybearer at Ropery	3s 3d for 7 days
Sailmakers:	Leading Men	5s 2d to 5s 8d
	Workmen, 1st class	4s 6d 2nd class 4s 2d
Sawmills:	Workmen, 1st class	4s 0d 2nd class 3s 8d 3rd class 3s 3d
	Sawyers, top men	4s 2d pit men 3s 8d
Shipwrights:	Modellers	7s 0d
	Liners of Masts	7s 0d to 7s 6d
	Writers	6s 0d to 8s 0d
	Single-stationed men	5s 6d to 6s 0d
	Leading Men	6s 6d to 7s 0d
	Workmen	5s 0d
Single-stationed men for applying tests to stores from contractors		11s 0d
Timekeepers		4s 3d for 7 days
Wheelwright 1st class		4s 8d 2nd class 4s 3d
Writers (mechanics) in lieu of clerk or non- professional writers:		
Professional writer to Master Shipwright		9s 0d to 11s 0d
Others		6s 0d to 8s 0d

## DOCKYARDMEN

The pay for hired men was spread over a wider range, for example:

Shipwrights & caulkers:	4s 0d to 5s 4d
Coppersmiths	4s 0d to 6s 6d
Boilermakers	4s 0d to 7s 6d
Skilled Labourers	3s 0d to 4s 6d
Recorders of Work	4s 0d to 7s 6d

Note that the pay of the shipwright in 1673 was 2s 1d a day with 2112d a week lodging allowance, and the advantages of 'chips' and pay and the pay of an apprentice. In 1873 the pay was 5s; the shipwright's pay had hardly increased by 100% over two centuries- a contrast with wages in the 20th century.

### Fair Wages Resolution

Most political parties agreed that the State should be a model employer and that the conditions of its workers should not be less favourable than in private industry. The Admiralty regarded themselves as good employers prepared to listen to criticism of the treatment of its employees. They maintained a good apprenticeship system and had provided schools for the education of their young employees. They had introduced the shortened working week. There were opportunities of promotion to many of the higher posts in the service and there was security of employment for established Dockyardmen. The advantages of superannuation, etc, are dealt with later.

Parliament had passed the first Fair Wages Resolution regarding wages paid by Government Contractors. It had been shocked to find as a result of an enquiry that in many cases very low wages were paid by some government contractors. It was acknowledged that every effort had to be made to secure the payment of such wages 'as are generally accepted as current in each trade of competent tradesmen.' In 1906, a claim was made in Parliament that wages in the Dockyards should not be less favourable than those which government contractors were compelled to pay. Mr Edmund Robertson, the Financial Secretary, undertook that:

*. . . fair wages should be paid, the difference between Dockyard and outside work being taken into account.*

[Hansard 1 March 1906]

An excellent historical survey of wages and general conditions of work in the Dockyards has been made in papers contributed by N McLeod, Director of Labour, Admiralty, 1944- 1949. The author confessed that much of his writing had been cribbed from N McLeod's papers.

His figures relating shipwright's wages and the cost of living show that the wages after 1833 kept pace with the cost of living up to about 1870 and then rose faster than the latter up to 1913.<sup>1</sup> (See graphs on the following pages)

The weekly rate for the hired shipwright of 1901 to the beginning of the First World War is given below:

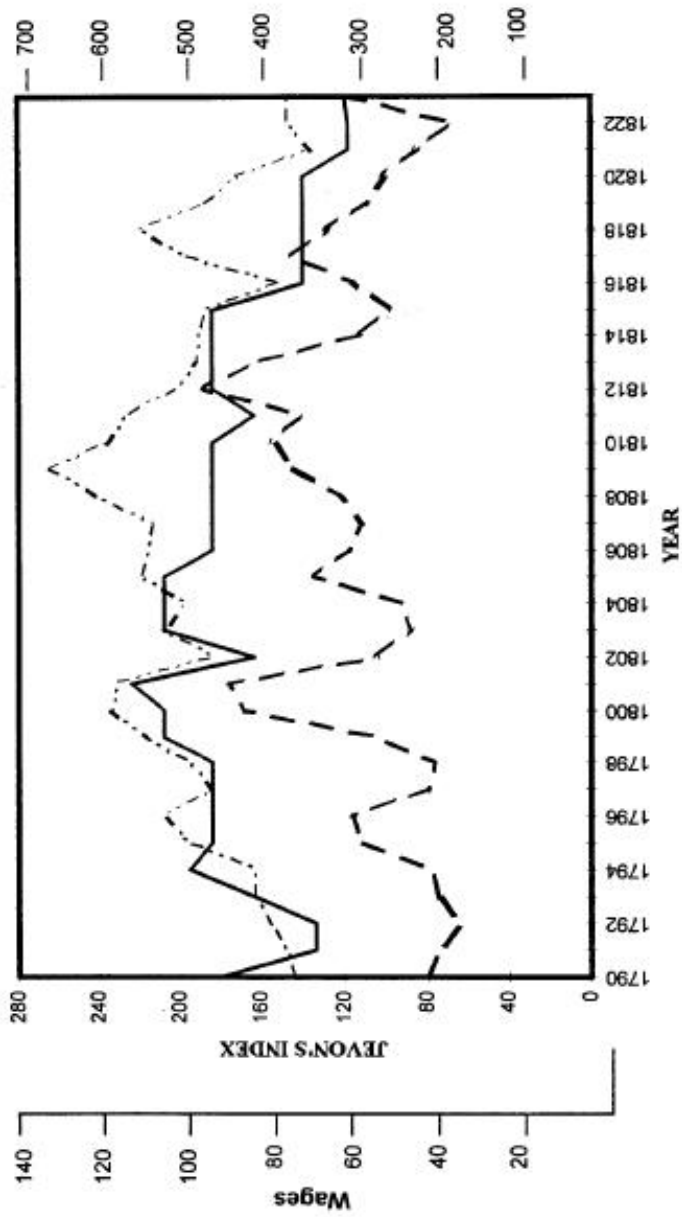
1901 34s 6d    1906 35s 6d    1912 36s 0d    1913 38s 0d<sup>2</sup>

In 1905 the weekly rate for the skilled labourer was from 21s to 27s and for the unskilled

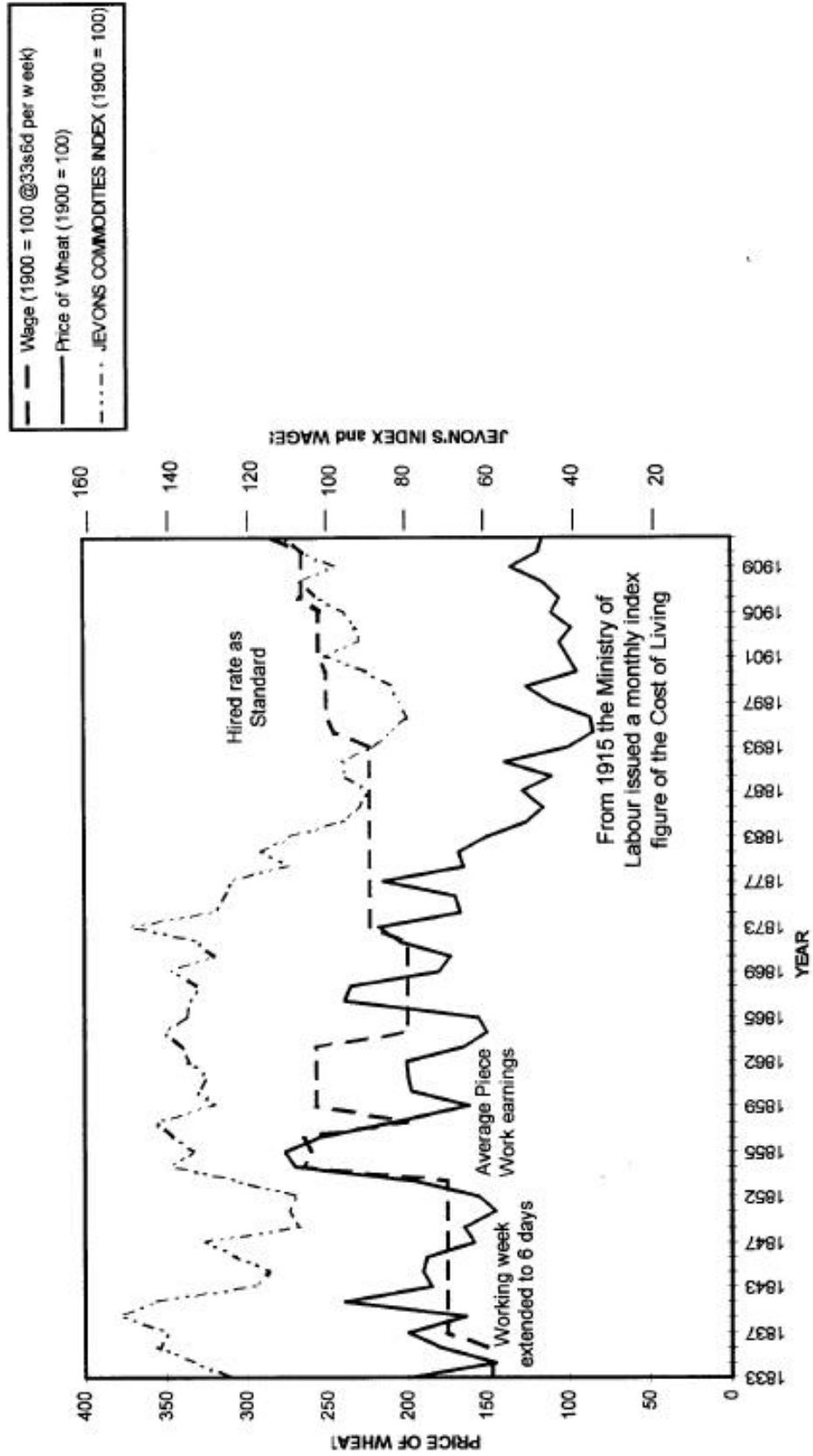
1 There was a steady approach to the level of wages in private industry and by the First World War there was a practical equality in hourly rates.

2 From 1st October 1914 the rates for established and hired Shipwrights, Engine, Ship and Electrical Fitters were 37s and 39s per week respectively. Labourers' rates were 24s and the minimum pay for the Skilled Labourer was 25s per week.

**WAGES AND PRICES - 1790 THROUGH 1823**



# WAGES AND PRICES - 1833 THROUGH 1913



## DOCKYARDMEN

labourer 20s. Yard boys were paid 6s per week rising to 16s at 20 years of age. A train driver, classed as a skilled labourer, could earn 22s at 20 years of age.

In 1906 Admiralty increased the rates of pay and introduced the bonus or premium system. The bonus system allowed the workmen to increase their pay by completing their work in less time than allowed for it; a premium or bonus was paid in proportion to the time saved. If a workman saved 25% of the time allowed for the job, he was paid at the rate of 25% in excess of the ordinary hourly rate for the actual number of hours taken. There was opposition by the trade unions to this system and after 1910 there is evidence of its suspension.

Sympathy may be felt for some of the poorly paid Dockyardmen, but Winston Churchill, First Lord of the Admiralty, pointed out in 1912 that for the last sixty years, no increase had been made in the substantive pay of the British sailor. The basic pay of the Able Seamen and Stoker, First Class, was then 1s 8d a day; that of a Leading Seaman, 1s 10d; Petty Officers, 2s 8d; and Chief Petty Officers, 3s 4d.

### Yard Craft Men <sup>1</sup>

Boys were admitted from 14 to 16; previously the age limits had been 13 to 16. They were promoted to Ordinary Seamen at 18 or discharged. At 24 years of age Ordinary Seamen were rated Able Seamen.

By 1914 the title of Master or Mate was restricted to Masters and Mates of self-propelled vessels who were capable of navigating their vessels round the coasts of the UK. Other Masters or Mates had a descriptive word attached to their title: 'coaling master,' 'dredging master,' etc.<sup>2</sup>

The annual leave was: Master & Engineer, 12 days; Mates, 9 days; other ratings, '6 days.

#### Rates of Pay in 1914

Master 1st class	8s to 9s a day
Master 2nd class	7s to 8s a day
Mates	5s to 5s 9d a day
Engineers 1st class	8s 6d to 9s 6d a day
Engineers 2nd class	7s to 8s a day
Engineers 3rd class	6s to 7s a day
Chief Stoker	5s 1d to 5s 7d a day
Able Seaman	4s a day
Ordinary Seaman	3s 10d (at 21) a day
Boys	2s to 2s 3d a day

#### **Superannuation**

Details of the Superannuation Scheme in force up to the end of the Napoleonic War have already been given. After the war, there was a drastic reduction of expenditure in the Dockyards and in 1828 a Select Committee of the House of Commons condemned the granting of pensions to workmen. No action was taken on the Report until 1833 when the Admiralty obtained an Order in Council of 3 April 1833 revoking all previous Orders on the subject and stating that no pensions or retired allowances should be given to workmen 'except only in special cases of claims founded on peculiar services accompanied by distress.'

<sup>1</sup> See section on Captain of Dockyard's Department in chapter 9

<sup>2</sup> in 1914 at Chatham there were three paddle tugs; one twin-screw tug; two yard craft and lighters. For the Chatham and Sheerness ferry service there was a RFA paddle and RFA screw vessel and two launches.

## DOCKYARDMEN

In 1833 the rate of Dockyard pay had been revised and brought into line with outside rates for average annual earnings. Thus it was argued that over a long period, the Dockyardmen received as much pay as if he had been in private employment and that the grant of pension rights was quite unnecessary. After 1833 outside rates began to rise and the Dockyardmen began to demand higher rates. To counter this the Admiralty reversed the 1833 policy to avoid giving up. increase in pay. An Order in Council of 22 May 1839 directed that Artificers and Workmen (excluding ordinary labourers and hired men), entered on the establishment of the Yards since 1 May 1833, should be put on the same regulations regarding superannuation as those entered before that date.

The Order in Council of 1764 stipulated the number of men to be admitted to superannuation. However, instead of waiting until a man had become too old or too feeble for work and then allowing him a pension if the proper number of pensioners was not exceeded, the Admiralty in the Napoleonic Wars had adopted the practice of treating every man who was regularly employed as eligible for pension if he subsequently fulfilled the conditions as regards service and fitness. The Order in council of May 1839 referred to men 'entered on the Establishment of the Yards.' The limits of age to be put on the Establishment was 20-35 and subsequently 20 to 40 with an extension to 50 for men who had served not less than 10 years in the Forces or in a hired capacity in a Government Department. There were created two grades of workmen, the established man eligible for pension, and the hired man without this privilege.

The privilege of superannuation was after 1809 extended to all industrial Admiralty employees whether serving in the Yards or not, but when in 1840, and subsequently, 'Steam Factories' were established at various Yards, the men employed in them were excluded from the privilege, for they had different rates of pay and different hours of work, and conditions of employment prevailing in private industry were more closely followed than in the Dockyards proper. There were protests in the 1860's when men over 60 in the Steam Factory at Woolwich were medically examined and some were dismissed. The men complained that they were being subjected to the provisions of the Superannuation Act of 1859 without receiving its benefits.

### *Salaried Officers and Clerks*

The pensions of Officers and Clerks obliged to retire from age and infirmities had been examined by the Commission of Revision <sup>1</sup> and, instead of being at the discretion of Admiralty were (16 January 1809) put on a scale dependent on length of service.

By 1822 the pension scales were:

Service	10 to 15 years, pension not exceeding 4/12 salary
	15 to 20 years, pension not exceeding 5/12 salary
	20 to 25 years, pension not exceeding 6/12 salary
	25 to 30 years, pension not exceeding 7/12 salary
	30 to 35 years, pension not exceeding 8/12 salary
	35 to 40 years, pension not exceeding 9/12 salary

Those who had previously served in the Royal Navy or in a Civil Department belonging to it were entitled to superannuation after a shorter period of service.

<sup>1</sup> The Commissioners investigating the practices of abuse on the clerical side, considered that the cause could be attributed mainly to the poor salaries (£30 to £55 pa) which often had not been increased for over a century and no regular superannuation scheme.

The salaries were revised and for the clerical side are given in the section of Clerks, etc. Every officer and clerk had to give a bond of three times his salary and subscribe to an oath of fidelity to comply with the new regulation.



## DOCKYARDMEN

The Yard Commissioners had no regular scheme of superannuation but on retirement they continued to be granted pensions by Order in Council generally three-quarters of the amount of their salary.

In 1862, Henry Vinall, Clerk in the Master Shipwright's office, was superannuated after 53 years service on full pay of £300 per annum.

A Treasury Minute of 4 August 1829 led to the following change:

The official income of the whole salaried staff (except Naval and Marine Officers, Civil salaried Officers and Clerks placed on salary before 4 August 1829 and Inferior Officers receiving no more than £200 per annum) was to be subject to an abatement of 2 1/2% on salaries of and under £100, and of 5% on salaries over that amount, towards superannuation. Further, those entered on salary subsequent to August 1829 were put on the following scale of Pension:

Service	10 to 17 years, pension not exceeding 3/12ths of salary
	17 to 24 years, pension not exceeding 4/12ths of salary
	24 to 31 years, pension not exceeding 5/12ths of salary
	31 to 38 years, pension not exceeding 6/12ths of salary
	38 to 45 years, pension not exceeding 7/12ths of salary
	45 years and upwards not exceeding 8/12ths of salary

Thus the rate of superannuation was reduced so that Officers and Clerks had not only to contribute towards their pension but had smaller pensions than their predecessors.

In 1875, a Regulation directed that all Officers and Clerks who entered before the Superannuation Act of 1859 must retire at 70.

Inferior Officers whose salaries did not exceed £200 per year were pensioned on a scale of 12ths, which after 50 years' service in that capacity, if possible, gave them a pension of £120 per year. The maximum pension of a Leading Man was £34 and of an Artificer £24. With these pensions there was a tendency for men to linger on in Admiralty service for as long as they could.

Charles Dickens' father joined the Pay Office in London in 1805. In 1821 he was transferred from the Pay Office to another branch and retired in 1825 when his salary was £350 per year. For pension purposes he had 19 years' service and was 39 years of age; he was entitled to 5/12ths salary as pension, i.e., £145 16s 8d.

The rates of pension for workmen in the Dockyard laid down in the Order in Council in 1802 and confirmed with slight modification by later Orders, were in force until the passing of the Superannuation Act of 1859.

### *Superannuation Act 1859. Established and Hired Men.*

By this Act all established persons in HM Civil Service admitted thereto by a Certificate from the Civil Service Commissioners<sup>1</sup> were, without contributing to any Superannuation Fund, on retiring on account of age (60 being the minimum), unfitness or abolition of office, entitled after ten years' service, to an annual pension of 1/60th part of their pay for each year's service, the maximum pension being 40/60ths of their pay. All were expected to retire at 60 years of age, at the latest 65, and the age limits for establishment were from 20 to 40 years. If a civil servant was discharged on account of ill health or abolition of office before he had served ten years, a gratuity not exceeding a month's pay for each year of service might be granted.

<sup>1</sup> The conditions that each candidate had to satisfy the Commissioners before being granted the certificate, were those of age, health, character, knowledge and ability and nationality.

## DOCKYARDMEN

In 1869, Woolwich and Deptford Yards were closed down. This involved the discharge to pension of men in the prime of life who had every expectation of remaining until the age of 60. In 1868, orders were given not to fill any vacancies in the Yards without the authority of Admiralty; no vacancies were filled until 1872, thus bringing down the established numbers.

The superannuation regulations were strictly enforced for men in the service; men were discharged at 60 unless they were efficient, and in no circumstances were they employed after the age of 65.

In 1860 the work force numbered 2782, of whom 1000 were Shipwrights and 605 were labourers. 1735 were established and entitled, by the 1859 Superannuation Act, to retirement pension after the age of 60 but compelled to work at a slightly lower rate than the hired men. When conditions were slack the hired men could be discharged and in time of emergency men could be put on piece work which enabled them to earn about one-third more than Day work.

In 1876 established men about to retire were allowed to complete the year's service for pension, if they had already completed nine months of it. In the same year skilled labourers were established in that capacity for the first time- normally labourers classed as skilled were on the establishment as ordinary labourers.

The following figures show the increase in the number of hired men:

	<i>1870/1</i>	<i>1871/2</i>	<i>1872/3</i>	<i>1873/4</i>	<i>1874/5</i>	<i>1875/6</i>
Established	1478	1350	1385	1320	1330	1330
Hired	1191	1584	1589	1654	1844	2170
	<i>1884/5</i>	<i>1885/6</i>	<i>1886/</i>			
Established	1412	1356	1355			
Hired	2809	2843	3120			

In 1876 the numbers of established men for the Dockyards were increased by a thousand and the privileges extended to the Engineering Trades. The increase was not enough to include in the Establishment as large a proportion of Engineering workmen as had been customary on the Constructive side.

Establishment came to mean, not the total number regularly employed, but that proportion of men whose service counted for pension. Establishment came to be regarded as a reward of good conduct and long service. To prevent claims for superannuation, hired men were discharged on the 31st March and re-engaged on the 1st of April of each year. Until 1885 it was common practice to discharge hired men at 60.

(In 1891 established men were allowed to retire at 65 instead of 60.)

### *In all Royal Dockyards*

Year	Established Shipwrights	Hired Shipwrights
1872/3	3121	426
1882/3	2906	1633
1895	2021	2060
[no entries between 1896 & 1910]		
1911	1936	5095
1913	2461	
1917	3772	8000

## DOCKYARDMEN

### *Establishment at Chatham Yard 1886/7*

Boilermakers	18	Painters & Glaziers	16
Braziers & Tinmen	3	Patternmakers	4
Bricklayers	1	Plumbers	11
Caulkers	24	Riggers	45
Coppersmiths	7	Ropemakers	20
Engine Keepers	6	Sailmakers	20
Fitters	38	Sawyers	12
Founders	7	Sawmills	25
Hosemakers	4	Shipwrights	567
Joiners	97	Smiths	186
Labourers	184	Storehousemen	33
Locksmiths	2	Spinning Machines	7
Mason	1	Surgery Attendants	2
Messengers	3	Wheelwrights	5
Oar Machines	6		

*(Number of Hired Men 3120)*

From 1887 for the next three years no vacancies were filled to reduce the number of established men. In 1891, the proportion of established men of all trades and grades in the Dockyards to the total was about 20%, in 1903 it was 25%, and in 1910, 19.7%. In 1913, Treasury sanctioned a gradual increase to a maximum proportion of 25%. In 1917 the proportion was about 30% of the total of workers including labourers.

In 1916, the Board decided to offer the privilege of establishment (after one year's approved service at Rosyth) to volunteers for Rosyth Yard from the southern yards (and two shillings per week increase in pay). Normally the period of service before establishment was three years.

After the end of the First World War, it was necessary for the first time since 1869 to discharge the established men under the age of 60 and in 1922 when the proportion of established men to the total had risen to over two-thirds, it was decided to fill only one vacancy in eight in the establishment. (These figures are for Shipwrights.)

### *Hired Men*

Although there was no pension for the hired men, by Order of Circulars 29th November and 15 December 1870, hired men might, under certain conditions, be granted a gratuity on discharge. After twenty years' ordinary service or after fifteen years' service on reduction of establishment, they might be granted a gratuity, on discharge, of a week's pay for each year of service. In 1891, gratuities were given after seven years' service; in 1893 the gratuity for an unskilled labourer was a £1 for each year of service. By 1891, the hired men had additional privileges. They were allowed to have apprentices in training and they were allowed to compete for all appointments in the Yard after three years' service.<sup>1</sup>

<sup>1</sup> The shoaling of Shipwrights took place once a year in the Dockyard School and later the Canteen. Established men were picked for the gangs before the hired men. Shoaling used to be carried out on Saturday afternoons. The shipwright had the traditional right to excuse himself from the gang of any Chargeman he disliked and/or did not want to work with.

## DOCKYARDMEN

By 1967, unestablished employees who resigned or who were discharged on redundancy were granted the following gratuities after five years' qualifying service:

For each year up to 5 years	one week's pay
For each year between 5 & 10 years	two weeks' pay
For each year in excess of 10 years	four weeks' pay subject to a maximum of a year's pay

The hired men were not entirely free to leave Admiralty service when they pleased. By the 3rd Section of the Statute 4 Geo cap 34:

*Any labourer who contracted to serve for any time and having entered into such service shall absent himself before the term be completed may, on complaint being made before a Justice, be apprehended and by such a Justice be committed to prison with hard labour for any time not exceeding three months, and have an abatement from his pay during the time of his confinement.*

It was pointed out to the Yard Officers that a man must be hired for a specific time before this threat could be implemented. Apparently at Sheerness, Shipwrights and sailmakers left without notice. The law of Master and Servant was amended in 1867 and fines and damages took the place of imprisonment.<sup>1</sup>

For a considerable time no difference was made in the pay of hired and established men in the same trade and there were appeals by the hired Shipwrights for equating their pay to the real wages of the established men. However, in 1873, the established rate for Shipwrights was fixed at 5s a day, while the hired rate varied from 4s to 5s 4d a day. The difference between the pay of the established and hired Shipwrights began to be regarded as the equivalent of contributions towards pensions of the former of the order of  $\frac{1}{2}$ d in 1s wages.

In 1876, when establishment was extended to the men of the Engineering trades, the principle was laid down that as establishment was of considerable pecuniary value, men were to be put on a lower established rate of pay than the hired rate. This principle was, however, applied gradually as hired and established rates of pay were frequently fixed independently. In 1891 it was decided to make deductions varying from 2d to 6d a day from the hired man on placing him on establishment; those under 4s a day had a reduction of 2d a day, those between 4s and 6s a day, a reduction of 3d, those between 6s and 8s a day, a reduction of 5d and those over 8s a day a reduction of 6d a day.

(It must be remembered that the established employees were liable to transfer to work in any Government establishment in the UK or overseas.)

In 1916 the deduction for boilermakers for establishment was:

1s 6d for the 34s rate	2s 6d for the 42s rate
2s 6d for the 40s rate	2s 0d for the 36s rate
4s 0d for the 60s rate	5s 0d for over 60s rate

This differentiation was finally abolished in 1948 when the rule was made:

*'No part of wages will be deducted for establishment.'*

By the Superannuation Act of 1887, under certain circumstances, one half of all established man's hired service might count for pension, a compensation for the progressive reduction in the proportion of established men.

(This service was counted in full after 1949)

## DOCKYARDMEN

### Amendments to Superannuation after 1909

The 1909 Superannuation Act reduced the pension scale from one-sixtieth to one-eightieth for each year of service subject to a maximum of forty-eighths, but provided for a lump sum of one-thirtieth of the employee's annual salary for each year of service up to a maximum of one-and-a-half times annual salary and emoluments. In the event of an employee's death after five years' service, a year's pay might be granted to his legal personal representative.

The Superannuation Act of 1914 amended the earlier Superannuation Acts. Gratuities to unestablished employees were made payable to the dependants of those who died in the service (previously, by the 1877 Act, these were payable only to those who retired in the service). In addition the 1914 Act cancelled the power of the Head of Department to appoint to established positions, persons who had not been certificated by the Civil Service Commissioners. The Act also cancelled the privilege formerly granted to the professional officer of an addition of years to the actual period of service for the purpose of computation of pension, and the award of a pension when the period of service had been less than ten years.

A J Munby, the Victorian civil servant, whose admiration of well-built working class women won him a place in the Hall of Fame, retired from Whitehall on 30 June 1889 after 29½ years' service on a salary of £600 per annum. He was allowed five extra years for special service so that his retiring pension was  $34/60 \times £600 = £340$  per annum.

During and after the First World War, Dockyard workmen received temporary increases of pay similar to those granted to workers in private industry. Non-industrial Civil Servants received bonuses varying with the cost of living. In both cases a temporary addition was made to the pension but this was assessed and revised, in one case, in accordance with the movements of the industrial bonus and in the other in accordance with variations in the cost of living. This persisted until the bonuses were merged in the salary or wages.

Section 4 of the Superannuation Act of 1935 provided that all pensions should be calculated on the average salary for the last three years of service, and that in return the scale of the additional allowance should be increased to three-eighths of such average salary of each year served, subject to a maximum of  $1\frac{1}{2}$  years' pay.

Entrants to the Civil Service after 1 March 1948, as a general rule, had their pensions abated at the age of 65 for a man and 60 for a woman to take account of the retiring pension for which they would qualify under the National Insurance Scheme. The deduction was £1 14s per annum for each year of reckonable service.

Part I of the 1949 Superannuation Act provided for the widow of an established civil servant a pension of one-third of his pension or £26 per year, whichever was the greater. The scheme was contributory and payment was made by the deduction of  $1\frac{1}{4}\%$  of salary or by deduction from the additional allowance paid on retirement. Under Section 35 of this Act a civil servant who had reached the retiring age and had completed forty years' service might reckon any further established service up to a maximum of five years.

When in 1837 Mr Wood thought of the Superannuation Scheme as an alternative to an increase of pay for Shipwrights, he judged shrewdly. Men were willing to pay a high price for the regularity of employment and the provision of a pension. In 1864 the Civil Lord, (Mr Stansfield, MP) admitted to the House of Commons that Shipwrights on time work in private yards received 7s a day as compared with 4s 6d in the Royal Yards. The limitation of establishment to a small proportion of the workmen had the effect of raising wages since hired men's wages became standard and it was difficult to justify the payment to hired men of less than the outside rates. It also prevented the retention of old men, who were useless in the Yard, by kind hearted officers.

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On 1 January 1909 the first payment of Old Age Pensions for people over 70 was made; the pension was scaled according to income. The rate of pension was 5s for a person with an income not exceeding £21 per year down to 1s a week. The limit of income for receipt of the old age pension was £31 10s a year. The leader of the Conservative opposition pronounced:

*Such prodigality might well deal a blow to the Empire from which it might not recover.*

### Medical Benefits<sup>1</sup>

In the Dockyards the custom of providing medical attendance and monetary compensation for injuries received on duty existed long before the men received protection from the Health and Safety Acts passed in the last quarter of the 19th century.

Surgeons were appointed to the Yards as early as 1660 and were paid partly by the State and partly by contributions of 2d a month deducted from the men's wages. No provision for the treatment of disease not attributable to the service existed before the passing of the National Insurance Act in 1911.

Oppenheim mentions that in 1637 a workman injured some years earlier received a gratuity of £2 and that a shipwright named Apslyn was paid £5 3s 4d as compensation for the loss of his apprentice's wages during 62 days owing to an accident.

In 1676, it was decided to give as compensation to workmen hurt in the service of the Yard a sum equal to the pay lost by their absence, although as a matter of principle, their names were not to remain on the Dockyard Books.

The precedent of giving full pay was firmly established in the 18th century and in the 8th Report of the Commission on the Civil Affairs of the Navy, we find a statement of the practice then in force. Workmen injured in the execution of their duty were allowed full pay for six weeks if they were unable to resume work sooner and thereafter not more than 4s a week (about one-third of the normal wages) until they were able to return. In the case of broken limbs and other severe injuries full pay was sometimes continued until their return.

To prevent fraud it was long customary to compel men on the Hurt List to attend the Yard daily for inspection. In 1757, the men at Woolwich protested against this on the ground that attendance at the Dockyard actually retarded the patient's recovery, and patients were excused attendance at the discretion of the surgeon who was bound to take other measures to prevent malingering.

The Commissioners in 1807 proposed to alter the existing practice and to allow men on the Hurt List half the daily pay of their class until the Surgeon reported them fit for duty or until they were declared unfit for further service. These proposals were adopted.<sup>2</sup>

<sup>1</sup> See Medical Officers in chapter 12

<sup>2</sup> By Order in Council 14 September 1808 any of the Inferior Officers of the rank and below that of the Master Workman, who were paid by salary, were allowed their salary for the time of absence owing to hurts received in the execution of their duty. When absent in consequence of casual sickness they were allowed only half their salary on production in either case of a certificate from the Surgeon of the Yard that they were incapable of attending their duties. Inferior Officers such as Leading Men paid by the day were entitled to hurt pay, but not sick pay. Hurt pay scales were established by which the officer was on roughly half pay, e.g., Pro- Quartermen of Shipwrights & Caulkers:

War, Summer 4s, Winter 3s 2d; Peace, Summer 3s 8d, Winter 2s 11d a day (the normal pay of such officers was 7s a day in war and peace) The figures for Leading Men of Joiners were 3s 7d; 2s 11d, 3s 3d and 2s 7d per day

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Men on the Sick List, i.e., men whose illness was not due to the service were not entitled to leave with pay. They received no benefit until the National Insurance Act of 1911 provided payment of an allowance during unemployment through sickness.

Men permanently disabled owing to injuries received in the service were regarded as eligible for pension from 1764 although they might not have served the period to qualify for pension on other grounds.

The Instruction to Dockyard Officers in 1844 authorised payment to the widow of a workman killed by accident when employed on the public service, of a pension during her lifetime at half the rate her husband would have received (1844 £10 to £12 per annum).<sup>1</sup> Gratuities were occasionally given to children, for example in 1852, a gratuity of £30 was given to the daughter of a shipwright who was killed on duty.<sup>2</sup>

The Superannuation Act of 1859 empowered Treasury to grant pensions or gratuities to established workmen who had completed the period of service necessary to qualify them for a Superannuation Allowance and had been compelled to quit the service because of severe bodily injury. Gratuities were not to exceed three months' pay for each two years of service; pensions were not to exceed tenths of the usual annual salary.

The Act made no provision for hired men or for the dependants of established men, but the Admiralty drew the attention of Treasury to these omissions, and pensions varying from £7 10s to £17 per annum were granted to widows of established workmen killed on duty (Treasury Letter, 23 April 1862).<sup>3</sup> If an established man were to die before he received his pension, his widow received nothing.

In 1866 a widow was given a gratuity equal to her husband's full pay for the period he was on the sick list, or the difference between full and half pay for the time he was on the Hurt List (Admiralty Letter, 26 November 1860).

A Treasury Circular of 23 December 1873 permitted the grant of special allowances or gratuities to workmen, whether established or hired, who had to leave the service by reason of severe bodily injury sustained without their own default and in the discharge of their public duty. Provision was also made for grants to widows or children of men dying as the result of injuries received on service.

The Superannuation Act of 1887 increased the maximum scale of compensation to workmen or their dependants to a gratuity of one year's pay or an allowance, which together with any other Superannuation Allowance was not to exceed a year's pay or £300 a year, whichever was the less. (This was applicable to all classes of civil servants.)

Industrial legislation such as the Factory Act, the Workmen's Compensation Act, National Health Insurance Acts and Unemployment Insurance Acts were applied to the Dockyards as a matter of course. The Workmen's Compensation Acts of 1897 and 1907 regularised the position of the workmen as regards compensation for injuries received at work. (Any scheme of compensation had to be not less favourable to the workmen than the provisions of the Compensation Acts.)<sup>4</sup>

1 However, the widow of Robert Smallwood killed in the explosion of a boiler in the Metal Mills in 1866 was offered a pension of £7 10s a year. (see Development in chapter 1)

2 See section on Master Shipwrights in chapter 5

3 See Development in chapter 1

4 The Disabled Persons (Employment) Act 1944 required those who employed 20 or more workers to employ 3% of persons registered with the Ministry of Labour and National Service as disabled persons under the Act. The law did not apply to Departments of the Crown, but HM Government agreed to be under the same obligation as other employers.

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A change in the Sick Pay Scheme for Industrial Employees was introduced in May 1960. Employees were allowed paid uncertificated sick leave after 26 weeks continuous service and where not more than three working days were taken at a time and not more than five working days in any period of twelve months.

### Politics and the Dockyardmen

Up to the 19th century, Rochester, where more than 300 Freemen<sup>1</sup> had the franchise, traditionally provided Admiralty or Crown seats in the House of Commons. Freemen could be persuaded to cast their votes for candidates sponsored by the Government in return for favours which could be distributed by the Parliamentary candidate to his supporters. Those who lent money to impecunious Dockyardmen found that influence was sometimes necessary for the recovery of their money, and contractors were assisted in securing business in the Yard. The entry of men into the Yard and subsequent promotion could be facilitated by Parliamentary influence.

However, political influence did not always secure promotion. In the Sandwich era (1771-1782) Samuel Hogsflesh, Foreman of Smiths at Sheerness, applied unsuccessfully for the post of Master Smith, in spite of the fact that his father was a Freeman of Rochester and there were four votes in the family. Seniority governed most of the promotions in the Dockyards.

After 1832, Rochester had two MP's and Chatham one.<sup>2</sup> The Parliamentary boundaries of Chatham included a large part of what is now known as Gillingham.

(In 1918 the municipal boroughs of Rochester, Chatham and Gillingham were formed into one Parliamentary Borough, Rochester; this was divided into two divisions, called respectively the Chatham and Gillingham Division, each returning one member of Parliament.)

For the election of 1832, there were 677 electors in Chatham of whom 572 approx. voted: by 1838 there were 777 electors.<sup>3</sup> The Dockyardmen were given leave of absence to cast their votes. In January 1835 it was ordered that:

*Such men as wish it are to be allowed leave of absence on the days of nomination and voting to exercise their elective franchise permitting them to work out their lost time.*

1 In a City Regulation made in 1689 it was ordered that no person ought to be admitted to the freedom of the city of Rochester but only such as had served as apprentices for seven years at least to Freemen of the city, inhabiting within the same, and such as had been the eldest son of a Freeman inhabiting within the City, and such persons as should purchase the Freedom for the sum of £10 at least. (1820, £40)

In 1834, 547 freemen were resident within the city and Liberties of Rochester (i.e., within 7 miles of the City), but the total number of freemen was not less than a thousand. The total population was 9,891.

2	Members of Parliament for Chatham		
1832	W L Materley	1857, 1859	Sir Frederick Smith
1834	G S Byng	1865, 1868	Sir A J Otway (L) *
1835	Sir J P Beresford	1874	Sir G Elliott (C)
1837, 1841, 1847	G S Byng	1875, 1880, 1885 & 86	Sir J Gorst (C)
1852	Sir Frederick Smith	1892	LV Lloyd (C)
1852	LV Vernon	1895, 1900	Sir H Davies (C)

\*Brother-in-law of Lord Clarence Peget, Secretary to the Admiralty (1859-1866).

3 An Admiralty letter dated 20 December 1834 stated that complaints had been received that 'Yard Officers and others afloat have endeavoured to influence the workmen in the exercise of their elective franchise .. no interference should take place.'



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In the elections of 1865, Dockyard employees were allowed two hours unpaid leave on Nomination Day in the period commencing 11 am and extending to 2.30 pm and on Election days a half day's paid leave, the forenoon half. There were 780 electors in the Yard and 710 voted. By 1874 the privilege of a half day's holiday on full pay on Polling Day was applicable to voters in the Dockyard Boroughs and to those who had county votes. This privilege was withdrawn when the 48 hour week was introduced in 1894. On Polling Day, 6 December 1923, the Yard was closed for the afternoon for the General Election.

### Meritocracy

In the 1840's attempts were made to ensure that influence was not the main factor in the promotion of men in the Yard. A school was opened in the Yard to educate the apprentices in 1843. In February 1847 a Circular was sent to the Yard Superintendents:

*It is desirable that each employee should feel that however humble his position originally, his future fate depended on his own exertions. Their Lordships see too much reason to apprehend that such is not the present state of feeling in the Dockyards; but that the rise from Shipwright to Leading Man and from Leading Man to Inspector is regarded as a matter of accident or favour than as a reward due to merit ...*

Middleton when Controller had attempted to introduce a system of meritocracy into the promotion of the lower ranks of Dockyard officers appointed by the Navy Board.

In 1781 no one was to be recommended as acting Quartermaster unless he had been out of his apprenticeship for more than four years. In the following year it was ordered that quarterly lists were to be submitted by Yard officers with information on time lost during the past four years, performance and character. In September 1782 printed forms were sent to the Yards asking for information of those who wished to be, and also of those already, promoted to Quartermasters, etc.

A regular system of reports, embracing every man in the Yard, was introduced to provide the basis of future promotion by merit. Certain educational attainments were laid down for the various Dockyard Officers. Promotions were to be based on selection from reports, followed by examination, and the submission of two names for each vacancy to the Board of Admiralty for the final decision.

There was still the possibility that a subordinate holding a different political view from his superior would not have his name submitted for promotion according to the Circular of 1847. To what extent politics was responsible for many of the abuses of the system of promotion in the Yard is not known with certainty; many of the workmen, especially Shipwrights, were related by birth and marriage, son following father, etc, and this led to nepotism. The Officers of the Yard were capable of taking bribes for the entry of workmen and apprentices. Finally it was worth the while of the ambitious workman to enquire the place of worship of his superior.

Many considered that the system of promotion of 1847 was not really successful and it was suggested that disfranchising the Dockyard workers would be beneficial to the service. Mr Gladstone's Reform Bill of 1866 included a provision to give the vote to £7 per annum house renters and to take the vote from men employed in HM Dockyards, Arsenals, Yards and Factories. Mr Arthur Otway, Chatham Liberal MP protested to Mr Gladstone, but secured no redress. The Liberals were defeated, owing to the secession of a section of the party led by Robert Lowe.

This step of disfranchisement had been advocated by the Royal Commission of Enquiry

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into the Control and Management of HM Naval Establishments of 1860, which had visited Chatham in the December of that year.

*All officers and men in the Dockyards to be placed under the same restriction as to voting as the officers of the Post Office, Customs and Inland Revenue.*

A Select Committee had reported:

*All the witnesses admit that the political party enjoying the power and patronage of office exercise an influence, more or less effective, upon the constituents of Dockyard Boroughs.*

Earlier it had been declared that there were irregular promotions and appointments in the Dockyards in 1852 after the Tories returned to office. In 1852 there were 318 Chatham voters in government employ and in that year the Liberal electors of Chatham petitioned against the return of the Conservative candidate, Sir Frederick Smith, on the grounds of corruption. Smith was said to have bribed 54 persons including the Master Smith. One man was promised a job as messenger in the Yard and another a job as bricklayer in the Yard for his son.

As late as 1904, Admiral Fisher declared that the reform of the Dockyards:

*. . . ought to be accompanied by the disfranchisement of the Dockyard workmen whose political interference is a great public scandal, and is utterly subversive of economy and efficiency in the Dockyards.*

This was his answer to their opposition to his plans to reduce Dockyard personnel, build ships in private yards and concentrate naval yards on repairs.

The Northcote-Trevelyan Report on the Organisation of the Civil Service. Changes were taking place at this time which were to make the Civil Service the envy of other nations. In 1854 there appeared the famous Northcote Trevelyan Report on the organisation of the Civil Service; this Report favoured the selection of civil servants by examination. An Order in Council dated 21 May 1855 appointed Civil Service Commissioners to examine and certify the suitability of men nominated for public appointments. No civil servant appointed after 1859 could qualify for a pension unless he had a certificate from the Civil Service Commissioners.

After 1859 competitive examinations for Civil Service appointments were enforced. Candidates had to satisfy conditions of age, health and character, and were examined in academic subjects. Apprentices to the Dockyards were examined by the Civil Service Commissioners for the first time in 1860. In that year the following announcement was made with regard to promotion:

*An examination is required of every candidate for promotion. Their Lordships will select from the examination list, on the recommendations of the officers, those who are considered the best qualified. The claims of those whose names appear at the head of the examination list will be duly considered; but industry, merit and practical qualifications will have their weight in guiding the selection. Parties using political or other indirect influence will be punished.*

From then on promotion examinations for Dockyard employees were held annually in the Dockyard. The Headmaster of the Dockyard School conducted these examinations for the selection of Officers of the Yard such as Foremen, Inspectors, Draughtsmen, Leading Men, Storehousemen, Writers, etc. In his report to the Superintendent on his examination

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of the candidates for Foreman of Smiths, the Headmaster stated that ' a book of tables and an arithmetic book both of which I forward was found in the possession of I King an hour after the commencement of the examination.' After 1867 the Civil Service Commissioners conducted the examinations in the Dockyard School; it became usual to hold promotion examinations when vacancies occurred.

Hired mechanics and labourers employed at Chatham Yard had to satisfy the Civil Service Commission before being placed on Establishment. For the establishment of messengers, the written test included writing from dictation, the first four rules of arithmetic, simple and compound. For Surgery Assistants the test included reading, writing and spelling, the first four rules of Arithmetic, simple and compound, with tables avoirdupois and apothecaries' weights and measures. Details of other examinations for Officers and Apprentices have been given in the section on Apprentices.

By Admiralty Order dated 1 January 1860 it was ordered that the entry of all artificers and labourers should rest entirely with the Superintendents of the Dockyards. For the first time the Board of Admiralty relinquished the patronage it had previously exercised in the nomination of workmen.

With a view to putting an end to Department and political patronage in the Civil Service, there were further Regulations in 1867 and 1872 to ensure that all promotion proceeded from the results of competitive examinations conducted by the Civil Service Commissioners. In 1874 protests were made that the appointments of draughtsmen from the Dockyard to service in the Controller's Department and the appointment of overseers were not made according to seniority from the last examination list nor after competition, but from personal recommendation by the officers of the Constructive Department to the Controller of the Navy for his approval.

### **Employment of Women in the Yard**

Girl Apprentices were first entered into the Yard in 1969.<sup>1</sup> Before that time women were generally only employed in the Yard on clerical, cleaning or other unskilled duties. From 1905, women were employed as tracers in the Drawing Offices,<sup>2</sup> and mention has also been made of the employment of women in the Ropery. The rates of pay for these women were very low.<sup>3</sup> Even as late as 1969 it was accepted that a woman doing the same unskilled job as a man should receive only 85% of his wage.

During the First World War women were entered in large numbers for a variety of occupations.<sup>4</sup> Initially they were employed mainly in such duties as typing and clerical work.<sup>5</sup> In 'Periscope' of January 1983, there are pictures of a group of women taken in No 5 Machine Shop during the First World War. They were employed on such jobs as welding and drilling etc. Some were crane drivers, but most of them were labourers. Details have been published of the work done by the women in Portsmouth Yard and a similar pattern of employment must have been followed at Chatham. At Portsmouth they were employed in the Factory, Boiler Shop, Gun Mounting Shop, Coppersmiths' Shop, Drawing Office, etc. They seem to have been paid about 20s a week when first employed, a figure gradually advanced to a flat rate of 35s. At first they worked mainly by themselves and left the Yard in advance of the men, but after a few months this distinction was lifted.

1 See Apprentices in chapter 4

2 See Section on Draughtsmen in chapter 14

3 in 1876 the widows in the Ropery earning 10s a week were claiming out-door relief.

4 The schoolmaster taught some of the women mensuration to avoid waste of material.

5 See section on Clerks in chapter 13

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For example: Mrs Whitmore was married to an ex-shipwright apprentice of the Yard, who contracted infantile paralysis and she was forced to seek work to support herself and her family. She was interviewed for a job in the Yard in 1916 by Sam Hoare, the chief writer in the Constructive Department. She was offered three vacancies; in the Smithery, Afloat or in the Saw Mills. She chose the last and was employed in the old Mills sharpening circular saws. When the Saw Mills were opened on St Mary's Island she moved and was then employed sharpening handsaws. She was employed on piece work with maximum earnings of 35s a week. The Measurer watched such earnings very closely. Out of the 35s she paid 14s to have her children minded.<sup>1</sup>

The employment of women on clerical and typing duties continued in the interval between the First and Second World Wars. During the Second World War women were again brought in to help in the huge programme of work in the Yards. They were mainly employed as skilled and ordinary labourers. As soon as the war was over their services were generally dispensed with, but in some cases the employment of women in industrial grades continued after the war and they were to be seen all over the Yard on cleaning duties, driving delivery vans and working in the Storehouses and canteens.

### **Lower paid employees of the Yards**

#### Labourers

The details of the number of persons employed in the Yard quoted in various parts of this history show that the labourers were, after the Shipwrights, one of the largest groups of workers. The labourers were the responsibility of the Boatswain of the Yard. There was no difficulty before the 1940's in recruiting labourers; applicants could be manual labourers, ex-service men and unemployed tradesmen.

Robert Beeman, Boatswain of the Yard, gave evidence to the Committee on Dockyard Economy in 1858. When a number of labourers were to be entered, the applicants were lined up and the Superintendent, the Master Shipwright and the Boatswain selected some of the more robust men after questioning them about their character and previous employment. Those selected were examined by the Dockyard Surgeon and if found satisfactory in health would be entered on the Yard books. Any men found unsatisfactory were discharged at the end of the month. Sometimes labourers were entered by Admiralty or by the Captain Superintendent's order in which case the Boatswain had only to report on them at the end of the month.

The wages of the ordinary labourers were just over a half of those of the tradesmen. They were given a rise of 1s on wages of 12s a week in 1856.

Ordinary labourers were normally employed on cleaning and carrying work. There were opportunities of improvement for the labourers if they gave satisfactory service in the Yard, especially if they could read and write. They could become skilled labourers and in other sections reference has been made of the opportunities for advancement as sawyers, hammermen, painters, gardeners, messengers, storehousemen, etc. With the advent of iron shipbuilding there was an increase in demand for skilled labourers for drilling, iron caulking, riveting, etc.

In the Dockyard Enquiry of 1859 the Leading Man of painters, George Cheshire, complained that there was an insufficient number of qualified painters, i.e., those who had served 7 years' apprenticeship. There were only 12 painters, one hired, and a grinder. They had to carry 12 labourers whom he declared used too much paint and spread it unevenly until they had been on the job for some time. His evidence revealed that

<sup>1</sup> The author remembered her husband. He was employed later as a clerk in the Expense Accounts Department. He died at work suddenly. Mrs Whitmore died in 1990 aged 95.

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labourers carried out painting work. He declared:

*We have painters who have been raised from labourers, but these were men who had served their time as painters.*

*(i.e. they were painters who had been forced to enter the Yard as labourers)*

The Enquiry revealed that labours were entered as hammermen and could attain higher posts. As the pay for mechanics in the engineering trades was low compared with private industry, recruitment of skilled men was difficult and there was a tendency to allow labourers to undertake mechanics' work. This was stopped when parity was established between the shipwright and engine fitter trades.

In 1864, a system of classification of labourers was introduced with rates of 14s, 13s 6d, and 13s a week. A skilled labourer was paid 18s a week.

When the pay of the Dockyard labourer was 13s a week, it was often necessary for the labourer with a large family to seek relief from the Parish. A meeting of Dockyard labourers agreed to send a memorial to Admiralty 'praying for an increase in wages.' They claimed that they 'were worse off than the inmates of the Union (workhouse)' and that convicts were better fed than they were.'

In 1867 all labourers received 14s a week, but the wages of a number of skilled labourers were reduced from 18s to 15s. The labourers complained that of their 14s, 6s was spent in rent, light and fuel, and assuming four in the family, there was left 2s each for food, children's school fees, etc. For the inmates of Medway Union the charge per head for men, women and children was 3s 8 1/2d per week. The wages were roughly the same as those of farm labourers without the perks of the latter. Most of the families managed to exist on the money until some misfortune like the sickness of the wage earner occurred.

'Chatham News' of 27 July 1872 announced a rise of pay for labourers:

Labourers	2s 4d to 2s 6d a day (a rise of 1s 0d per week)
Skilled Labourers	2s 9d to 3s 0d a day (a rise of 1s 6d per week)

The rate of the skilled labourer was then that of the 1860's. In addition, 6th class men in the Metal Mills and 3rd class men in the Saw Mills received 3s a day instead of 2s 9d and 2s 10d respectively.

The doctor at Medway Union complained that the Relieving Officer had ordered medical relief for the family of a Dockyard labourer in July 1872.

The rates of pay for the women were also very low and it was noted in 1876 that widows in the Ropery earning 10s a week were claiming out-door relief.

The complaints of the Dockyard labourers were supported by E J Reed, who wrote in 1872 that at Earle's Shipyard, labourers holding plates and angle irons to be punched and sheared and known as 'helpers' were paid 26s a week, the rate of the shipwright in the Yard. Earle's were advertising in the 'Chatham Observer' for labourers paid 18s a week for the nine hour system.

Another grievance of the hired skilled labourer was the drop in wages which occurred on establishment. A skilled labourer in some cases could earn as a hired man from 4s to 4s 6d a day; after establishment he would receive 3s 3d a day. Many refused establishment because of the drop in wages. After 1891, those earning under 4s a day had a reduction of 2d a day on establishment.

Even after the pay of the ordinary labourer went to 17s or 17s 6d a week in 1891, the man depended heavily on the good management of his wife. The expenditure of any ordinary labourer and his family was roughly: rent 4s 6d, fuel 1s 3d, clothing 1s, club

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money 6d, wife and four children 10s. The food bill was split up as follows: six gallons of bread 5s, lib of butter 1s, 2 lbs of dripping 1s 4d, one gallon of flour 8d, 2 lbs of meat 1s, vegetables 6d, cheese 6d.

The Dockyard labourers petitioned for an increase in pay. In 1893, their wages were raised from 17s and 18s a week to 19s a week; the 17s and 18s being the probationary rates for the first two years for hired men. They then petitioned for an increase in pay to 20s a week.

One of the leaders of the labourers was William Lewington, a Dockyard Storehouse labourer. He was founder of the New Brompton Labour Party, a trade unionist, labour organiser and a member of Gillingham District Council.

In August 1897, the Federated Council of Government Employees met at Sheerness to consider the reply of Admiralty to the petition of skilled and unskilled labourers about their pay and conditions. The reply was considered unsatisfactory and a resolution was passed urging Admiralty to increase the weekly wages of the ordinary labourer from 19s to 21s, the same as was paid to War Department labourers in the Woolwich Arsenal.

### Skilled Labourers

At this time the position of the skilled labourer was examined carefully. The term is used to include all workmen, who, without being graded as a mechanic in one of the recognised trades, are called upon to carry out jobs requiring any degree of dexterity superior to fetching and carrying. For this they received a rate in advance of the labourer's rate: the highest rate being paid to workmen engaged in iron shipbuilding; welder, riveter, iron caulker<sup>1</sup> and driller. In one petition, the skilled labourers engaged on riveting wanted rises in pay and status and to be classed as riveters, not labourers.

In the last decade of the 19th century, problems arose over the relativity of the work of the skilled labourer compared with that of the craftsman. After the shipwright had marked out the place, the remainder of the operations (drilling, riveting, caulking, etc) were carried out by skilled labourers. The latter regarded their work as equivalent to that done by tradesmen in private shipyards.

In 1891 the complements of the Chief Constructor's Department and Day pay were:

Hired Shipwrights: 155 at 5s 8d; 185 at 5s 6d; 185 at 5s 4d; the remainder, 5s 2d.

Hired Skilled Labourers: Hand drillers: 1 at 4s; 1 at 3s 10d; 40 at 3s 8d; 52 at 3s 6d; remainder at 3s 4d.10

Machine Men and Fitters' Assistants: 9 at 4s 2d; 13 at 3s 10d; remainder at 3s 6d.

Riveters & Holders up: 20 at 4s 2d; 25 at 3s 10d; 6 at 3s 8d; 38 at 3s 6d; rest at 3s 4d

Iron caulkers: 6 at 4s 6d; 4 at 4s 4d; 18 at 4s 2d; 28 at 3s 10d; remainder at 3s 4d

Painters' assistants: 12 at 3s 8d; 14 at 3s 6d; remainder at 3s 4d

Plumbers' assistants, Platers' helpers, etc: 4 at 4s 6d; 12 at 4s; 40 at 3s 8d; 48 at 3s 6d; remainder 3s 4d

Ordinary Labourers: 255 at 3s; remainder 2s 10d

In February 1914 a deputation from the Parliamentary Committee of the TUC placed the following resolution before the Board of Admiralty:

That this Congress condemns the system obtaining in the Royal Dockyards and other Government Factories of choosing men as Skilled Labourers at comparatively low rates of pay who at present are doing similar work to that

1 By the end of the First World War these were called titular trades and a junior apprenticeship system for them was introduced in 1919 - see section on Apprentices.

## DOCKYARDMEN

*done by skilled craftsmen in private shipyards, and calls upon the Government to class and pay these men not lower than men employed on the same class of work by contractors. That the Government be requested to institute a system of apprenticeship in all trades ...*<sup>1</sup>

To quote the reply given by the Parliamentary and Financial Secretary:

*And when Mr Hill says, as he has said before with great force, "Why don't you organise exactly like a private yard?" The first thing I say is, that you are not comparing like with like. We have in the shipbuilding and engineering departments about 13,400 skilled labourers. We have about 4,600 unskilled labourers .. . In 1905 the unskilled labourer got 20s a week. Now he is getting 23s a week in the Home Dockyards. Then as for skilled labourers, the rates have been increased since 1905 from a scale of 21s to 27s to the present scale which is as follows:*

*Probationary rate: 23s Normal scale: 24s to 28s Special rates: 29s, 30s, 31s.  
and he earns from 25% to 50% over his time wages.*<sup>2</sup>

### Relationship between craftsmen and labourers

The attitude of the Shipwrights towards the advancement of labourers was benevolent; there was no fear of the latter gaining craft status because the apprenticeship condition was strictly observed. When iron ships were first introduced, much of the riveting, drilling and all the plating was done by Shipwrights, but gradually a lot of repetitive work was passed to the skilled labourers. Thus all riveting, drilling, caulking and some of the plating was being done by labourers before the end of the century.

However, in 1897 the boilermakers were protesting to Admiralty that skilled labourers were doing their work and were paid from 19s to 24s a week compared with boilermakers' pay of 33s to 34s a week.

### Messengers

The Messengers of the Yard assisted by boys acted as caretakers of the various offices, etc. They were skilled labourers and in 1882 there were about 18 of them. The scales for established Messengers were 3s increasing to 4s 6d a day; for hired men, 2s 6d to 3s; and for boys 1s to 2s 6d. Initially this pay was to cover all overtime in the week except the Admiral Superintendent's Messenger who had to attend Sundays and was paid extra. Later all Messengers became eligible for overtime.

By the 1929 arbitration award Messengers were allowed to count on overtime any time worked beyond 47 hours a week. Before the award, overtime did not begin until one hour's extra attendance had been made each day. In 1932, the Messengers' pay was 38s plus 12s War Bonus.

In 1959 the titular trades of welder and riveter/iron caulker were accorded full craft status and apprentices of these trades were admitted to the Yard. Before this, trainees for these trades were drawn from boys who entered the Yard as Yard Boys after leaving their elementary school and who were retained as labourer if they gave satisfactory service. See Apprentices.

<sup>2</sup> Throughout the history of the Yard, management has used overtime to increase the earnings of the workers to give the industrial staff pay comparable with their counterparts in private industry and to raise the standard of living of the lower paid workers.

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### Mustering of Workmen

In 1849, by a series of orders known as 'Mr Ward's <sup>1</sup> Minutes,' changes were introduced in the Dockyards. The number of workmen and officers was reduced, the hours of labour were rearranged, the mode of mustering the workmen was changed slightly and new checks on stores and expenditure introduced.

The number of Shipwrights in all Yards was reduced to 3,500 and corresponding reductions were made in other trades.

Changes were made in the hours of the Yard during the winter months. During the summer months (March to October), the hours of attendance remained unchanged at 7.10 am to 11.50 am; 1.30 pm to 6 pm. From 27 September 1849, the hours of attendance from 16 November to 31 December (the shortest working days of the year) were: 7.40 am to 11.50 am; 1.10 pm to 4 pm.

It was directed that the Admiralty Orders for the day were to be read in the presence of the Superintendent to the Principal Officers of the Yard at 9.30 am.<sup>2</sup>

The muster by Storekeepers' clerks was abolished and Timekeepers were appointed for this duty. Mention has already been made of the men's tickets which were of metal with the workman's Yard number stamped on both sides. The Yard number was changed on the 1st April each year. The tickets were held in the Muster Stations,<sup>3</sup> one at each gate; the metal of the ticket, iron, copper, brass, being characteristic of the gate. Workmen, on In-muster picked up their tickets and deposited them in the Workshop Ticket Box. The entry doors of the Muster Stations were numbered and were manned by timekeepers who, at the final two minute bell-ringing stood by the doors to close them at the end of bell ringing. All remaining tickets were collected and the doors reopened. Latecomers asked for their tickets and their numbers were booked. The unclaimed tickets were those of absentees. After 1874, a man who was late at the 7 am muster was admitted at 7.15 am and was checked  $\frac{1}{8}$ th day's pay; formerly he would have lost half a day's pay. In the 1920's the check was a 'sixteenth.'

'Chatham News' of 25 July 1891 reported that a workman called Thorn, a riveter, had his collarbone broken when struggling with the police at the In-muster at Pembroke Gate. The trouble was due to the difference between the time shown by the clocks on the Boiler Shop and at the Upper Gate. At that time a man was admitted up to ten minutes late but was checked  $\frac{1}{8}$ th day's pay.<sup>4</sup>

A handbook of instruction and information for the guidance of officers, etc, 1893, stated that any man or boy who might appear at the Gate after it was closed, was not allowed to pass into the Yard unless he appeared within a quarter of an hour after the closing of the Gate when he might enter the Yard and proceed to his work after claiming his ticket in the Muster Office. He was checked 118th day's pay.

Most workshops had a ship's bell which was rung for three minutes, and later one minute at the cessation of the main bell-ringing as a start work signal. Chargemen then locked the ticket box, latecomers placing their tickets on top. Often those men who had just cleared the Muster Station were checked at the ticket box. This rush to put tickets in the box led to bruised fingers and bad tempers at times, especially when men worked afloat and the ticket box was placed in an awkwardly sited position. Latecomers and

1 Henry G Ward Esq, MP, First Secretary of the Admiralty

2 See Development in chapter 1

3 Of the two Muster Stations near the Admiral Superintendent's house, No 1 was built in 1858. Muster Station No 3 associated with Pembroke Gate was opened in 1882 (YSM Book gives the date as 1874) and Muster Station No 4 at Gillingham Gate was opened in 1897

4 Up to 1894 the men were allowed 3 minutes to get to work after bell-ringing.



## DOCKYARDMEN

absentees were noted and the list later handed to a Recorder, who sometimes as a check, would be there at 7 am.

The signal to cease work was fast bell ringing for about quarter of a minute. Shop bells followed and the workmen picked up their tickets to deposit them at the Muster Station ready for the next In-Muster.

In 1932 there was a change over to the clocking system<sup>1</sup> which was in operation until closure. Portsmouth Yard started this system in 1929 at the Torpedo Depot.

### Bell-Ringing

There were posts or masts supporting the bells at Main Gate, Pembroke Gate and Gillingham Gate. The post at Main Gate is built of half-cylindrical plates, lapped-jointed, with prominent rivet heads exterior to the post. The post is surrounded by a circular pavilion on Tuscan columns and is reckoned to date from about 1820. The Main Gate bell was used at Deptford Dockyard and put up in Chatham in 1869 when the old bell was taken down.

The bell, tolled by rope and wheel, weighs about five cwt; the bellpost weighs 6 tons 18 cwts. According to YSM Book the post at Pembroke Gate was erected in 1898 and is a steel mast, 114 feet long, ex-**Undaunted**, a wood screw frigate built in Chatham in 1861 and broken up in 1882.<sup>2</sup> The bell post is formed from groups of three plates, butt-jointed, and fastened to three interior Tbars by countersunk rivets. The bell at this gate is tolled by rope and clapper. The bell post at the Gillingham or Island Gate is probably from one of the masts of the **Agincourt**, a five masted vessel reduced to three masts in the period 1893-94.

(Many of the main masts of the old battleships had wooden or pole masts sheathed round with riveted steel plating, half-inch thick.)

The summoning of the workmen to the Yard by bell-ringing is an institution probably as old as the Yard itself. A Navy Board Order dated 17 January 1795 stated:

*1st December to 2nd February: Bell at Yard Gate to be rung at 6 am for five or six minutes, to begin long toll at three-quarters past six, to continue ten minutes, and at 7 o'clock to strike four times more when the Great Gates are to be opened ... the Gate to continue open one hour, the call being by candle light. The ringing of the bell in the evening is regulated according to daylight.*

Order dated 1 February 1896:

*Storehouse Clock is to be taken as standard but clock over Boilermakers' Shop is to be correct with it. Both clocks are to be put right daily between 10 and 11 am by Greenwich Time given at the Admiralty Telegraph Office at 10 am.*

*Ringings of bell at the gate: During the first five minutes, slowly and irregularly; during the second five minutes, moderately quickly and regularly; during third five minutes becoming quicker and quicker, and very quickly during the last minute.*

*Bells in the shops, ships, etc, are to commence ringing three minutes before time to commence work, being rung very quickly during the last minutes, and they are to cease when the Gate Bell stops.*

1 The clocking stations were at the places of work; the man took his card from a rack by the side of the clock and recorded the time by punching the clock.

2 Smithery Diary of Chatham Dockyard (F Sanders). The bell post at Pembroke Gate was a mast of Agincourt. The mast was fixed at the gate and the tackle cleared away about the middle of August 1898.

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The ringing of bells was stopped in 1940, when it was ordered that the ringing of bells was to be the warning signal of invasion by the Germans. The pattern of ringing for the 7 am In-Muster just before that was:

6.45 am	single stroke	
6.50 am	two strokes and rest	
6.55 am	three strokes and rest	
6.58 am to 7 am	continuous ringing	['Periscope' April 1970]

The policeman who rang the bell received by hand signal the time changes from another who watched an electric clock.

Bell-ringing has led to rhymes about the 'Dockyard Matey.'

Have you seen a Dockyard Matey run?  
Yes, by God, I've seen it done.  
At the tolling of the bell,  
You can see them run like hell.

Little Dockyard children,  
Sitting on the Dockyard wall,  
Watching their fathers doing  
Nothing at all.

Have you seen a Matey run?  
Yes, by God, I've seen it done,  
When he hears the Dockyard bell,  
Drops his tools and runs like hell.

At the Dockyard Ball, the Dockyard Ball,  
You should see those Mateys dancing round the Hall,  
Shipwrights on the polished floor,  
Boilermakers never sweat so much before.

The Engine Smiths and Turners too were there  
It was the grandest day of all -  
Till one young 'erk' shouted 'work'  
And mucked up the Dockyard Ball.<sup>1</sup>

### Payment of Wages

Mention has already been made of the method of paying the men's wages up to 1856. The Leading Man drew the wages and paid his gang at noon on Friday. In 1844, a new system was introduced into Deptford and Pembroke Yards, whereby the men were paid individually. The Storekeeper cast out weekly in the Muster & Pay Book the wages due to each workman. The weekly amounts of each man's wages was entered in the 'Weekly Pay Book' and totalled. This book was sent weekly to the Heads of Department to be compared with the books and notes of the Foremen, Inspectors and Leading Men of these trades. The Weekly Pay Book was signed by these officers. A weekly certificate of wages was made out and after verification by the Heads of Department was referred to the Superintendent who signed the certificate after the payment of wages. The records of the payments were sent to Admiralty every quarter. When the Superintendent had authorised the payment, the Storekeeper on the morning of the payment, had to take from his iron chest the total sum for payment. A clerk read from the weekly pay book which had, numerically arranged, the sums standing against each man's number. The storekeeper placed this amount in a correspondingly numbered

<sup>1</sup> Sung to the well known hymn tune, 'Hark my Soul'

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compartment of a tray prepared for this purpose. At the time of payment the man delivered his metal numbered ticket to the clerk who called out the number, the man receiving into his own hands from the Storekeeper the amount of his wages. Wages were paid on Friday afternoons for the week ending the previous Saturday. The Foremen, Inspector and others had to apprise each man employed under him the amount due to him before he went to the Pay Table.

The man hoped to get a new penny in his wages. When tobacco was 3d an oz he would put the penny on the tobacconist's scale and expect to get  $\frac{1}{3}$  oz of tobacco (c.1918).

The Royal Commission for the reorganisation of the Civil Service set up in 1848 reported in 1853. One of the changes which resulted was the creation of the post of Accountant who became responsible for the payment of salaries and wages. After 1856 the wages at Chatham Yard were paid as described above. Payment was made at the Cash Office at 11.45 am on Friday and the Pay was completed in a quarter of an hour. The men crowded at the top of the stairs in the Officers' Terrace for their pay, the actual payment being supervised by the Superintendent.

When the Extension Works were completed, a Pay Station north of the Mast Pond was built. After Bell-ringing, the men proceeded to the Pay Station and lined up in order of Muster numbers. Any man who arrived late missed his turn and had to wait until all those who were in order were paid. The doors were not opened until the arrival of the Superintendent who gave the signal 'Pay the Men.' Muster tickets were used for payment and the money was paid by Pay clerks.

After the clocking system was introduced into the Yard in 1932, the men were paid at the clocks by Recorders. The wages were put into envelopes and carried in yellow boxes by the Recorders. Each man was handed his wage packet and his signed clocking card was put into the box. A man absent from duty could depute another to draw his wages by an authorised form of order of payment (Form D 206) signed in favour of himself and countersigned by his charginan.

By an Admiralty Order dated 9 October 1858, monthly advances on quarterly salaries were authorised to be made to officers and clerks. The men had been paid weekly some forty years before.

From April 1963, the payment of wages to the men was made on Thursday, for the week ending the previous Friday, one week's wages being kept in hand.

### Working Hours

Table for 1861	Coming in Bell to continue ringing and gate to open	Bell to cease ringing & gate to be closed	Going out Bell to ring and Muster Office to be opened	Coming in Bell ringing and Gate to be opened	Bell to cease and Gate closed	Going out Bell to ring & Muster Office to open
Jan1/31	7.25 am	7.40 am	11.50 am	12.55 pm	1.10 pm	4.30pm
Feb1/28	7.00	7.15	11.50	12.55	1.10	5.00
Mar1/15	6.50	7.05	11.50	12.55	1.10	5.30
Mar16-Sept30	6.50	7.05	11.50	1.15	1.30	6.00
Oct 1/15	6.50	7.05	11.50	12.55	1.10	5.30
Oct 16/31	6.50	7.05	11.50	12.55	1.10	5.00
Nov 1/15	7.00	7.15	11.50	12.55	1.10	4.30
Nov16/30	7.10	7.25	11.50	12.55	1.10	4.00
Dec 1/31	7.25	7.40	11.50	12.55	1.10	4.00

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The men had to work Saturdays throughout the year. In September 1860, the men of Chatham Yard asked for a half day's holiday on Saturday from Admiralty; this had been recommended by Admiral Smart's Committee in 1859, and from 14 September 1861 approval was given to the men leaving the Yard on Saturdays at 4 pm throughout the year without reduction of the total hours worked. The men took from 8 to 8.30 am for breakfast.

By 1869 the starting time varied throughout the year from 6.45 am to 7.30 am and the finishing time from 4 pm to 6 pm. the men were allowed 1 1/2 hours for dinner; they were allowed to take half hour for dinner on Saturdays and left the Yard at 3.15 pm.

By 1881, the Dockyard closed on Saturdays at 2 pm instead of 3.15 pm, the 1 1/4 hours being made up in the week by the men having only 1 1/4 hours for dinner instead of 1 1/2 hours during the first five days of the week. These alterations were made because of the legislation affecting young persons; the apprentice had to leave the Yard at 2 pm on Saturdays and the men had to follow suit. Needless to say there were complaints about the shortening of the dinner break.

The average working week was just under 51 hours. In 1701, it probably did not exceed 56 hours. In outside Yards, the working week was longer, 53/54 hours. It should be noted that there was no difference in pay for summer and winter working although the hours differed.

Mention must be made of the working conditions of the Smiths and Metal workers in the Royal Yards. In 1846, the Smiths had been divided into three classes paid as follows: First Class, 5s 6d a day; Second Class, 4s 9d a day; Third Class, 4s 3d a day.

In 1849 the Smiths started to work Factory Hours, ten hours a day throughout the year, and their pay increased by 10d, 9d and 7d a day for the three classes respectively. Hammermen were paid from 3s 3d to 3s 9d a day.<sup>1</sup> The average number of hours worked per day was increased by one hour forty minutes. At this time the Shipwrights earned 4s a day and Joiners 3s 6d a day. In 1857, the Shipwrights and Joiners received increased pay: Shipwrights, 6d and Joiners, 4d a day. There were no increases for the Smiths as they were on the ten-hour day system.

After the 1 January 1870 this system was abolished and all worked the regular Dockyard hours; the Smiths were then paid on the 1845 scale. It was estimated that the Coppersmith's wages fell from 6s to 4s 9d, the Millwrights' wages from 5s 2d to 4s 6d, and the Blacksmiths' wages from 4s 10 to 4s 3d a day; a drop in wages of between 2s and 4s a week. Those who had worked Factory Hours memorialised Admiralty for a proportionate increase in wages since the increase granted to other tradesmen in 1857 was not given to them as the privilege of working longer hours was looked upon as equivalent to a higher rate of pay.

In 1866 the workmen in the Smithery were allowed to commence work at 8.30 am if they missed the 6 am muster. The men represented that the rents of houses near the Yard were so high that they were forced to reside a considerable distance from the Yard.<sup>2</sup>

In 1873, the Smiths' wages were increased by 6d a day to: First Class, 7s 6d a day; Second Class, 6s 6d a day; Third Class, 5s 6d a day; Fourth Class, 4s 9d a day. Established Hammermen's wages were increased by 3d a day to: First Class, 4s a day; Second Class, 3s 6d a day. Hired Hammermen were paid rates from 3s to 4s a day.

1 1888 Mr A Morris, First Class hammerman, was appointed to post of Locksmith. Messrs M Colbert and J Godfrey, promoted from Second Class to First Class Hammermen.

2 in the Handbook of Instruction and Information for the guidance of Officers, etc, of 1893, it was stated that workmen and boys were to reside within two miles of the Dockyard.

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The 49 hour week already conceded at Woolwich Arsenal, was introduced into the Dockyard from Monday, 2nd July 1894; previously the working week was 50<sup>1</sup>/<sub>2</sub> hours for the men.

Jan 1-15	7.30- 12.00	1.30 - 4.30 pm
Saturdays	7.30- 12.30	
Jan 16-31	7.30- 12.00	1.30 - 4.45
Saturdays	7.30- 12.30	
Feb 1-29	7.15- 12.00	1.30 - 5.15
Saturdays	7.15- 12.15	
Mar 1- Oct 18	7.00- 12.00	1.30 - 5.30
Saturdays	7.00 - 12.00	
Oct 19-Nov 10	7.00- 12.00	1.30 - 5.00
Saturdays	7.00- 12.00	
Nov 11-30	7.15- 12.00	1.30- 4.30
Saturdays	7.15- 12.15	
Dec 1-31	7.30- 12.00	1.30- 4.15
Saturdays	7.15 - 12.30	

The total working hours per year numbered 313 days with an average of eight hours per day. Boys within limits of age for young persons fixed by the Factory Act were allowed Easter Monday and Boxing Day as holidays.

The hours of the office staff in 1894 were: 9 am to 5 pm with half hour break at midday and from 8.30 am to 1 pm on Saturday.

Certain conditions were imposed on the introduction of the 48-hour working week. The allowance of three minutes for getting to work after bell-ringing in the morning and afternoons was to be discontinued;<sup>1</sup> the allowance of five minutes to get to the Pay table was to be discontinued; the custom of granting a half day's holiday on the visit of the Lords of the Admiralty was to be discontinued; the allowance of a half day's holiday for voting at the elections was to be discontinued; the granting of leave without loss of pay on the launching of ships was to be discontinued. No time was to be worked up for holidays, but the four public holidays with pay was to continue.

Overtime on ordinary days was paid at the rate of each hour of one eighth day's pay; Sundays and Holidays were paid at double rate. Men who worked afloat and on work of urgency often took a half hour for dinner and ceased work correspondingly before the normal out-muster. This was termed 'working time in lieu.'

With the introduction of electric lighting in 1906, a uniform 48 hour week was introduced. From Monday 2 July 1906, the times were:

Monday to Thursday	7.00 am to 12.00 noon	1.30 pm to 5.00 pm
Friday	7.00 am to 12.00 noon	12.45 pm to 4.45 pm
Saturday	7.00 am to 12.00 noon	

A modification to this working week was made when the dinner break on Friday was lengthened to one hour.

In 1919 the working hours on Friday afternoon were amended to 1.30 to 4.30 pm and later to 12.30 to 3.30 pm after the introduction of the 47 hour week. The 1937 Factory Act limited the maximum working week for young people under 16 to 44 hours. Payment was made at 3.30 pm.

<sup>1</sup> One minute allowed later.

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In 1947 the working week was 44 hours worked on five days only. This was again reduced in 1960 to 42 hours and finally the 40 hour week was introduced in 1965, the workmen starting 7.30 am instead of 7.00 am and working an eight hour day.

The Dockyard workmen traditionally took an official break in the mornings. This practice like 'chips' was overlooked by most officers, but there are tales of workmen who had their tea kicked over by over zealous supervisors: After the Second World War this practice became recognised and the hooter sounded at 9.00 am to signal the start of the 20 minute breakfast break.<sup>1</sup>

### Introduction of Iron Shipbuilding

Mention has been made of the entry, after 1860, into Chatham Yard of iron workers for the building of the **Achilles**, the first iron ship to be built in a Royal Yard. These iron workers, angle iron Smiths and Platers, were the early Boilermakers, whose skill had been handed down from Blacksmiths and Millwrights. Their trade involved plating, angle iron bending, riveting, caulking, plate flanging and forge welding. As the Engine and Boiler works were in the close vicinity of the Thames Shipbuilding Yards, the centre of the private shipbuilding industry until the 1880's, these men were available to build iron ships in the mid 1800's. Their trade of iron shipbuilding began to be divided into sections: the Platers and angle iron Smiths were the highest grade craftsmen, followed by riveters, holders-up and iron caulkers.<sup>2</sup> By 1865, the iron work in merchant ship yards had passed from the Shipwrights to the Platers.

Each Plater had a gang of men to assist him called 'Platers' Helpers.' There was also a group of iron workers whose special task was 'frame turnery' In the Royal Yards, even fifty years later, Shipwrights still carried on the main details of the work with the aid of skilled labourers.

The iron workers who entered the Yard were paid 7s a day compared with the pay of the Shipwright of 4s 6d a day. To avoid massive dismissals of the Shipwrights, who were wood workers, it was decided to train some of the latter by allowing them to work alongside the iron workers. This avoided Admiralty incurring the expense of providing the discharged workers with fares to their home towns.

On 3 July 1862, a demarcation of labour dispute came to a head and about 90 iron workers approached the Superintendent of the Yard to complain that they had to work with wood workers and train them. Not receiving any satisfaction from the Superintendent the iron workers went on strike and left the Yard.<sup>3</sup>

This dispute was reported in 'Chatham News' of 5 July 1862:

*On Thursday, ( 3rd of July) a good deal of excitement was caused in the Dockyard by a large portion of the hands who were employed upon the iron frigate, **Achilles**, now building in No 2 Dock, refusing to proceed with their work. It appears that the dissatisfaction arose from the authorities having determined on retaining the service of a number of hired shipwrights who were entered at the establishment at the time of the American difficulty ( 1861 ), and placing them upon the Achilles; by which arrangement the iron workers alleged that an act of injustice was done to themselves. In consequence the men waited upon the Captain Superintendent on Thursday and made a complaint to the*

1 It is understood that this concession was withdrawn in June 1981.

2 Iron caulking using compressed air was not introduced until 1904

3 Men who had worked in private yards had been used to concessions such as advances in wages.

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*above purport. After paying all attention to their statements, Captain Fanshawe and O Lang Esq, Master Shipwright, pointed out to them the fallacy of their views upon the matter and dismissed them from the Yard. The number of men who went out of the Yard upon this matter was about ninety. Amongst the men who had thus foolishly sacrificed their employment were some who entered the Yard about a year or eighteen months ago as labourers, but who were now earning 4s a day each, and others, skilled mechanics, who were earning 7s a day and it appears simply absurd on the part of the first-named class of men to suppose that their rights are infringed by Shipwrights being put to the same work; for what can they possibly urge as a reason why a monopoly of this labour shall fall into their hands. It is much to be regretted that workmen will be guided by the opinion of a few of the noisiest men of the class to which they belong, and did not exercise their own discretion upon matters in which their own well-being as well as the comfort and prosperity of their families are so closely concerned. But let them take a friendly warning and beware of the dog in the fable which in grasping at the shadow, lost the substance; for it has been found by experience in the Yard - as might be reasonably expected- that skilled Shipwrights can accomplish more in iron ship building than any other class of workman and that their work is of a very superior character; if ever workmen refuse to labour with such men, they will only sacrifice their own interest.*

On Thursday evening a meeting of the striking workmen was held at the 'White Swan' at Chatham, which was attended by delegates from the London Trades Council at which resolutions were passed pledging the men not to return to work unless the Shipwrights were withdrawn from the vessel.

The iron shipbuilders drew their wages on Friday but were not re-engaged. There were other meetings with various Union representatives, but as noted in the 'History of the TUC 1868-1968,' 'The Minute Books of the London Trades Council from 1860 to 1861 present a mirror of the Trade Union history of the period ... In 1861/2, for instance, we see the Council trying vainly to settle the difficult problem of overlap between the trades of the Shipwrights and iron shipbuilding.'

For the next 25 to 30 years relations between the Dockyardmen and the Trade Union movement were cool and the Yard was manned mainly by non-union men.

A telegraph was sent from the Yard to Admiralty for instructions and the Board directed that the Yard Shipwrights were to be tried on the work. Two iron workers volunteered to assist with the training. 'Chatham News' of 13 May 1893 had an article about Mr John Thompson, born in 1817, who became a Shipwright in the Yard and served in the Dockyard Brigade of Volunteers, receiving 6d per hour for the drill period.<sup>1</sup> Referring to the strike over the **Achilles**, Thompson said that two of the iron shipbuilders, Bill Morgan and Welsh Bob, did not come out with the others. Dockyardmen volunteered for the work and the two mentioned above took the lead. Plating was carried out by the Shipwrights and riveting and drilling by the labourers, who were styled for the first time, 'skilled labourers.'

According to Hansard. Sir James Elphinstone (Portsmouth) on the 28 April 1863 asking the Government to establish a Commission 'to enquire into the best mode of constructing iron-clad ships'

..

*I think however that as Shipwrights are really the best class of workmen for*

<sup>1</sup> See section on Local Defence Volunteers in chapter 15.

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*iron ships, and by education and intelligence superior to ordinary blacksmiths the government should without delay set about building warships in all Dockyards ...*

In 1862, there were 1200 men working on the **Achilles**. the Shipwrights were not paid the rate of the iron shipbuilders; they retained the 4s 6d a day pay.

'Chatham News' of 12 July 1862 reported:

*Measures were taken to prevent turn-outs from obtaining work in Government Yards. Some of the leading men who did not join the strike, but were favourable to the movement and who were tampering with the workmen were dismissed.*

In the following week the same paper noted that an Admiralty Order had been sent to . Woolwich enclosing the names of 90 men, Smiths and Fitters, who had been discharged from Chatham for refusing to work with Shipwrights on board the Achilles. These men were not to be employed in any Government establishment.

The hard feeling generated at Chatham persisted and as late as November 1862, Mr Pritchard, Leading Man of Riveters, employed on the **Achilles**, was assaulted by men discharged from the Yard earlier. There were disturbances at this time in private yards.

'Chatham News' of 30 August 1862 reported a strike at Messrs Mare & Co, a Dockyard employing 1700 men, and building the steam vessel, **Anglesea** Some of the men became dissatisfied with their foreman and truck to get him dismissed; the strike petered out.

In 1869, the authorities were asking for volunteers among Shipwrights at Chatham used to iron shipbuilding to go to Portsmouth to introduce iron shipbuilding at that Yard.

### Conditions in the Yard after 1850

#### Holidays

In general, conditions for the workmen in the Yard gradually improved in the second half of the 19th century. Workmen employed in the Yards were allowed by Admiralty Order of 5 May 1851 two clear days to visit the Great Exhibition of 1851 without loss of pay, the Yards being closed for that occasion. A free railway pass and the entrance fee was given to each visitor. Again on the 28th and 29th June 1862, holidays were granted to Dockyard employees to visit the International Exhibition.

As previously mentioned the holidays given by the Dockyard were Good Friday, Christmas Day, Her Majesty's Birthday and Coronation Day. When Christmas Day fell on a Friday or a Tuesday, the men would have an extra holiday on the Saturday or the Monday without pay. Prior to the introduction of the 48 hour week they were, however, usually allowed to work up the lost time by overtime before the holiday. When Christmas Day fell on a Saturday, the men were allowed to leave the Yard on Friday at the normal Saturday time. If the holiday fell on a Sunday, a day's paid leave was given on the Saturday or Monday.

In 1894, on the introduction of the 48 hour week, the question of holidays was examined. It was decided to substitute August Bank Holiday, the first Monday in August for Coronation Day, and to stop the concession of working up overtime prior to the holiday. Thus 'Chatham News' of 10th April 1897 reported that the Yard was to close from the 15 to the 19th of April. The men were to be given a paid holiday on Good Friday, but the 17th, the Saturday, was to be a compulsory unpaid holiday.

It was usual when ships of over 2000 tons burden were launched, that work ceased on launching day and the men were given a half day's holiday with pay, and worked off the



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remainder of the day by unpaid overtime. Thus when the **Shannon** was launched on Thursday, 20 September 1906, the men were given the half day's holiday and worked an extra half hour each night from Monday, 10 September, for the payment of the remainder of the launching day.

As was customary a half day's holiday was given after the visit of the Lords of the Admiralty to the Yard; the men worked up the other half day.

These extra holidays were privileges not rights, and no half day's holiday was given the launch of the **Medea** in 1888. There were strong influences in the Admiralty, urging that shipbuilding should be put out to contract, and the Director of Dockyards was anxious to avoid any poor comparison between the practices of the Royal and private yards. In the same year Admiralty warned that there would be an end to the half day's holiday on the occasion of the Admiralty inspection after that year.

In 1901, Whit Monday was given as a Yard holiday in lieu of the holiday granted on the late Queen's birthday. For the Coronation of Edward VII, which was to be held on Thursday, 26 June 1902, and then postponed, the Yard was closed from Wednesday until the following Monday: two days' pay was given, and the men were checked 5/8ths pay for Saturday. When the Coronation took place on Saturday 9 August, the men worked Friday morning and were given Friday afternoon and Saturday as paid time.

### Smoking

The rules concerning smoking, which had been rigorously prohibited in the Dockyard, were gradually relaxed. In 1865, Captain Houston Stewart issued orders that two gas lamps were to be fitted to the wall outside the Yard for the use of Dockyard workmen who smoked in the dinner hour and to light their pipes for the homeward journey. In 1875, the regulations which prohibited workmen from taking pipes into or smoking in the Yard were modified. Men were to be allowed to smoke during meal times at the following places: under the iron ship sheds, Nos 1 & 2; in the Smitheries and in the Metal & Lead Mills; the Boilermakers' Shop and the Engine Houses (except in the Saw Mills). In the 1920's smoking was allowed in No 1 Machine Shop between 9 am and 11 am and between 2 pm and 4 pm. It was an offence to carry matches and the lighting of pipes or cigarettes was done at a gas jet. The prohibition on the carrying of matches was not lifted until after the Second World War.

### The provision of refreshment in the Yard

In the early days of the Yard much of the drinking water came from suspect sources and the consumption of alcoholic drinks was high. The sale of beer in the Tap House in the Yard presented problems to the authorities for over 200 years. John Hollond stated that the Tap House in the Yard, 'necessary at first, but now one of the greatest abuses in the Navy,' was abused since the Master Shipwright was the only one who controlled it, and he might be away from the Yard on official or private business. During the Commonwealth the Officers of the Yard expressed great concern over the consumption of drink by Dock yardmen. They had no jurisdiction in this matter outside the Yard. However, in 1654, they appealed to the Commissioner:

*There is an intention of erecting another Tavern in Chatham midway to the Dock which may be of ill consequence to the Navy. We hope the Council of State or Admiralty Committee will take order for preventing it.*

The Tap House was in charge of the Porter of the Yard. In 1678, he was fined for allowing the men to drink and smoke in his Tap Room during working hours. It was rumoured that the Porter found the privilege of the Tap House very profitable. Strictly

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speaking, the Porter was allowed to sell only small beer to be drunk outside the Tap Room, but for many years they sold wines and spirits without official opposition.

An Order referring to the sale of drink and forbidding the sale of spirituous liquor was issued by the Navy Board on 23 August 1694:

*Whereas by articles of instruction to the Porter that officer is strictly prohibited to meddle with the selling of any drink in his own house near the gate unto any labourers, watchmen or others appertaining to the Yard so many and so insufferable abuses having been occasioned by the means. But if he desires to have vent to any beer it must be only in the summer time and of 6s price such as is fitting to quench the party's thirst that drink thereof to enable him better to perform his labours and not such as shall distemper, detain and keep them from their labours in the King's service and whereas we have reason to doubt not .. that this wholesome and indispensable article of the said officer's duty is generally abused in all their Majesties' Dockyards and instead there of the said Porters take upon themselves to keep Taverns (as it were) in their houses and Tap houses, selling wines, brandy, punch and other potent and intoxicating liquors to quench workmen's thirsts but rather dozing them and making them unfit for labours to their Majesties' great disservice as well as the poor men's waste of their wages. We have therefore thought fit for the total obstruction and prevention of such pernicious practices, etc ... forbid the Porter to sell spirituous liquors.*

This Order was probably disregarded soon after its proclamation. After a fire at Sheerness in 1739 attributed to the sale of spirits in the Yard, the Navy Board directed that the Order of 23 August 1694 should be read to the workmen. The sale of wines and spirits had been tacitly permitted for many generations and the prohibition of their sale was most probably ignored. The finances of the Navy at that period did not permit the regular payment of wages and salaries, and discipline in the Dockyard was bought with money.

In the 1790's Trumans, the London Brewers, supplied Thomas Parry who kept the Tap House at Chatham Dockyard.

About 1801 the privilege of selling table and small beer, also stronger beer under restraint, together with articles of provisions, was allowed to a distinct person under the denomination of Tapster, who could be removed at the pleasure of the Commissioner. About 1833 Taphouses or Dockyard canteens were abolished in an effort to reduce drunkenness in the Dockyard. In May 1834 work people who owned Beer houses were given a week to give them up or be dismissed.

In the 1860's workers' dining rooms or canteens were provided following a lead from Portsmouth Yard. In 1869 all workers in the Yard conformed to normal Dockyard hours, the Factory system was abolished. Dining rooms were provided for those who lived too far away to go home to dinner. The YSM Book described the women's dining room of 1863 south of Anchor Wharf which was converted in 1911 to a men's dining room. A large room in the Rigging House was made into a dining room; another was made under the Spinning Room, and there were others.

'Chatham News' of 2 January 1873 noted:

*For the cooking or warming of dinners of workmen, cooking apparatus has been provided by the Captain Superintendent whilst a commodious dining room capable of accommodating 400 person exists in which persons can take their meals without being exposed to the weather.*

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In 1877, a coffee and tea stall belonging to Mr Askew of London stood outside this dining room and provided drinks at 1/2d per cup. Up to 1888 it had been the custom for publicans to be allowed to take beer into the Yard during the dinner time for the convenience of the men who were at some distance from the Dockyard canteen at the Extension works. Admiral Kelly ordered the discontinuance of this practice.

In 1882 one of the buildings of the Dockyard Extension was set aside for a canteen. This canteen abutted on to the Factory Basin and was formerly used as a Drawing Office. The men had complained of the distance of the Extension Works from their homes. The journey had to be made on foot and they could not get there and back in the time allowed; in 1877 the Superintendent had stopped the practice of workmen working a half or three quarters of an hour of their dinnertime and leaving early. 'Chatham News' of 17 June

1882 reported the formation of the Dockyard Workmen's Canteen Association, with shares of £1 each. Hot dinners were supplied at 6d and it was hoped to reduce the price. All were admitted to the canteen, but only shareholders' widows and orphans could reap profits from the enterprise. 920 men could dine together.

The Annual Meeting of the Chatham Dockyard Canteen Association held in January 1886 reported the following. There was a profit in the year of £160 10s 1<sup>1</sup>/<sub>2</sub>d which was divided as follows: Widows' & Orphans' Fund, £57 5s 2d; Reserve Fund, £30; Remainder to Capital Account. The Secretary received £10 and the Treasurer £2 for their half year's service; the Committee Men received 26s each.<sup>1</sup>

'Chatham News' of 4 July 1891 gave an account of the new dining hall for Dockyardmen.<sup>2</sup> The cost of construction was to be borne by Admiralty but the charge for repair and for the consumption of gas was to be borne by the Dockyard Canteen Committee. It was hoped this would lead to the abolition of many existing canteens and shanties.

'Chatham News' of 16 January 1892 gave a detailed account of the canteen which provided good and wholesome dinners at a reasonable price, besides providing refreshments and other comforts. Admiralty allowed a man to look after the premises provided at the Extension Works, but the other attendants required to carry on the concern had to be provided by the Association which was managed by a committee of which Mr Hicks was the Chairman and Mr W MacDonald was the secretary.

A member paid a fee of 10s but the money could not be used or withdrawn at any time. This entitled him to full benefits of the canteen and Mess room and, in the event of his death, the widow received £5 and 5s for each child under 14 years of age; in the event of his wife's death, a payment of £2 10s was made to him.

The canteen was open to all workmen. Hot dinners were provided at 6d or the men could form themselves into messes and provide their own dinners which were cooked free. For the year ending 1891, the gross receipts were just over £2,000; sale of dinners, £572 2s 1d; soup, £41; coffee, £101; mineral waters, £101; tobacco, £64; beer, £1,168 8s 4d.

£180 was voted for various purposes including £20 to a local committee for the relief of distress outside the Yard. The funds of the Association were then worth £170.

The paper gave more details of the new canteen and mess room at the upper end of the Yard, No 1 Dining Room. Admiralty had provided part of the Brass Foundry adjacent to the Smithery and had given £700 towards converting it into a dining room; the Committee had added £80 to that sum. This dining hall could accommodate 300 men, and for those who took their own dinners and wanted them cooked or warmed, a large galley was

<sup>1</sup> In September 1888 the Dockyard Canteen Committee had an outing by brake to Maidstone and Mailing.

<sup>2</sup> in the YSM book the details of this canteen are given as: No 3 Dining Room, built 1899, reconstructed 1935, boiler houses added in 1939 on W side.

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situated in one corner in which about 180 dinners could be placed at one time, the cooking or warming being attended to by the men provided by Admiralty. Adjoining the dining room was a room for Inspectors and Dockyard Officers. A kitchen was provided with an enormous gas stove as well as a large ship's galley for the making of soup. Between this and the Inspectors' room was the refreshment bar. The cutlery in the canteens was stamped C.D.W.C.

By 1894 the Dockyard Canteen Society had a balance of £315 from its operations in the Lower and Upper dining rooms.

In 1925 the Whitley Council took over Nos 1,2 & 3 Canteens and the Chatham Dockyard Canteen Association was disbanded and its assets divided out among its members according to the years of membership. The canteens or dining rooms were then run by the Canteen Manager<sup>1</sup> and his staff. There were originally divisions for superior officers, subordinate officers, chargemen and workmen but over the years this demarcation had been relaxed.<sup>2</sup>

After the closure of R N Barracks, Chatham in 1961, the canteens in the part of the barracks taken over by the Dockyard were brought into service as additional restaurants for Dockyard employees. By 1970 there were the following restaurants: 'Central,' 'Victory,' 'Collingwood,' 'St Mary's;' and two mobile canteens.

There were other privately owned canteens and clubs in the Yard. Under the Main Offices was the Upper Yard Clerks' Mess, later known as the Clerical Officers' Mess. This was run by a committee elected half-yearly. There was no subscription and the canteen was run from the profit on the meals. A ship's galley was obtained and a chef and his assistants were employed to prepare meals. The service was carried out by helpers who were allowed out from work a quarter of an hour before meals. The beer was supplied for many years by Messrs Shepherd & Neame. This canteen was taken over by the Canteen Manager of the Yard about 1950; the chef and his assistants were superannuated. At the time of closure, the Clerical Officers' Mess was understood to have been established for nearly a century.<sup>3</sup>

Under the Section House the police ran a bar which favoured members of the Yard were allowed to patronise. This was a favourite haunt of the senior Drawing Office Staff of the Constructive Department who lunched at the canteen at the northern end of the MCD Drawing Office. This bar was closed about 1961.

There were vendors outside Main Gate and in the 1860's a man stood three times a day selling peppermints, cloves, lemonade, acid drops and horehound (cough medicine); Mr Mullinger, a fish merchant of Chatham High Street stood selling Yarmouth herrings; and Mr Baker sold newspapers.

At the turn of the century there was in front of the Convict Prison building at the old entrance to Pembroke Gate a stretch of level ground used originally as a cricket pitch. When the prisoners were removed from Chatham, on this piece of ground were sited pitches of entertainers and stalls of itinerant traders. Among the latter were Rocky Allen of Gillingham with a barrow load of cough sweets and Charlie Baker of the 'Steam Engine' of Arden Street, Gillingham, with his van carrying all manner of refreshments. After the Naval barracks were built, Baker brought his horse and van into the Yard at noon and sold cakes, etc. According to 'Chatham News' of 20th November 1981, the van was outside the Dockyard Gate at 6 am over the Khyber Pass at 11 am for the soldiers' break, then back to Pembroke Gate at 11.45 for dinnertime. Charlie Baker died

1 From 1st December 1966 the Canteen Manager was designated 'Catering Manager'

2 The Catering Establishments were later taken over by the Ministry of Supply

3 The information about this canteen was supplied in January 1970 by Mr Grimdsatl who was secretary of the Mess at the time of closure.

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in 1906, Catherine Baker in 1928. The charges were: Tea and coffee, 1d per cup; bread and cheese, 1d; cakes, 1d; Woodbine cigarettes, 2 packets 11d; apples 1d a bag; spring onions 1d a bunch; cold drinks 1d a bottle.

The Welcome Soldiers' & Seamen's Home at one time provided horse-drawn carts for the supply of refreshment to sailors and civilians in the Yard. The canteen was run by Mrs Taylor.

Older men will remember the children gathered at noon round the Dockyard Gates waiting for them to open at bell-ringing so that they could hand over dinners to their fathers and brothers. On the wall of the Muster Station at Pembroke Gate there stood for many years a warning notice marking the limit to which those bringing dinners to Dockyardmen might advance into the Yard.

An Order had been issued in 1862:

*Great inconvenience arising from the children who bring the dinners of the workmen who remain in the Yard struggling and climbing about the ships building and in Dock and also risk being incurred of these children injuring themselves or others. The workmen are to be informed that children who bring their dinners if remaining in the Yard must remain quietly with them. If this is found impracticable the practice of admitting children with dinners must be discontinued.*

*E G Fanshawe Captain Superintendent.*

During the Second World War, mobile refreshment cars were provided by the peoples of the Dominions for use in the Yard.

### **Emigration and Unemployment Problems during the latter part of the 19th century**

#### Emigration

There had been a reduction of the labour force in the Royal Yards in 1849 and after the discharges in 1857, 'The Times' advocated the offer of a free passage to Australia at the expense of the Australian Land Fund to discharged workers. Australian road labourers were paid from 8s to 10s a day with wood, water and tents found. The wages of the lowest paid Dockyard labourers was of the order of 13s a week.

When Gladstone became Prime Minister, his administration (1868 - 1874) was pledged to economy and in the period 1868 to 1870, Woolwich and Deptford Dockyards were closed and discharges from all the Royal Yards took place. (By 1874, Income Tax reached its lowest level, 2d in the £.) After this it was generally assumed that discharges from the Yards would occur when the Liberals were in office.

Deptford Yard closed in April, and Woolwich in October, 1869. Woolwich Yard had the following complement: 690 shipwrights, 39 caulkers, 139 joiners, 219 smiths, 21 millwrights, 42 sawyers, 48 riggers, 15 sailmakers and 520 labourers. Deptford employed about 800 men. 1,235 men were transferred from Deptford and Woolwich Yards; 249 were pensioned at the average rate of 10s a week; 342 were assisted to emigrate; 171 were discharged with gratuities; 42 were dismissed, died or were temporarily retired; 392 hired men were discharged without gratuities.

There were discharges at Chatham Yard to make way for the established men from Deptford and Woolwich Yards and to effect further economies. The following posts for men in the Ropery were abolished: 1 foreman, 2 layers, 27 men; leaving the Master

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Ropemaker, 1 layer, 15 men, 8 labourers and 8 boys. No apprentices were entered into the Yard.

In April 1869 the following notice appeared on the Dockyard Gate:

*The Dockyard artisans who accept the offer of passage in Her Majesty's troopships proceeding to Canada must distinctly understand that on their arrival at Quebec they will be in exactly the same position as ordinary emigrants, and that the government is not in any way responsible for providing them with employment. There is, however, a large demand for labour by private employers, but for their own sakes, the emigrant should not refuse any reasonable offer on their first arrival. Workmen recently discharged, if they have been employed in the Dockyard two years, may be considered candidates for emigration. Good character, cleanly habits, medical examination as to fitness, and a sum of £2 5s will be required . . .*

The Government were bringing home troops stationed in Canada and the troopships **Serapis** and **Crocodile** were to be sent empty to Canada for this purpose. It was decided to allow the emigrants to go out on these ships. In many cases the sum of £2 5s for an adult (and for every two children under 12) was paid for by the British and Colonial Emigration Fund. On 20 April 1869, 391 emigrants left on **Crocodile** and on 1 May 1869 the **Serapis** left Portsmouth with 776 emigrants, including about 60 from Chatham.

A later notice amended the instructions to include men with upwards of one year's service in the Yard amongst those to be taken out, provided that they had not been discharged for more than twelve months.

'Chatham News' of 7 May 1870 stated that emigrants to Canada on the troopship had to pay £2 including the Canadian Emigration Tax of one dollar, and 10s was returned to each man on landing. Established men with under ten years' service leaving with the approval of the authorities, were to be given a gratuity of one month's pay for each year of service. The paper gave instances where gratuities had been paid to established workmen with less than ten years' service, e.g., A 1 Tyler, Caulker, £52 6s 4d; G E Hayes, £47 5s 8d.

The paper reported on 4 June that a large number of men discharged from the Yards with their wives and families, numbering about 188, left Strood Station for Portsmouth, where they were to embark on the **Tamar**, troopship. On the Friday between 50 and 60 men in the Yard took their discharge for the purpose of emigrating on the **Tamar**. On the **Tamar** were 91 married men and 90 married women, 88 single men, 27 single women, 166 children and 10 military pensioners and their families. The civilian men were principally from Woolwich and Chatham. In addition to emigration some Dockyardmen went to the Prussian Dockyards for work.

Every encouragement was given to the men to leave the Yards. Officers who had served beyond a certain number of years were allowed to add a number of years to their time to count towards an increased scale of pension. In other cases offers were made to commute the superannuation allowance to a down payment. In 1873, Donald Grant, a clerk in the Master Shipwright's office, commuted his pension of £125 a year for a lump sum of £1,600. Men over 55 not capable of doing a full day's work were superannuated, up to 10 years was added to the period of service of established men to increase the amount of their pension. At Woolwich, hired men who had more than 15, but less than 20 years' service were given gratuities. Hired men with over 20 years' service received a week's pay for every years of service.

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The plight of shipworkers in the Deptford and Greenwich districts was pathetic. There was no work available in the private yards. 'Chatham News' at this period had many articles on the terrible hardships suffered by the ship workers and their families.

### **Working conditions in the latter half of the 19th century**

The discharges from the Yards were halted by the outbreak of the Franco-Prussian War in 1870. In 1872, it was ordered that workmen superannuated under 60 years of age, must, if required, give up their pensions and return to work in the Yard, otherwise their pensions were forfeited.

Gradually there was an improvement as regards private shipbuilding. A number of Shipwrights left the Yard in 1872 for three years' work at Messrs Dudgeon's Shipbuilding Yard at Poplar. The pay was 6s 4d a day and a bonus every fortnight if they could earn more. The pay for a Dockyard Shipwright was 4s 6d a day. However, many Dockyardmen were content with the lower pay preferring the more moderate wages with the certainty of employment, if established, to higher wages without this certainty.

During the emergency, overtime was worked in the Yards: one hour during the dinner break, and one hour at night. Then the discharges began again in 1874 when older men were superannuated, who required only two or three years to reach 60 years of age. They were given the rate of superannuation to which they would have been entitled had they remained until the maximum age. Strangely, by 1875, there was some difficulty in obtaining shipwrights for the Royal Yards and officers were sent to the Thames Yards and to the Tyne to recruit men.

'Chatham News' of 5 May 1877 reported that for some years past Royal Marines had been employed on different kinds of work in the Dockyard. The Marines were to be withdrawn and their places taken by civilians.

In 1880 the total establishment of Chatham Yard consisted of 3,339 men, of whom 1,428 were established <sup>1</sup> and 1,911 were hired. The established men comprised:

Shipwrights	618	Smiths	175	Labourers	178
Caulkers	24	Boilermakers	18	Riggers	49
Joiners	97	Fitters <sup>2</sup>	32	Storehousemen	24
Ropemakers	27	Men at the Block,			
Sailmakers	13	Saw & Metal Mills	73	Other Trades	68
Sawyers	16	Painters	16		

The wages bill was £254,327.

Apart from the economies practised by the Government during the period 1868 to 1885, another factor which affected the Royal Yards was the tendency to place a higher proportion of new warship construction in private shipbuilding yards, a transition hastened by the change from wood to iron and steel ships. In 1884, the Parliamentary Committee on Contracts for Building and Repairing Ships recommended that the Royal Yards be retained mainly for experimental work. A number of MP's had interests in private shipbuilding companies. The Dockyardmen complained that the Liberals placed fifteen ships to private contract shipbuilding within three months of regaining office in 1886.

<sup>1</sup> The number of established men remained reasonably constant during the second half of the 19th century falling slowly from about 1700 to 1400. The fluctuation of numbers occurred with the hired men who could be discharged without trouble. The total number of workmen rose from about 2,000 to about 6,000 in this period.

<sup>2</sup> There were 88 hired fitters to 32 established fitters

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A further factor which caused redundancies in the Yards after 1886 was the recruitment of additional labour during the troubles in Egypt and Sudan in the period 1882-1885. In January 1883 there were 1,500 hands at work in Chatham Yard above the normal strength of the establishment and some two or three thousand were daily working extra hours. Great exertions were being made to finish the building of the **Rodney** and **Warspite**, both launched in 1884 and to complete the **Agamemnon** and **Conquerer**.

In September 1886, Admiralty ordered a reduction of the numbers of men employed in the Royal Yards: at Sheerness, 60 joiners and labourers received notice of dismissal. In that year there was only one ship under construction at Chatham, the **Immortalite**, a 1st- class cruiser of 5,600 tons building in No 2 Dock and launched in 1887. Contract building was in full flush; **Immortalite** and **Aurora** were built in government Yards but the other five of the class were put out to contract. Work was so scarce in the Royal Yards that many artisans accepted the pay and work of labourers as an alternative to discharge. Many shipwrights had to move to the northern yards to get work in their trade.

The Committee of Enquiry of 1886 under Vice-Admiral Graham (Controller 1885-1888) was very critical of the supervision and methods of working of the men in the Royal Yards. This led to a tightening of the discipline and further discharges. 'Chatham News' of 23 April 1887 reported that four shipwrights found talking together by the Civil Assistant to the Admiral Superintendent in working hours, were summarily dismissed as a warning to others. But as a workman explained to a local press representative in 1887:

*The officers should never lose sight of the fact that workmen often have to solve difficult problems in the intricate parts of a ship where the official seldom, if ever, puts his foot.*

In 1887 there were a large number of dismissals from the Yard, of the order of 1300 including large numbers of shipwrights. Four acting Inspectors of Shipwrights reverted to workmen, suffering a pay reduction of about 16s a week. A gratuity of a month's pay was given to hired men of seven years' service or more. 'Chatham News' reported in May 1887 that in spite of the Admiralty's policy of phasing the reduction in the Dockyard labour force, the number of discharged caused considerable distress. In November this paper reported that the effect of Dockyard discharges was to be seen in the large number of empty houses in the parish. The Medway Board of Guardians had to meet requests for relief for women and children where their men had had to leave the district to seek work. This time no rail passes were given to the discharged men, many of whom had to get themselves and their tool boxes to districts as far as the north of England.

There was great distress throughout the country at this period owing to unemployment. A serious disturbance followed a large meeting in Trafalgar Square held to ventilate the grievances of the unemployed. Engineering employees at Bolton accepted a 7 1/2% reduction in their wages.

In 1888, 80 shipwrights and 40 joiners were entered for work on board vessels in the Medway Steam Reserve. It was estimated that the work would last two months and the men could then expect to be discharged.

The total number employed at Chatham Yard in August 1887 was 4,400.

### *Established Men at Chatham 1886/7*

Boilermakers	18	Painters & Glaziers	16
Braziers & Tin men	3	Patternmakers	4
Bricklayers	1	Plumbers	11
Caulkers	24	Riggers	45
Coppersmiths	7	Ropemakers	20



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*Established Men 1886/7 continued*

Engine Keepers	6	Sailmakers	20
Fitters	38	Sawyers	12
Founders	7	Sawmills	25
Hosemakers	4	Shipwrights	567
Joiners	97	Smiths	186
Labourers	184	Storehousemen	33
Locksmiths	2	Spinning machines	7
Mason	1	Surgery Attendants	2
Messengers	3	Wheelwrights	5
Oar Machines	6		

Number of Established Men 1,354:      Number of Hired Men 3,120  
(At Sheerness Dockyard: 829 established men; 830 hired men)

According to the Estimates for the financial year April 1888/9, the numbers would be:

Staff-Captain's Department	160
Storekeepers	173
Chief Constructor's Department	1700
Chief Engineer's Department	<u>1350</u>
Total	<u>3383</u>

In 1888, as a result of strike action, the platers and boilermakers on the Tyne received a 5% increase on piece work rates and 1s 6d on time rates. The joiners gained a rise of 1s a week. The higher wages offered in the Tyne Yards tended to attract some of the shipwrights from Chatham Yard, and at times the authorities did not find it easy to recruit the shipwrights required for short period engagements needed in an emergency.

The naval rivalry between Great Britain and Germany in the latter part of the 19th century led to an increase in the work force in the Yard, and the Medway Towns experienced a temporary boom. By the Naval Defence Programme of 1889 the building of battleships which had fallen to negligible proportions in the Royal Yards after 1885, was divided between public and private yards. The population of Gillingham doubled between 1881 and 1901. In 1890 and 1892, the numbers in the Yard were 5,670 and 6,134 respectively

1892 Constructive Department::	1151 Shipwrights
	477 Smiths and Ship Fitters
	1181 Labourers
Engineering Department	362 Engine Fitters
	126 Boilermakers
	500 Labourers

The growth of naval expenditure at the turn of the century was extraordinary; it had trebled under both Liberal and Conservative governments between 1889 and 1904. There were public protests in 1904 and Fisher combed the Estimates to effect economies by scrapping some 154 obsolete ships with savings on maintenance and repairs, and by Dockyard reorganisation which resulted in discharges of some 6,000 workers from all the Royal Yards. His policy was to use the Royal Yards for repair and refit work only.

In December 1904 it was announced that Officers and Men over 60 years of age were to be discharged by the end of March 1905. In July 1905 during the discussion of the Navy

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Estimates it was proposed that the reduction in the number of hired workmen in the Yards would be: Portsmouth, 2270; Chatham, 2300; Devonport, 1659; Sheerness, 800.

The men were to be discharged primarily at the rate of 70 a month. Thus in August 1905, 33 men from the Chief Constructor's Department were discharged; 30 from the Chief Engineer's Department; 2 from the Electrical Department; and 5 from Naval Stores. A hundred established Shipwrights were to be removed from Sheerness to Chatham. It was announced in September 1905 that since the 1st of April 1905, 1360 workers were discharged and that a considerable number over 60 years of age were sent out prior to that date.

The last battleship to be built at Chatham was the **Africa**, launched in May 1905; the **Shannon**, an armoured cruiser of 14,600 tons was launched in the following year. Thereafter the building of large warships was halted with a reduction in the numbers employed in the Yard. A deputation from the Councils of Chatham and Gillingham went to the Admiralty in March 1906 to make representations about the reduction in the number of employees in the yard. At a Council meeting of 12 April 1906, the Mayor of Chatham moved:

*This Council petitions the Lords of the Admiralty to take the earliest opportunity of preparing slips in Chatham Dockyard to enable them to build ships of the **Dreadnought** class if the size of the present slip is not already sufficient. The question of the prosperity of the Dockyard means the prosperity of the Borough.*

In May 1907 the Mayor of Gillingham in company with the Mayors of Chatham and Rochester interviewed the Parliamentary Secretary to the Admiralty to press upon the Admiralty the importance of maintaining Chatham Dockyard at full strength and to reconsider the question of building large ships over the Dreadnought class. No definite assurances were given, but the deputation returned hopeful.

Within two years of the discharges, the number of men employed in the Yard appeared to rise again; many came back to the Yard to reclaim their jobs. In December 1913, Fisher declared:

*We discharged upwards of 6,000 Dockyard workmen before the Unionist Government left office eight years ago. Alas they have all re-entered.*

Mr Winston Churchill was reassuring Chatham by saying:

*There is no question of abandoning Chatham in which scores of millions have been spent.*

### **The challenge to the supremacy of the shipwright**

In the section on Apprentices, mention is made of the division of apprentices in 1878 into Principal Trade Apprentices, Shipwright and Fitter Apprentices, and Minor Trades Apprentices. Engine Fitter Apprentices or Fitter Apprentices of the Steam branch, were apprenticed to the Chief Engineer; Ship Fitter Apprentices were apprenticed to the Chief Constructor.

Rivalry began to grow between the various trades in the Yard. The proportion of established to hired Shipwrights was much higher than for Fitters. In 1880, there were 32 established Fitters and 88 hired Fitters. However, the number of Fitters was to increase from 120 in 1880 to 240 a decade later. The reason for the large number of Shipwrights,

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618 in 1880, was the number of jobs performed by them which were far removed from their original trade of shipbuilding with wood <sup>1</sup>

'Chatham News' of 25 June 1881 carried a long letter signed 'Matter of Fact; which attacked the system whereby Shipwrights carried out Fitters' work- a Fitter being defined by the writer as a man whose work it was to 'fit' parts of metals (iron and steel) together.

A deputation from the Amalgamated Society of Engineers (ASE) waited on Mr A J Otway, MP, on the matter of the fitting of watertight doors by Shipwrights.

In the 'Chatham News' of 25 June 1881, under the heading 'Dockyard Work' appeared:

*Mr Broadhurst succeeded in Tuesday's ballot at the House of Commons in obtaining the first place at evening sitting of the 19th July for his motion declaring that 'it is detrimental to the public service, fatal to the efficiency of our warships, and unjust to the artificers concerned, that superintending Leading Men should be placed in authority over workmen with whose trades they have no practical experience, or that men should be put to execute work for which they are unsuited either by training or experience.'*

In 1883 there were complaints that Ship Fitter Apprentices were being forced to work with and under Shipwrights. There was resentment against Ship Fitters being supervised by a Foreman of Shipwrights, who was actually the Foreman of the Fitting Shop. There had been, however, two grades of Leading Men of Fitters, those of the Ship Building Branch and those of the Steam Branch.

In 1890 the Smiths protested that they were ruled by an alien trade - Shipwrights.

The Shipwright regarded himself as indispensable to the Yard. The Chairman of the Ship Construction Association at Chatham, Mr A Edwards, Foreman of the Yard, expressed this in the following words:

*All that pertaining to the construction of ships whether in wood, iron or steel we do, being our own, which we have done and shall continue to do to the satisfaction of their Lordships and the public . . . it is ourselves, the shipwrights, who build the nation's ships ... the constructor of a ship who has the whole responsibility is a shipwright.*

By 1894, the Shipwrights were beginning to be limited in the range of their work. They petitioned in 1894: .

*The name of shipwright still covers, as of yore, the name and work of our trade in all its varied operations in ship construction. The general training of shipwrights clearly and distinctly fits them for the various work in the construction of vessels, more especially does this apply to the special training of your petitioners. Therefore on these grounds, as well as that of past service, they feel they are entitled to dutifully approach your Lordships, and seriously appeal that no alteration be made in the allocation of their work in the construction of vessels in HM Dockyards.*

There was a little jealousy between the trades involving wood and metal. The author remembered travelling in a bus with an old Dockyard Fitter who spoke scathingly about

1 Shipwrights recruited from outside would often be used to working with wood only. They would be sent to the mast or boat house or paired with men who would train them to work in metal as well as wood.

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Joiners and started a scurrilous recitation about them. Unfortunately only one part could be recalled:

*In glue and dust we put our trust; If that won't do then putty must.*

However, Shipwrights were not allowed to undertake electrical work. This was carried out by ship fitters supervised by shipwright officers until the formation of the Electrical Department.

In 1894, the ASE alleged that fitting work done by shipwrights was inferior in quality; the complaint was investigated by the Director of Dockyards who found that the charges were largely unfounded. In the following year there was more bad feeling over the demarcation of the work of the Fitters and Shipwrights. The Boilermakers also demanded, in a petition to Admiralty, that the branches of their trade in the Constructive Department should be transferred to the Department of the Chief Engineer.

After the abolition of the posts of Masters in the Yards after 1822, the supervision of work carried out by Shipwrights and other tradesmen such as Joiners in the Constructive Department was carried out by the Foreman of Shipwrights. Ultimately Foremen of the Minor Trades were appointed and after the formation of the Royal Corps of Naval Constructors in 1883 the overall supervision of the activities of this Department was carried out by Constructors and Assistant Constructors recruited from those trained as Shipwrights.<sup>1</sup>

The Constructive Department was responsible for the whole structure and general fittings of a ship except the engines, guns and electrical equipment. The Shipfitters of this department were involved with the machinery of the ship apart from that responsible for its propulsion, e.g., the steering gear, capstans, etc. They had been responsible for the electrical work until the formation of the Electrical Department in 1903. The Engineering Department was responsible for the overhaul and repair of the boilers and engines and of the machinery which operated the gun turrets.

The diversity of the work of the Shipwright as it existed in the 1960's is shown by the syllabus of training for Shipwright Apprentices of this period. In the first year they were given instruction in woodwork, including the use of tools, properties of various timbers, conversion and seasoning of timber, fireproofing, methods of securing wooden articles, wood finishing and preserving. They were also taught basic metal work, welding, profile cutting, etc. In the second year they were given instruction in boat building, reinforced plastics, the structure and fitting of ships, and Mould Loft and scribe board work, etc. In their third and fourth years they participated, under supervision, in the actual repair and refit work on ships and submarines.

The Shipfitters were trained with the Engineering and Electrical Fitter Apprentices. They spent eight months on basic hand skills, eight months on auxiliary machinery (engines, motors, etc). They left the Training Centre after two years for training in the shops and afloat. (The distinction between Engine and Ship Fitters ceased in the 1970's.)

With the decline of shipbuilding and the growth of importance of the Engineering and Electrical Departments, many of the best Apprentices opted to choose Fitter trades rather than the Shipwright.<sup>2</sup> For many years, however, the outstanding Shipwright Apprentices had the best chances of rising to the highest posts in the service. Until the reorganisation of the late 1950's the Constructors were in charge of work on ships and the head of the Constructive Department co-ordinated all Dockyard work in connection with the construction, reconstruction or repair of all ships and vessels.

<sup>1</sup> See Subordinate Officers in chapter 14.

<sup>2</sup> See Apprentices in chapter 4.

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### **Industrial Relations up to 1914**

The men could bring grievances or demands to the notice of Admiralty by petitioning their immediate superior or the Board of Admiralty direct; their petitions were considered when the Board made its annual visitation to the Yards.<sup>1</sup> The procedure is illustrated by the report in the local paper about the inspection of the Yard by the Lords Commissioners of the Admiralty, Saturday, October 26 1872:

*Members of the Board arrived from Whitehall about 8.50 am and breakfasted with the Captain Superintendent, W C Chamberlain. They then toured the Yard. After lunch the Commissioners received depositions of workmen engaged in the dockyard on the subject of increase of pay for the whole of the mechanics of the Yard. A similar application in the form of a petition had just been previously received by the Commissioners from the Officers of the Yard. The workmen's deputation consisted of nine men, one being selected to represent each of the trades and departments in the Yard. The Commissioners left Chatham for London in the afternoon. The workmen were given a half holiday on Saturday next. The men worked overtime to make up the time for the remainder of Saturday so as to have a whole holiday on that day.*

In 'Chatham News' of 12 February 1881 it was noted that any person employed in the Dockyard was allowed to make representations by letter to Admiralty; these were forwarded through the Admiral Superintendent in the months of October and November each year. The petitions were accompanied by the names of those who wished to speak in support of their case.

In February 1883, Admiral Brandreth, Controller of the Navy, and Mr Campbell- Bannerman, MP, Secretary to the Admiralty, attended at Chatham Dockyard to receive depositions of the workmen who were asking for increased pay. The Shipwrights at Sheerness had petitioned for an increase of pay at this time on the grounds that since the introduction of composite ship building their work had become more onerous and responsible, and that their wages were not as high as in private yards. (The pay of a Yard shipwright was then 30s a week, and he would be entitled to a pension of 10s a week after twenty years' established service.)

Similarly in 1887 the Dockyard Draughtsmen petitioned the Royal Commission on Civil Establishments for a pay increase because:

*... their responsibilities had lately increased owing to the development of the scientific and theoretical principles of naval architecture and engineering, and the radical changes in the construction of modern warships and machinery.*

Later the business of hearing and discussing petitions with the men devolved on the Parliamentary and Financial Secretary. Thus 'Chatham News' of 13th August 1890 announced that the Financial Secretary of the Board of Admiralty would visit Chatham Dockyard on the afternoon of Friday and also on Saturday the 12 and 13th September next, with a view to enquiring into the statements made in the memorials, workmen on Day pay may have submitted on the subject of the circumstances and conditions of their employment, and to hear any representations which any of the workmen might, on behalf of their fellow workmen, desire to argue in support of their memorials.

In 1904 it was announced that the Lords of the Admiralty did not propose to visit

<sup>1</sup> Whilst Mr Otway was MP for Chatham the Dockyardmen were allowed to send their own delegation to speak to the Lords of the Admiralty at their Annual Visitation without the presence of Dockyard Officers.

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Chatham Dockyard that year to receive the petitions of the workmen. In future petitions were to be forwarded to Admiralty between the 1st and 15 of January each year.

Petitions might be submitted to Admiralty by individual workers or by classes of men; no distinction was made between trade unionists and non-trade unionists. Initially group requests were drawn up by shop floor meetings, but after 1883 trade associations began to organise many of the petitions. Later trade union officials like John Wilkie of the Amalgamated Shipwrights began to accompany the delegates meeting the official side in order to advise them. In 1894, there was a deputation to Admiralty from the Shipwrights of all Royal Yards requesting that they should be paid trade union rates as in private yards, less the appraisal value of the pension for established men. However, the 1906 list of petitions still showed a number of complaints from individual workers who were perhaps out of the main stream of the work force.

In 1914, Admiralty ruled that any individual petitioner had to submit all matters of personal character initially to the responsible local officers. In the event of his not being satisfied, appeal might be made to the Superintendent, and in the last resort the matter could be placed directly before the Board of Admiralty in a petition. If the Yard Officers interviewed the petitioner, he could be accompanied by a person chosen by the petitioner to assist him in stating or arguing his case. Similarly if the circumstances arose, the petitioner could be interviewed by the Financial Secretary either in London or in the Yard after the sending of the petition.

In regard to questions affecting the whole of the employees in the groups, Shipwrights, Fitters, etc, the various classes of work people at each Yard had to elect representatives, e.g., Chatham: Shipwrights, 3; Fitters, 3; Skilled Labourers and Labourers, 4; Boilermakers, 2; Clerical staff, 2; Drawing Office staff, 2; Storehouse staff, 2. After the forwarding of their petition the representatives from each class had to attend an interview in London with the Financial Secretary and Admiralty officers. The representatives were allowed to be accompanied by other persons nominated by them and not exceeding half the deputation. The expenses of the representatives were paid from public funds, none were to be paid who were not in the service of the Admiralty.

Deputations affecting individual classes of workmen were held, as hitherto, at interviews with Financial Secretary in the Yards. The deputation consisted of two representatives of each class, one of whom might be a nominee, who was not a Yard employee.

### **The Trade Union Movement in the Yard**

Trade Unions were illegal between 1800 and 1824, yet the association of workers or trade societies did not cease to exist; they were in effect Friendly Societies. In Rochester Museum there is a certificate of membership of the Associated Shipwrights Society:

This is to certify that James Rich Killick is a member of the	
Associated Shipwrights Society	
Given under our hand the 20th day of June 1806	
Signed: E W Campbell	Signed: Alex Wilkie
Branch Secretary	General Secretary.

The Amalgamated Society of Engineers, Machinists, Millwrights, Smiths and Pattern-makers was founded in 1851. Civil Service Trade Unions dated from 1850 when the postal workers began to organise. William Booth, their leader, was suspended in 1866 for his work as leader of the Unions.

In September 1883, the Shipwrights of Sheerness formed a branch of the Ship  
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Construction Society, a rival organisation to the Associated Shipwrights Society. It was claimed that the new group was formed for the intellectual,<sup>1</sup> moral and social improvement of Shipwrights, and was not merely a trade association for obtaining increases of wages.

In the 1890's there were a number of trade associations in the Yard: Shipwrights Constructive Association (Chatham & Sheerness), Associated Society of Shipwrights, Shipwrights of the London & Yarmouth Provident Union, Carpenters' & Joiners' Society, Hand Drillers' Society, Iron Caulkers' Society, Painters' Society, Plumbers' Society, Riggers' Society, Dockyard Labourers' Protection League.

'Chatham News' of 1 February 1896 reported the first annual Dinner of the Associated Shipwrights Society. This society was very active in helping its members to find jobs in places like Hull when the reduction of the number of hired men took place in 1905. The Dockyard Labourers' Protection League, was led by Mr Lewington, who from 1890 to 1894 was the Secretary of the Medway District Trades Council. This association gave support to the lower paid members of the Yard who later joined non-craft Unions such as the Transport & General Workers Union.

Trade Unionism as we know it today developed very slowly in the Royal Yards. Except in time of war or emergency a strike was ineffective and established men had too much to lose. After 1869, the proportion of established to hired men started to decline and the trade union movement started to grow. The trade unions offered advantages to the hired men if they were discharged from the Yard.

The workers in the Royal Yards found that the associations mentioned above were powerless in dealing with Admiralty and their members wanted to deal with wages and conditions of work rather than lectures, prizes and charitable benefits. The trade unions which superseded the Associations were, after a protracted struggle, officially sanctioned in 1892 by the Liberals. Many Dockyard Shipwrights joined the Amalgamated Society of Shipwrights organised by John Wilkie.

Although men were allowed to join trade unions, their complete recognition by Admiralty was a protracted process; union officials were not initially recognised as representatives of the men unless they were employed in the Yard. 'Chatham News' of 12 February 1898 reported anti-union activity by Admiralty. Four trade union officials were discharged from Portsmouth Yard after a meeting at the Unicorn Gate on a Saturday night; among them was R Gould, a Portsmouth Shipwright. Admiralty refused to reinstate him and Mr Goschen declined to see the Trade Union Congress Parliamentary Committee about the matter. At the beginning of this century there were reports of fights between the union members of the Factory and the non-union members, the 'blacklegs.'

In 1906, the Amalgamated Society of Shipwrights sponsored a Parliamentary Labour candidate at Chatham, John Jenkins. He was elected but lost his seat in 1910; perhaps the Dockyardmen expected too much from him.<sup>2</sup>

By 1910 the Chatham Dockyardmen claimed the support of the trade unions and labour members of Parliament in dealing with Admiralty, whilst electing in their own seat middle-class representatives of the Conservative party. In the last part of the 19th century

1 In 1884, the Chatham Dockyard Ship Construction Lecture was delivered in the Chatham Lecture Hall by Chief Constructor Robinson (retired) on 'The early history of the Art & Science of Naval Architecture.' He reminded his audience that the father of John Elder who owned the shipbuilding yard in Glasgow, later the Fairfield Company, had worked in Chatham Yard.

2 Jenkins was also given lower-deck support, but the Labour Party were not interested in naval matters and their habit of calling reduction in naval spending appeared as a threat to those employed by Admiralty.

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the Dockyardmen considered the Liberal Ministries responsible for the economies practised which led to dismissals from the Yard and after 1874, with few exceptions, Conservative MP's have represented Chatham and Gillingham until the end of the Second World War.

### MP's for Chatham

	1900	Sir H Davies	C (unopposed)
	1906	J H Jenkins	Lab
Jan	1910	G F Hohler	C
Dec	1910	G F Hohler	C

### MP's for Rochester & Chatham

	1918- 1922	J Moore-Brabazon	C
	1923- 1924)		
	1924- 1929)	Sir P Goff	C
	1929	S F Markham	Lab (Nat)
	1931	Sir P Goff	C
	1935	L F Plugge	C
	1945	A G Bottomley	Lab

### MP's for Gillingham

	1918- 1922	G F Hohler	C
	1923- 1924		
	1929- 1931	Sir R V Gower	C
	1935		
	1945	J Binns	Lab

### **Life outside the Yard**

Up to the latter half of the 19th century, the Dockyardmen endeavoured to live as close to the Yard as possible since they had to walk to work. Some of the Officers resided in the Yard and perhaps others rode on horseback to their office. From their inventories and wills we know that some of them possessed a horse.

Thus the men lived in Old Brompton, the Smithfield Bank, in the rear of the houses and shops of Chatham High Street, the Best Estate, east of Clover Street, Chatham, Ordnance Street and Old Gillingham. As the population grew with the extension of the Yard in the latter half of the 19th century there had to be housing developments further from the Yard. After the Napoleonic War, the restriction on building along the line of fire of Chatham Lines was gradually lifted and by the middle of the 19th century there was extensive building in and behind what is now Mill Road and Marlborough Road, thus creating New Brompton. Again brickworks were developed in Luton and houses were built in that area.

Travel became easier when the improvements of the road system were made after the latter half of the 18th century. An Act, 9 Geo III, cap 32 enabled Commissioners to make a new road from Star Lane in Eastgate, Rochester to Chatham Hill. The money was raised from rates and toll gates were erected at Angel Comer, Strood, and near Church Street, Chatham. These toll gates were taken down in the 1870's. Acts, 12 Geo III, Cap 18, and 16 Geo III cap 58, were passed to pave and improve the streets of Chatham; the cost to be met by rates. Military Road, Chatham, was built by the Board of Ordnance in 1804. It was a private road with gates at the High Street end. In 1854 permission was



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given to open Military Road to the public; it was closed one day a year to signify private ownership. The road was transferred to the ownership of the Local Board of Health in 1875.

The Dockyard worker from Rochester would have journeyed to the Yard along Landwall (now Globe Lane) up Chatham Hill (now Dock Hill), and along the road constructed in 1620. In 1660, John Taylor, the Master Shipwright at Chatham, reported that the 'landwall leading to the State's Dock at Chatham which was erected at public charge also the wharfing is much decayed, there is enough old timber to repair it, value £20, workmanship £16.' Between the Land Wall and the river was the Mill pond, and on the other side was marshy ground associated with the Brook. The Commissioners of the Navy were directed to repair the wharfing and to place 'two posts and a chain on the same to keep it entirely for the State's use.' In the Estimates of 1694 and 1697 appeared the item: 'Keeper of the Key of Landwall, £1.' In 1712 Richard Burton, locksmith, claimed 15s for repairing the 'lock at ye barr of ye Landwall and making a new key to do.'

In his History of Kent, dated 1798, Hasted wrote:

*Over a long broad road or causeway separately railed along for the convenience of carriages, as well as foot passengers, called the Land Wall, built and repaired at the charge of the Government, leading from the High Street at a distance of about a quarter of a mile close to the river is the Old Dock*

About 1815 the Parish authorities consented to repair the portion of the road formerly maintained by the Admiralty extending from the Gun Wharf near Dark Lane to the 'Queen's Head' public house just past St Mary's Church, Chatham, at the corner of Red Cat Lane. This road included the old Land Wall.

The Parish authority started to maintain the road from the 'Queen's Head' to the Team Stables at the corner of Westcourt Street, Brompton, after 1833. This was the road from the Church to the Dockyard built in 1620.

In 1908, Auger & Co started to cut away a corner of the bank nearly opposite St Mary's Church, Chatham, to straighten out the road to the Town Hall.

Living conditions in the homes of the Dockyard workers gradually improved. Instead of complete dependence on wells and rain water, a piped water supply became available. The Chatham & District Water Company was started in 1856; the first works were at Old Brompton, but operations in the Yard depleted the supply there and new works were constructed at Luton. The water supply to the area of the Brook, Chatham, was speeded up owing to an outbreak of cholera in 1866. The incidence of cholera was so bad that the area was put out of bounds to the troops.

The Public Health Act of 1875 stipulated the collection of house refuse, and the contents of ash pits. By 1887 house refuse was collected and cess pits emptied in Chatham and Gillingham.

The drainage of Chatham was originally performed by a stream known as the Brook. By the early 19th century the Brook, serving as the Town ditch, must have been in a shocking state, and its condition was discussed annually by the Court Leet. After the formation of the local Board of Health in 1849 sewers were laid to carry out surface water and some sewage from parts of Chatham into the Medway at Holbom Wharf. Almost a hundred years elapsed before the proper disposal of the sewage of Chatham was carried out; there were still houses in Chatham provided with cess pits in the 1980's. There was criticism of the drainage system of New Brompton in the 1870's, and at the time there were outbreaks of cholera and smallpox in Old Brompton. Main drainage was not begun in Gillingham until 1893.

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The lavatories in some parts of the Dockyard were quite primitive until well into the 20th century. The excreta was carried away by water flowing under the toilet seats. Apprentices used to tell of the trick of floating a candle under the seats to the consternation of the unfortunate sitter.

The local Gas works started in 1818, but most homes had to wait until the next century for a supply of electricity. St John's Church Chatham, was lit with gas in 1821, and electric lighting was installed in 1905.

In 1862 a Gillingham Vestry Meeting resolved that 'roads & streets of New Brompton shall henceforth be lighted by gas.' It was not long before residents and traders were complaining that the lighting was inadequate and of poor quality. In 1893 when Chatham was already enjoying the benefits of electric lighting, the New Brompton traders claimed that customers were being lured away from the High Street to the brighter shopping facilities in Chatham. Three years later electric lighting was introduced into the area by a Mr W Jasper and the New Brompton works of the Chatham, Rochester & District Electric Light Company, which was later taken over by the Council in 1902.

In the latter part of the 19th century a workman's house would cost about £100 and the rent of it a few shillings a week. A higher class residence, No 2 Ordnance Terrace, Chatham with 7 rooms and a kitchen and gas and water laid on, was offered about 1870 at £26 per year. In 1906, Holcombe, later a school, was offered for sale for £8,500. In the 1880's a number of building plots were offered for sale:

1884, Building Plots at Luton. Land facing Luton Road divided into 86 plots each of 15 feet frontage and with varying depths from 95 feet to 100 feet.
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It was all disposed of at prices ranging from £45 to £50 a plot. The lots at the rear went for lower figures.

Many of the old houses pulled down in recent years had rooms with distempered walls except for the parlour which was often papered. One wonders what happened to all the furniture which was made by skilled workers in wood of the Dockyard when 'chips' were readily available.

Before the advent of the railways, travel for those who would afford it was by horse or by coach. The cost of travel in 1696 is shown by a claim of an increase of travelling allowance for the Messenger attached to the Yard. The allowances were: Journey to London 5s; for horse hire to London, 8s; for horse hire to Gravesend, 2s (the remainder of the journey to London would be covered by boat). An idea of coach travel is provided by the claim submitted for travelling expenses incurred by William Beare, Master Sailmaker, in attending the Navy Board in London in 1813.<sup>1</sup>

Went the 14 and returned the 16th February	
Coach hire from Chatham to London	16s
Coachman	1s
Coach hire from London to Chatham	15s
Coachman	<u>1s</u>
	£1.13s

The railways system was in operation by 1860 and the Medway Towns were soon linked with one another and with London, Maidstone, and the North Kent coast towns. However, the cost of normal rail travel, excluding workman's fares or excursions was

<sup>1</sup> Stage coach c 1830 Portsmouth - London 21s inside; 12 6d outside  
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not cheap. In 1877, the fare from Chatham to London and return was 4s 8d, a third of a week's wages for a labourer. By one of the fast trains, the journey from Chatham to Victoria took about an hour. After 1877, New Brompton and Chatham had rail access to Charing Cross as well as Victoria Station. (Toomer Trains connecting Chatham, LC & D Ry Co, and Strood, S E Ry Co, were introduced after successful proceedings against the companies led by the Mayor of Rochester, Alderman Toomer.)

From about the middle of the 19th century local transport was provided by horse buses. There were services from New Brompton to Chatham and to Strood, and from Luton to Strood. The firm of 'Pilchers' which ran some horse buses was still in existence, c.1987. Motor buses took over from the horse buses and by 1921 the Maidstone & District Bus Co was the largest operator in the area.

At the beginning of the 20th century electric trams, the Chatham & District Light Railway, were provided for the Medway Towns. Public services were started in 1902 and within a few years trams were running over routes which extended from Rainham to Strood. Workers in the Dockyard were carried to Main Gate, Pembroke Gate, and to the 'Shalders Arms' near the Island Gate of Chatham Yard.

The fares on the trams were not to exceed 1d for the first mile and a 1/2d for each subsequent mile. Up to the closure of the system in 1930, halfpenny workman's fares were available on certain trams before 6.30 am, at midday, and at out-muster in the evening.

In October 1902 a tram went out of control in Westcourt Street, Old Brompton and overturned. There were over 60 men in the tram, mainly Dockyardmen; 54 were injured, 4 fatally. As a result the route was changed to Middle Street. In 1908 a car ran away down Middle Street and crashed into the Dockyard wall, fortunately without seriously injuring anyone.<sup>1</sup>

In 1930 the trams were replaced by a motor bus service run by the Chatham & District Traction Company. In 1955 this company wound up the service which was integrated with that of the Maidstone & District Motor Services Limited.

Cycling became popular from the last decade of the 19th century; a large number of Dockyard men cycled to and from work.

### Leisure Activities

Little has been written about such activities of the Dockyardmen in the 18th and early 19th century. Many of the craftsmen would have had money to spend for they were relatively highly paid in the 18th century when the wars kept the Dockyard so busy.

An extract giving some details of the lighter side of the life of the Shipwright is quoted [The Kentish Garland, p 615 Vol II Ed J DE Vaynes, 1881]:

*On the Coal-hole Club at the George Ale-house, Chatham, by Thomas Austen, 1754*

*Men of exhaustless Wit and Springly Glee, Full fraught with Laughter and in Repartee. Their talk is Cricketing, of Tumults, Swords, New Laws, of next Pay-Days and Navy Boards.*

*They tell you each in Turn his silly joke, While with their Pipes they fill the room with Smoke.*

*They tell of Hares they caught, tho quick as Light; And Boast that they never did, all Night.*

<sup>1</sup> One of the most terrible accidents known to the people of the Medway Towns occurred near the Dockyard wall on the evening of 4th December 1951. Boys of the local Royal Marine Cadet Force were marching down Dock Road to the RN Barracks when they were struck by a bus. Of the 52 boys, 24 were killed.

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There were travelling theatre groups who performed in inns and yards, travelling showmen, fairs, cockfighting, bear baiting; entertainment for all tastes.

In the 19th century there seemed to have been a more regimented and disciplined body of workmen in the Dockyards; perhaps the aftermath of Establishment. Except when working overtime the men had many leisure hours. During the winter months they worked during the hours of daylight and left the Yard between 4 and 5 pm; by the last quarter of the 19th century work stopped in the Yard on Saturdays at 2 pm.

There were a great number of public houses in the Medway Towns from the 18th century. By 1754, James Best, the Chatham Brewer, was distributing beer to something like 95 inns, taverns and alehouses in Chatham, Rochester, Gillingham, Strood, Frindsbury and even to Sheerness. In Chatham alone there were 46 houses on the books and since there were at least 4 other brewers in the town supplying many more, there seems to have been an astonishingly high number of public houses for a town of between 7,000 and 8,000 inhabitants. It must be remembered that Chatham was a garrison town with Royal Marines and Sailors.

Another reason for the large number of licensed premises was the government strategy to reduce gin drinking. When William & Mary arrived from the Netherlands, the Court brought Jenever or Geneva to London as a fashionable drink. The name was shortened to gin and its consumption became a national problem. To eliminate the disastrous effect of gin drinking an Act was passed in 1830 which encouraged the drinking of beer. Up to 1869 anyone was permitted to open a beerhouse provided they paid the Excise Licence of two guineas. After that date a Justices' Licence was required. In 1872 there was excitement in the Medway Towns over the shortening of the licensing hours; on weekdays closing time was 11 pm and Sunday hours were 12.30 to 2.30 pm and from 6 to 10 pm.

There were many clubs formed in the Medway Towns. A typical example was the Chatham Working Men's Club and Institute, which was originally housed in premises in Nelson Road, Chatham. This club was opened in 1880, and was burnt down 17 years later. It was reconstructed and lasted without further incident until 1969 when the site was wanted for Chatham's redevelopment scheme. The club then moved to the original St Mary's Rectory on the New Road, Chatham. Another example was the Constitutional Club in Military Road which was erected in 1898 and opened to members on 3rd May 1899. It had a reading room, study room and billiards room. In the rear was the Queen's Hall capable of holding about 450 people. The premises were demolished owing to the redevelopment scheme.

For those who liked to drink at home, there was a choice of Francis's family ales: 1s, 1s 2d and 1s 6d a gallon; or 12 pints of Whitbread's London Stout for 3s 6d.

There were a number of music halls and theatres built in the 19th century. The famous Chatham Empire had its origin in a large assembly room in the Imperial Hotel in which entertainment was provided from 1835. On the site of this hotel was built, in 1890, the Gaiety Music Hall which was pulled down in 1911 and replaced by the Chatham Empire. The facade of the former Gaiety was preserved, but on the east side was built a superb entrance crowned by canopy and dome. There were 2,500 seats. However by the 1930's the cinema was proving a greater attraction than the variety stage and the Empire took to showing films. At the rear of the Empire was built the Picture House opened in 1917. This cinema specialised in showing comedy, cartoon and cowboy films. Many children enjoyed the Saturday morning matinees for a few pence each. The Chatham Empire and the Picture House were closed in the 1960's.

In 1850 Dan Barnard took over the 'Granby Head' which had a skittle alley. From this he formed the Railway Tavern and Hall of Varieties. The premises were burnt down in 1885

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and were rebuilt by the Trustees of Watts Charities and opened in the following year as Barnard's New Palace of Varieties. This seated 1100 in the pit, circle, balcony, boxes and promenade; all served by refreshment bars. The price of admission ranged from 2d upwards. This theatre was burnt down in 1934 and its site occupied by Lyons' Tea Shop and Dunn's hat shop.

The Barnards opened the Theatre Royal on the opposite side of the road in 1899. It survived being burnt down soon after its opening. It was considered to be superior to the Palace of Varieties and ran plays and musicals such as 'The Dollar Princess,' the 'Arcadians' and the 'Belle of New York.' Prices ranged from 4d to one guinea. This theatre was closed in 1955.

On Star Hill, Rochester, was the Lyceum Theatre, later the Theatre Royal, in premises built in 1791 by Sarah Baker. It opened in 1792 with Handel's opera, 'Acis and Galatea.' From 1884 it was used as a conservative club.

In Military Road, Chatham on the site of the 'Two Brothers' public house, demolished in 1960, was the Royal Alhambra Music Hall.

There was also the Lecture Hall and Opera House in Chatham. Here audiences were entertained by lectures, readings, music and waxwork exhibitions.<sup>1</sup>

For the keen music lover the London Philharmonic Orchestra used to play at intervals in the Central Hall, Chatham, which was opened in 1906.

The services had their own theatres: The Royal Marines, the Globe theatre built in 1879; and the Army, the Garrison Theatre opened in 1872.

The Casino in Rochester was a well known centre of entertainment. It was built in 1908 and named the Palais de Danse. In the early 1920's an entrepreneur, Lloyd Forsyth, took it over changing the name to the Casino. Then it became a venue for dancing, roller skating, boxing and wrestling.

After the first decade of the 20th century, we have the opening of cinemas in the Medway Towns. In Chatham, the 'Cinema de Luxe' opened in 1910, the 'National Electric Cinema' in 1912, Chatham Empire Picture Palace in 1917. The Invicta Cinema, opened in 1919, was later used as a Bingo hall. In the 1930's three new cinemas were opened in Chatham: the 'Regent',<sup>2</sup> the 'Ritz' and the 'Gaumont Palace.' In Gillingham, the 'Invicta Picture Palace' was opened in 1914. Before the last war there were the 'Plaza' in Duncan Road opened in 1932, the 'Embassy Cinema' in Gardiner Street and the 'Grand Cinema' in Skinner Street among others.

Chatham Public Library and Museum was opened in 1903 at a cost of £5,000, towards which Carnegie gave £4,500.

An outdoor attraction was the Rosherville Gardens at Gravesend. There were outings by horse drawn vehicles to local centres: 'The Bear' at West Mailing, Boxley, Cobham, the 'Hook & Hatchet' at Walderslade, and the 'Star' Inn. There were train services to the east, west and south of the Medway Towns after the 1860's. Many spent their free time on the beach at Upnor, and for others with more money to spend there were trips further down the river and visits to the North Kent coast resorts by paddle steamer or train. For those unable to afford to travel far, Rochester Castle Gardens, leased from the Earl of Jersey, were opened in 1872 to the public.

Long before the start of the First World War, sports were held by the Chatham Royal Dockyard Sports Association on St Mary's Island. Lord Rochester presented a tug-of-war shield to the Dockyard for competition at the annual sports. The contestants included men from the main Departments; the Smithery won the tug-of-war event for many years.

1 See Apprentices in chapter 4.

2 Replacing the Imperial Picture Palace

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The Civil Service Sports Council was founded in 1921 to encourage all forms of amateur sport and recreation in the Civil Service. In 1933, the CS Sports Association (Chatham Branch) was formed and a lease of their ground at Watling Street, Gillingham, for 21 years was granted by the War Department. There were further extensions to the lease and to the accommodation.

In the last two decades of the 19th century two football clubs were formed which are still extant: New Brompton, now Gillingham Football Club, and Chatham Football Club. In the season 1888-9 Chatham FC reached the quarter final of the FA Cup but were beaten 10-1 by West Bromwich Albion in a game played on the Great Lines. One result of this match was that all matches in the FA Cup had to be played on enclosed grounds and Chatham FC moved to its ground in Maidstone Road, Chatham.

In 1896 Gillingham Cruising Club was founded and many of its members were Dockyardmen. There were athletic and cycling clubs in the district. Cricket has been played in Kent since the middle of the 18th century and grew in popularity during the second quarter of the 19th century.

### **Growth of Co-operative and Friendly Societies**

One activity of Dockyardmen of which little is known, is the Co-operative movement. According to G D H Cole in his book 'A Century of Co-operation' workers in the Dockyards at Woolwich and Chatham operated com mills on a co-operative basis. In 1760 the Woolwich mill was burnt down and local bakers were accused of arson. There were mills in the Medway Towns, but which one was operated by the Dockyardmen is not known. The workers at Portsmouth Yard formed one of the earliest Co-operative Societies and built a mill and bakehouse about 1800 to supply its members with bread.

From 'Chatham News' of September 8, 1860:

#### *Chatham Co-operative Society*

*This flourishing society held its quarterly meeting on Wednesday at the School room on the Brook, kindly lent for the occasion by the Rev S Arnott. The unparalleled success of this Society may be gleaned from the following facts: two years ago it was started with about forty members, and as many pounds; now it numbers between 300 and 400 members, and its receipts last quarter amounted to £2,000. The profits were divided, half-yearly, among the members*

The Co-operative Society of Gillingham started in 1867 when wages were low and bread dear. Fifty members took up 10s shares and a baker's shop was started in Saxton Street and was run by a former Dockyard worker. Other shops of the New Brompton Co-operative Society were then opened for the sale of groceries, etc. Associated with this Society were social, educational and political activities and the annual dividend which helped the poorer families to buy the more expensive items such as footwear.<sup>1</sup>

Until the passing of the National Insurance Act of 1911, workmen who were sick and unemployed were not paid any benefit by the government. Sick and Provident clubs were developed by private enterprise to meet this social deficiency. It used to be said in joke that the starting of the five day week met with the disapproval of some men, for Saturday mornings was the usual time for collecting the subscriptions of such clubs.

Many other voluntary societies existed for relatively short periods in the Dockyard.

'Chatham News' of 13 January 1872, reported that the Royal Dockyard (Chatham) Widows' Pension Society was established in 1815 and had been duly enrolled under the Friendly Societies' Act. By 1872, it had only three surviving members and fifteen

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annuitants; it had a capital sum of £2,070 invested with the Commissioners for the Reduction of the National Debt. The paper reported in August of the same year that the surviving annuitants and members had signed an agreement for the dissolution of this society; the funds amounting to £2,094 were being distributed. It was noted that the Society, when founded in 1815, had originally embraced only the Superior Officers of the Yard and that about 1832 other respectable inhabitants were admitted as members. It was estimated that each widow, after the dissolution, would receive, instead of a yearly payment of £6, a capital sum on average of £123.

'Chatham News' of 29 January 1876 had an account of the Royal Dockyard Death & Burial Society which was founded in 1865. Members paid on joining 4d; 3d on the death of a member; and 2d a year to his collector. Any person between 14 and 49 employed in the Yard was eligible for membership. There were nearly 900 members and since April

1875 all claimants had received £10 18s each; presumably the threepences collected were handed over to the widow. The Society collapsed in 1892.

The Sailmakers had a Death Society formed in 1843. By the payment of a penny a week for at least 20 weeks a member received £5 on the death of his wife. Widows received the same amount on the death of their husbands. There were 240 members. By 1871 the amount received was reduced to £4 and by 1866 to £3.

The families of the poorer paid men of the Yard could obtain some medical attention from various charitable organisations. One was the Rochester and Chatham and Strood Dispensary, St Margaret's Banks, Rochester, established in 1831. Subscribers of a half guinea were allowed to recommend two patients a year; no patient was normally under treatment for more than two months. The Society had a patron, vice-patron, treasurer, secretary and fifteen committee men. Originally there were two physicians, two surgeons and a dispenser.

The tradition of passing the hat round in cases of individual distress was frequently reported in the local paper. During the building of the Achilles a man named Savage was 'struck near the heart with an iron plate' and died leaving a widow with six children. The man had only three years' service in the Yard and no pension rights. The widow was ultimately given a death grant of £10, but his workmates had already taken up a collection to relieve her immediate distress.

### **Conscription during the First and Second World Wars**

Conscription for service with the armed forces was introduced in 1916 during the First World War, but many of the Yard employees were exempt from call-up. An example of the procedure is given as follows:

*Frederick John Bloomfield, Fitter and Turner, registered under the National Registration Act 1915.*

*Recruiting Office, 16th December 1915.*

*Frederick J Bloomfield, 25 Stafford Street, Gillingham, Kent, Group 39.*

*The above man has been attested and transferred to the Army Reserve until required for service.*

*F J Bloomfield is employed in HM Dockyard, Chatham. In the opinion of the Lords Commissioners of the Admiralty so long as he is so employed he is doing his duty for his King and Country equally with those who have joined HNI Forces for active service afloat or ashore.*

*Charles E Anson. Admiral Superintendent.*

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*Certificate of Exemption issued by Military Authorities on grounds that the holder is marked in Military Register as not to be called up for service with the colours so long as the certificate is in force.*

A round blue and gilt badge <sup>1</sup> was issued to exempted Dockyard workers bearing the words 'On War Service.'

During the First World War there were shortages of food and prices rose sharply. This led to rationing of food in the latter part of the war. The production of food from allotments was encouraged and this, in turn, led to the further development of small- holdings on the outskirts of the Medway Towns such as Walderslade and Hempstead.

Also in short supply at this period were beer and spirits. Restrictions were placed on the licensing trade; opening hours were shortened and the practice of 'treating' was forbidden.

Conscription was again introduced during the Second World War. Most of the men in the Yard were in reserved occupations, but some (other than Shipwrights and Fitters) such as sailmakers and painters, were called up for service with the armed forces.

Many who remained in the Yard joined the Home Guard.<sup>2</sup> Others were engaged in activities related to Air Raid precautions such as fire-watching, first aid, wardens, etc.

### **Industrial Relations after the First World War**

During the Great War the government agreed to refer important disputes to arbitration provided there was no strike action. The Committee of Production set up in 1915 was the first of the independent authorities now represented by the Industrial Court. In claims before these bodies the Trade Unions who commanded the services of experienced negotiators had a great advantage over unorganised workmen.

After this War, Admiralty recognised that all questions affecting the pay and conditions of industrial work people in the Service were proper subjects for discussion with the appropriate Trade Union representatives of the work people. 'Whitleyism' <sup>3</sup>- the basis of staff management relations in the Civil Service was put into practice. Two industrial Whitley Councils comprising official and employees' sides were set up: The Admiralty Industrial Council which first met on 10 October 1919 and the Shipbuilding Trades' Joint Council. The former dealt with the general conditions of service of Admiralty industrial workers and the latter, with rates of pay and trade matters. The two Councils met at Admiralty normally six times a year.

In each Yard there were created Yard Committees of the Admiralty Industrial Council and also Departmental and Shop Whitley Committees: the Yard Committees met quarterly.

The representation in the Councils and the local Committees was confined to the nominees of the members of the Unions represented in the Establishment. Shop stewards were elected by their Trade Unions who informed the Department of the names of those selected. The shop stewards elected their own representatives known as convenors.

The Yard, Department and Shop Committees were chaired by the Superintendent, the Head of the Department and the Foremen of the Shop, Ship or Store, respectively. The staff side selected the Vice-Chairman. Those local Committees were empowered to

1 Made by Vaughtons Ltd, Birmingham

2 See chapter 15, Internal Security

3 Mr J H Whitley, Speaker of the House of Commons, was chairman of the Committee set up in 1916 to examine relations in industry and with a view to solving differences between employer and employees amicably.



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discuss general questions only, not wages. There were also a number of sub-committees of the Yard Committees: the Joint Production committee chaired by the General Manager; Accident Prevention; Traffic and Transport; Apprentices' Advisory and Canteen Advisory Committees, etc.

Whitley machinery existed at both national and local levels for the non-industrial staffs in Admiralty service. The Admiralty Administrative Whitley Council was a General Purpose Committee at national level and the District Whitley Committee and the Office Whitley Committee operated in each Yard.

Workmen were accepted for employment in the Yard whether or not they were trade union members. A list of unions recognised in 1965 by the Ministry of Defence (Navy) as representing employees in the Yard included:

Amalgamated Engineering Union (previously termed Amalgamated Society of Engineers)  
Electrical Trades Union  
Amalgamated Society of Boilermakers, Shipwrights, Blacksmiths and Structural Workers.  
Amalgamated Society of Woodworkers  
Transport and General Workers' Union  
Municipal and General Workers' Union, etc.

Until 1948 there were four organisations which represented the Drawing Office staffs in the civil Service, including the Admiralty Draughtsmen's Association formed in 1906. This Association was a member of the Federation of Civil Service Professional and Technical Staffs, known later as the Society of Technical Civil Servants. In 1969 the Society of Technical Civil Servants merged with the Institution of Professional Civil Servants to which most of the Technical non-industrial employees belonged, including the RCNC and the Dockyard Technical College lecturers.

Industrial relations in the Yard were good. The two national strikes of 1926 and 1957 did not affect the Yard. The Trades Disputes Act of 1927 specifically forbade Civil Servants to affiliate to the TUC or to a political party. There was no law forbidding Civil Servants to strike partly because of their special sense of responsibility to their employment and partly because they had an agreed system of compulsory arbitration. Striking was regarded as a disciplinary offence on the part of a Civil Servant; where strikes occurred in the Service, however, no action was taken except to withhold pay for the period of the strike. The repeal of the 1927 Act in 1947 restored their freedom.

On 5 February 1961 pickets were posted outside the Chatham Yard gates and some workmen failed to report for work when a token strike took place in nearly all the factories in the Medway Towns. A strike occurred at Chatham Yard on Friday, 8th August 1969, when a mass walk-out was staged to protest against delayed pay increases. The workers were addressed by Trade Union Officials. They had their records endorsed:  
'Absent without leave and on strike;' they lost pay.

### Whitley Structure- Industrial Staff (Admiralty only)

Joint Co-ordinating Committee (for all government industrial establishments)  
Shipbuilding Trades Joint Council (Wages & trade Matters in the Royal Dockyards)  
Admiralty Industrial Council (Welfare)  
Yard Committee  
Department Whitley Committees  
Shop Committees

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### Shipbuilding Trades Joint Council

#### *Official side*

Admiralty	7
Air Ministry	1
Office of Works	1
War Office	1
Treasury	1
Ministry of Labour	1

#### *Staff side*

17 representatives from Unions  
representing men in the Service

### Admiralty Industrial Council

#### *Official side*

Admiralty	8
Ministry of Labour	1

#### *Staff side*

15 representatives from Unions  
representing men in the Service.

(These numbers were modified when the Navy Department replaced Admiralty)

#### Yard Committee:

Management side: Superintendent of the Yard, Heads of Department,  
Welfare Officers

Staff side: Representatives of trade unions answering for each  
Department

The Yard Committee dealt with matters outside the scope of the Departmental Committees and the problems submitted by them.

#### Departmental Committees:

Management side: Head of Department and Officers

Staff side: Representatives of trade unions answering for each shop

Each Departmental Committee dealt with lack of essential labour, shortage of materials, leave and delays in the payment of incentives, together with items submitted by the various Shop Committees.

#### Shop Committees:

Management side: Foremen and officers

Staff side: At least one representative or shop steward to each trade union  
having members in the Shop.

The Shop Committee dealt with shop conditions, welfare, hygiene, amenities, new methods, proposals for improvement of layout etc.

Where an individual workman wished to draw attention to a grievance or problem, he could do it through the usual official channel or report it to his trade union representative on the committee concerned. This official would endeavour to obtain a settlement, but failing that he would inform the Secretary of the Employee's side of the Shop Committee. The Secretary would then endeavour to obtain a settlement with the officer in charge of the Shop. Failing that, the matter came before the Shop Committee. In the event of the matter not being settled by the Shop Committee, it would be reported to the Departmental Committee and failing settlement there to the Yard Committee.

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### Wages of Dockyardmen from 1914 to 1970

During the period from 1914 to 1920 inflation grew very fast. Taking the value of the £ in 1870 as 20 shillings, its value in 1914 was about 22s, but by 1920 its value was just above 9s. The price of a gallon of bread in 1904 was 10d, and in 1920, 2s 8d.

The index of prices, goods and services (1933 = 100)

1920	177	1926	123	1937	110
1921	161	1930	112	1946	187
1922	131	1933	100	1957	310

During the First World War there were wage increases for Dockyardmen, but in the main wages were adjusted to meet the rise in the cost of living by War bonuses. The Trades Societies made an application for wage increases for their members to the Committee of Production. The awards which came into effect from July 1916 were: 3s a week granted to men and 1s a week to apprentices and boys.

The Dockyard Shipwrights received all the bonus additions to wages that were granted to men in private industry. In 1919 the basic rates for shipwrights and allied workers rose to 40s for hired men and 39s for established men. The War Bonus reached the maximum for these craftsmen in June 1920 when it was 39s 6d a week + 12½% of the amount and the basic wage. The standard weekly wages of a hired craftsman was then 41s + 39s 6d + 12½% of the total of 80s 6d, i.e., 90s 6d a week, compared with 38s at the beginning of the War. Civil Servants (NI) received War Bonuses varying with the cost of living.

To meet the demand for labour during this war, the dilution of labour was practised in the Yard. In 1916, as a temporary measure, men were entered who had served a short apprenticeship of not less than four years and who had otherwise had at least four years regular training in the trade of Shipwright, Fitter, etc, provided that they showed a fair degree of competence. These men were designated 'improvers' and the rate of wages was to be the same as Dockyard apprentices of the corresponding length of service. On completion of six year service at their trades, improvers could, if efficient, be eligible for transfer to Hired Mechanics.

During the War piece work was undertaken in the Departments. The official side questioned the validity of excess earnings over day, 40 to 50% of time working rate, and there was a tendency to cut piece work rates whenever men had to be paid highly excessive wages. As a result Payment by Results went increasingly out of favour with the men especially as the increases of wages and bonus during those years were mostly given on a time basis without corresponding increases of piece rates. Immediately after the war Payment by Results was largely abandoned since both men and management felt that more men would be employed during the slack times if the time system were used.

The Dockyardmen had worked hard during the War but they were always determined to get the maximum pay for their efforts. When the clocks were put forward during the week ending May 20/21 in 1916, some men employed on the night shift at Devonport protested at losing an hour's work and pay on Sunday morning. They were unable to convince the authorities that the hour 2 to 3 am had been worked.

After the war, economy was practised by discharging men and adopting a system of reduced working hours similar to that used in the period 1816-1837. This method was proposed in 1919, but the men at Chatham refused to accept it. It was, however, finally adopted in all Yards in January 1921.

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The working week was reduced from 47 to 40 hours with reduction in pay - the 47 hour week had been introduced in 1919. From Monday to Thursday work finished at 4.30 pm, on Friday at 3.30 pm, and Saturday morning work was stopped for the majority of men.

In August 1921 the working week was increased to 42 hours: in September the 47 hour week was resumed. (The normal 44 hour week was introduced in January 1937, the 42 hour week in July 1960 and the 40 hour week in September 1965 when work started at 7.30 am.

As well as the reduction in the number of working hours a series of reductions of the War Bonus began. In July 1921 there was a cut of 3s a week followed by another cut of 3s in September; then followed a reduction of 12<sup>1</sup>/<sub>2</sub>% in total wages made in three instalments between November 1921 and January 1922. In July 1922 a cut of 7s 6d was made and this was followed by cuts of 3s and 2s in August; a final cut of 4s was made in November 1922. The total weekly wages for the Hired Shipwright, including bonus, was then 58s as compared with 90s 6d two years earlier.

(A short History of Devonport Dockyard by George Dicker.)

This reduction, drastic as it may seem, was smaller than for men in private trade as Shipbuilders, a further 10s was taken from their wages. The reason was that this reduction did not apply to the Engineering Trades and it was difficult to differentiate between men employed in the Engineering and Constructive Departments.

In March 1924, following the example of private trade there was a transfer of 7s of the industrial War Bonus of 17s a week to the basic rate leaving the War Bonus at 10s a week. The bonus was increased from 10s to 14s in August 1924 and was cut by 2s from October 1931. The pay of the non-industrial staff was then subject to a cut of 10%, but the pay of the craftsman was considered to be on parity with those in private yards and no other cut was made in his wages.

The basic rate of the Hired Craftsman<sup>1</sup> remained at 48s a week until 1942, but the War Bonus, based on the cost of living index, was increased steadily from 12s in 1931 to 35s 6d in 1943.

In 1912 there were 6,000 in the Yard; during the First World War the number employed at Chatham rose from 9,000 to 12,000, a figure which included a number of women employees. After the War there was the usual large reduction of the work force. In the 1920's Pembroke Yard was closed, Rosyth reduced to a 'care and maintenance' condition, and Haul bowline, the Yard in Ireland, was handed over to the Irish

Government. The labour situation at Chatham was worsened by the transfer of established men from the yards which were closed. In the slump period around 1925, large numbers of workmen were discharged from Chatham Yard. The Shipwrights were particularly hard hit since this grade does not exist in private yards and many discharged shipwrights had great difficulty in securing employment. In the retrenchment period following the First World War the entries of apprentices were progressively reduced.

The abnormally large reduction of numbers at Chatham Yard were the result of the reduction of Naval Estimates owing to the financial stringency at the time and to the fierce wielding of the 'Geddes Axe' as far as the Royal Yards were concerned in the early 1920's.<sup>2</sup>

**HMS Kent** was launched in March 1926. Between that date and August 1928, 1,624 men were discharged from Chatham Yard including 391 Shipwrights, 323 Fitters and Turners, 51 Joiners, 27 Coppersmiths, 58 Boilermakers, 30 Smiths, 9 Founders,

1 From February 1948 no deduction for establishment was made from any employee's wages. The conditions for establishment were age over 21 and adult service of three years in a Government department. The men had to pay 1s 4d for their Insurance stamp.

2 In August 1921 the Cabinet appointed a Committee of National Expenditure under the chairmanship of Sir Eric Geddes to make recommendations to the Chancellor of the Exchequer for effecting forthwith all possible reductions in National Expenditure on Supply Services.

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13 Painters, 23 Patternmakers, 39 Drillers and 19 Writers.<sup>1</sup> In August 1929, there were 1,086 men on new construction and 5,581 on repair work in Chatham Yard; by 1933 the number in the Yard was of the order of 7,000.

After 1936 there was a large increase in Naval Estimates and the numbers in the Yard and the intake of apprentices increased. During the Second World War the numbers employed in the Yard rose to 13,000 of whom 2,000 were women. After the War the numbers again fell:

	Industrial	Non Industrial
1955	9,650	1,440
1960	10,200	1,570
1961	9,720	1,670
1962	9,580	1,610
1966	7,520	1,718

### General Manager PTSO

1967/8	7,550	1,300
1969	7,550	

By 1970 the labour force was of the order of 7,500 and the wages bill £7 million a year.

There were demands after the Second World War for the Royal Yards to undertake commercial production of items such as prefabricated houses and to contribute to the overseas development programme. The tremendous overheads and the lack of experience of commercial practice had meant that the Yards could not compete with private industry. One attempt, the production of dustbins, is now a part of Dockyard folk lore.

### Rates of Pay: after 1931

Weekly rates for Electrical Fitters		
	Basic Rate	War Bonus
Pre 1 Jul 1934	48s 0d	12s 0d
1 Jul 1934	48s 0d	13s 0d (based on cost of living figures 55% above July 1914)
5 Jul 1935	48s 0d	14s 0d
28 Jun 1936	48s 0d	15s 0d
27 Sep 1936	48s 0d	16s 0d
27 Dec 1936	48s 0d	17s 0d
22 Aug 1937	48s 0d	18s 6d
4 Nov 1937	48s 0d	20s 0d
5 Jun 1939	48s 0d	22s 0d
19 Feb 1940	48s 0d	27s 0d
26 Jan 1941	48s 0d	30s 6d (and 1s 6d ship repairing allowance)
14 Feb 1942	48s 0d	35s 6d
20 Mar 1943	68s 0d	21s 6d
11 May 1944	68s 0d	25s 6d
23 Apr 1945	72s 6d	25s 6d
26 Apr 1946	72s 6d	31s 6d
6 Jan 1947	68s 0d	36s 0d (44 hour, 5 day week)
1 Apr 1948	69s 0d	41s 0d
28 Apr 1950	69s 0d	41s 0d (merit pay preliminary; 22s max)

<sup>1</sup> In 1927 a proposal to discharge established men with their discharge notices marked 'Services not entirely satisfactory' was abandoned after protests from many bodies.

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### Rates of Pay after 1931 continued

Minimum pay (bonus and basic rate consolidated)			
1950	121s	0d	
1951	132s	0d	
1952	139s	4d	
1954	147s	10d	
1955	158s	10d	
1956	171s	4d	
1957	182s	4d	
1958	189s	8d	
1961	198s	2d	(42 hour week from 3 Jul 1960)
1962	204s	2d	

In 1950 an attempt at classification of workmen was made by granting merit pay for workmen and chargemen. The rates of pay in 1951 were:

	Basic Rate & Bonus
Fitters, etc	121s to 143s (maximum lead 22s)
Minor & titular trades	121s to 130s
Skilled Labourers, Sch IV	118s to 121s
Skilled Labourers, Sch 1	106s to 109s
Apprentice (first year)	33s 3d
Apprentice (fifth year)	77s 9d (if over 20, 95s 6d)
Labourers	103s
Yard Boys age 15	27s
Yard Boys age 19	77s 9d
Women (Ropery machinists)	76s to 83s

For hours worked outside the limit of the working day, the pay was 11/2 times the day rate; for Sundays, the pay was twice the rate.

There were additional allowances paid to the men: Ship Repairing allowance and the allowance paid to men for working in confined spaces and obnoxious conditions, 'unkers' or 'unkers-money,' i.e., dirt money, and height allowance, etc. In 1938 the allowance paid to chargemen for supervising Payment by Results work was abolished - this had been introduced prior to 1910 and was referred to as 'Blood Money' as the rate depended on the number of men booked for PBR. Other allowances were paid to mechanics on special duties; men employed in the Central Estimating Office in connection with the preparation of estimates and the negotiation of Job Contract; men employed as Recorders by the Expense Accounts Officer to supervise the clocks at In and Out-Muster. The latter had special duties in connection with the payment of workmen and were responsible for the returns of employment of all work people and of the output of those engaged in forms of Payment by Result. Allowances were paid to mechanics employed on clerical duties as Foremen's Writers and to those employed by the Surveyor of Stores for the examination of stores received from contractors and the valuation of materials of various kinds.

Until 1963, following government policy, the rates of pay for industrial employees of the Navy Department were regulated primarily by reference to rates agreed in the Engineering and Shipbuilding industries. The Trade Unions were dissatisfied by this approach since they knew that nationally negotiated rates were the minimum below which no employer should fall; in practice, most firms paid substantially over the minimum. From 1963 the government conceded that Dockyard rates should be assessed on the 'M' rate which was calculated every six months on the basis of the rates in 34 industries selected in agreement

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with the Trade Unions. This system was in force up to July 1967, and the scales are given below for men in the General Manager's Department of the Yard:

Chargemen of Trades	Basic M rate	277s	Leads	80s to 140s
Craftsmen	Basic M rate	277s	Leads	0s to 47s
Titular & Minor Trades	Basic M rate	277s	Leads	0s to 22s
Skilled Labourers	Basic M rate	225s	Leads	5s to 21s (5 schedules)
Basic Labourers	Basic M rate	225s		

Craft supplements were payable in addition: Founders, 11s; Patternmakers, 9s; Coppersmiths, 2s.

In October 1965 the National Board of Prices & Incomes were asked to consider whether the system for determining the rates of wages in the Industrial Civil Service, deriving from the Fair Wages Resolution, was in keeping with the White Paper on prices and incomes policy. Resulting from the proposals in NBPI Report No 18 which deprecated the existing wages policy in the Yards, and from extensive discussions with the Trade Unions, a new wages structure was introduced in July 1967.

Craftsmen, Grade	367s
Craftsmen, Grade II (including minor trades and titulars)	327s

The craft differentials of 11s, 9s and 2s were payable in addition. Chargemen of Craftsmen had been placed in a Departmental Grade. There were 10 bands in the wage scales of skilled labourers: Band 1 included messengers; Band 4, Foremen's Writers; and Band 10, Storehouse Assistants. For their Chargemen, there were 7 bands- Bands 10 to 16.

Skilled labourers: Band 1, 257s and increasing by 5s per band.

Chargemen of skilled labourers: Band 10, 302s and Band 16, 332s.

Ordinary labourers, 237s.

(Women's rates were 85% equivalent of male rate.)

This division of craftsmen into two main grades caused considerable dissatisfaction among the workers. In November 1968, a crowd of about one thousand men gathered outside the office of the Admiral Superintendent at Devonport to demonstrate over the selection of Grade I craftsmen.

In 1970 there were 21 Grade I and 844 Grade II Shipwrights at Devonport; at Chatham there were 22 Grade I and 354 Grade II Shipwrights; 136 Grade I and 309 Grade II Electrical Fitters; and 190 Grade I and 236 Grade II Engine Fitters.

In July 1968 there were further pay increases of 11s to craftsmen and smaller amounts to the others. The pay of the apprentices serving four years ranged from 87s 6d at 15, 279s at 20, and 318s 6d at 21 and over.

In July 1969 rates of pay were again increased; there was a reduction of the number of semi-skilled pay bands by about a half, and overtime rates in the Dockyard group were brought in line with others in the Industrial Civil Service, time and one-third instead of time and a half rates for the first two hours, Monday to Friday.

Craftsmen, Grade I 416s; Craftsmen, Grade II, 380s. The differentials paid to Craftsmen Grade II were unchanged.

Non-craft (male) Unskilled, 275s; Skilled, 292s to 372s.

Non-craft (female) Unskilled, 221s to 234s; semi-skilled, 85% of male rates.

The pay of apprentices serving four years ranged from 91s at 15, 289s at 20, and 330s at 21 and over.

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The National Board for Prices and Incomes presented another report on the pay of Industrial Civil Servants in April 1970. The Board pointed out that the weekly earnings for men in the service were low compared with all industry level of earnings. The report also recommended that the grade of Craftsman I should be superseded by a system of allowances for craftsmen relating to work involving special skills.

From July 1970 the pay scales were: Craftsmen, 435s

Non-craft, (male) unskilled, 316s; skilled, 329s to 459s (11 bands)

Non-craft (female) unskilled, 263s to 277s; semi skilled, 871;2% of male rates

The pay of apprentices serving four years ranged from 131s at 15, 370s at 20, 413s at 21 and over.

There were to be four main levels of allowances above the basic craft rate of £2, £3, £4 and £6 for work of varying degrees of skill.

The settlement also provided for bringing women's rates into line with the corresponding rates for men, and also for increasing the basic leave allowance from 2<sup>1</sup>/<sub>2</sub> weeks to 3.

The next decade saw further attempts such as the granting of productivity allowances to the workmen and reduction of overtime and payment by result work, which was expensive to administer owing to the large jobbing content of the work, to form and retain an efficient and contented labour force in a time of full employment and high inflation.

### **Payment by Results in the Royal Dockyards**

In 1749 the Earl of Sandwich, First Lord of the Admiralty, ordered the introduction of a piecework system for shipwrights. Piecework had been worked for many years in cases where the output was readily measured such as ropemaking. Owing to the opposition of management and men, the start of the type of working for Shipwrights was delayed for some 40 years. In 1775 a Scheme of Piecework Prices was devised and an attempt was made to persuade Shipwrights to accept this method of working. It met with a mixed reception and when war with America broke out the matter was dropped. When peace came in 1783, and the wartime earning suddenly decreased, Shipwrights and Caulkers petitioned to work piecework. By 1788 piecework was general on new construction (Taskwork) being based on a Scheme of Prices of various items of work making up the whole of the ship. By 1793 piecework became general on repair work (Jobwork). The Professional Officers estimated the value of the work done and upon which payment was made; out of such estimates a Scheme of Prices was gradually drawn up for Job work.

During the war with France the piecework schemes got out of hand because appropriate action was not taken to cope with the increased cost of living; unlimited overtime was used to augment earnings.

In the period 1804-1816 various Commissions made recommendations about piecework schemes, but when peace was declared in 1815, to avoid wholesale redundancy, the hours of working and piecework rates were reduced. In 1833, by Order in Council, Time Working was reverted to on grounds of economy.

In 1847 Day work and check measurement were tried in which a man's work was measured as if it had been on piecework. A deduction from a man's wages was made if his work failed to reach the required standard. During the Crimean War, Task & Job work was reintroduced, and this lasted until 1864. In general one can say that Time work became the rule until the First World War(1914-1918).

There was also the Premium System. The scheme was first considered in 1903, but it



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would appear to have been an experimental scheme and was worked only to a very limited extent until it was suspended in 1910.

By 1917 piecework was employed in the departments of the Yard. Just before the end of the war a meeting on piecework, etc, was held between the Financial Secretary to the Admiralty and various Trade Unions. A letter was then sent to the Yards stating:

*It has been decided where it is necessary to fix locally new piecework rates or rates for special jobs on piecework or other systems of payment by results, such rates are to be fixed in consultation with the officers or representatives of the management with representatives of the workmen concerned.*

In the previous century there had been complaints by the men of their lack of knowledge of piecework rates. In 1920 an Officer was appointed in each Professional Department to represent management in the capacity of a Costing Officer in connection with negotiation with employees' representatives.

In 1923 the report of the Admiralty Department Committee on 'Methods of Remuneration in relation to the output in HM Dockyards and Admiralty Establishments' was published. This report recommended schemes for piecework and Job Price Contract, which were considered by the Board of Admiralty. After subsequent discussions with the Trade Union Representatives on the Shipbuilding Joint Trades' Council, an agreed Memorandum, 'Payment by Results in HM Dockyards' was forwarded to the Superintendents of the Home Yards. It was upon this Memorandum, amended in details from time to time since 1924, that the incentive schemes of Payment by Results employed in the Professional Departments in the Royal Dockyards in general use until 1963, was based.

The principle of the incentive scheme introduced in 1924 was that it should be possible for a tradesman of average ability to earn not less than 33 $\frac{1}{3}$ % over his basic wages of 48s a week, whether engaged on piecework or Job Price Contract, i.e., 26% of his take-home pay of 62s a week (48s + 14s War Bonus). This percentage was later raised to 45% for JPC. Unfortunately pay increases were in the form of increased War Bonus until 1943, the basic rate remaining at 48s. This handicapped men working on Payment by Results, whose earnings were based on the basic rate.

The Central Estimating Office was established in 1926 when staff on costing and estimating duties were appointed.

In piecework, men were paid standard amounts per unit for items of work of a recurrent nature; manufacturing an article, painting an area, drilling a number of holes, welding a length of material, etc. The work was valued according to a Price List.<sup>1</sup> Although the work was priced for the individual items, men could work singly or in groups where the nature of the work necessitated several men working together, e.g., a riveting squad or a Smith and Hammerman. The work was measured for payment by the staff of the Expense Accounts Officer, later the Finance Manager. The responsibility for the quality of the work rested with the Chargeman.

Squadwork was a form of collective piecework operated on New Construction for structural work. Prices were fixed at so much per square foot of plating erected, per foot of angle bar, etc, according to the nature of the work.

<sup>1</sup> The printed Schemes of Prices which governed straight piecework were the subject of negotiation and modification, if necessary, by discussion between the Professional Officers and Trade Union representatives of the workmen and ratified by the Shipbuilding Trades Joint Council.

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Broadly speaking a Job Price Contract was an agreement between management and men for a specified amount of work to be undertaken for an agreed price. Men failing to earn Day pay on Payments by Results were paid at Time rate. The Inspector would initiate the work specification and the Estimator, an experienced Technical Grade Officer employed solely on estimating, drawing on the records of the Central Estimating Office, would assess the time to complete the job. From this he would fix the price which included an additional sum to enable 33<sup>1</sup>/<sub>3</sub>% (later 45%) to be earned over the basic rate by workmen of average ability. This price was offered to the workman or his representative and when agreement was reached, the contract was signed by the management and the convenor and forwarded to the Expense Accounts Officers. (The convenor received an allowance paid by the workmen.)

If there was doubt about the contract, the earnings on Job Price Contract could be made subject to an equalising formula:

*Total earnings =  $T(2.13 - T/J)$  where  $T$  = time pay and  $J$  = job price.*

The effect of the formula is to decrease the percentage, when a man earns more than 44% and increase the percentage paid, when earnings are below this amount.

A further complication arose in connection with JPC when the 'Time Workers' Differential' was introduced. To take the case of the Electrical Fitter: in March 1943 a 6s a week increase in the Bonus was given to 'Time' or 'Day Workers' only. In order not to penalise the men on JPC, 20s of the Bonus was incorporated in the basic rate of pay. The new basic rate was then 48s plus 20s, i.e., 68s a week. This enabled workmen on JPC to increase their earnings which were based on a rate of 68s instead of 48s. In practice, the 6s award was paid to all men but when the JPC was completed, this sum of 6s per week or part thereof for each week, the workmen were working on the job was deducted from their pay, based on the actual hours worked on the Job Contract (there was no deduction for men on piecework).

Similarly in November 1950, a further rise of 11s was awarded to Electrical Fitters on Time work. The men on JPC were allowed to raise their earnings from 33<sup>1</sup>/<sub>3</sub>% to 45%, for the Timeworkers' differential had then risen to 17s a week.<sup>1</sup> Further complications arose when the Merit Pay Scheme was introduced; an average rate of 72s instead of 69s was used for JPC calculation. A man making 50% on JPC would earn an addition of 50% of 79s less the time workers differential of 17s.

The percentages mentioned in the foregoing were rarely adhered to, as was shown by the Ninth Report from the Estimates Committee, 1961-2. An account of Incentive Schemes given in this Report showed that about 50% of productive work in the Dockyards was done on JPC; about 20% was done as piecework and the remaining 30% was done on Time rates of pay.

The elements of the minimum pay (sometimes called consolidated pay) of a Dockyard craftsman in 1961, was as follows:

Basic pay	66s 0d pw
Bonus	118s 2d pw
Time workers' differential	<u>14s 0d pw</u>
Minimum or consolidated pay	<u>198s 2d pw</u>

(In the table given for Electrical Fitters), the basic rate was 69s and the time workers' differential was 17s a week- the total minimum pay in each case was 198s 2d per week.)

<sup>1</sup> Differential for mechanics 17s; for skilled labourers 15s to 16s; for labourers 14s.

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Job Price Contract was supposed to enable an average, diligent, intelligent man to earn not less than 45% above his basic pay (45% of 66s = 30s). In practice average earnings on JPC was then about 100% above the basic 66s per week. In addition Dockyard craftsmen on JPC received merit pay ranging up to 60s per week - the average man receiving 35s and also a ship repair allowance of 1s 6d per week as well as the flat bonus of 188s 2d. The man, however, regarded himself as having a handicap of 14s (the timeworkers' differential) compared to the time worker.

Thus the average earnings of a craftsman working a 42 hour week on JPC would be:

Incentive earnings (basic pay+ 100%)	132s 0d pw
Bonus	118s 2d pw
Merit Pay	35s 0d pw
Ship repairing allowance	<u>1s 6d pw</u>
	<u>286s 8d pw</u>

Piecework prices were charged to enable the average, diligent, intelligent man to earn 17s 6d per week<sup>1</sup> above the minimum rate of 198s 2d, if he was a craftsman; of 15s per week above a lower minimum rate if he was non-craft. Average incentive work earnings on piecework had risen faster than JPC earnings and then averaged 90s per week above the minimum rate. On piecework no bonus was payable and the basic rate and the time- workers' differential were not relevant.

Thus the average earnings of a craftsman working a 42 hour week on piecework was as follows:

Incentive earnings (min pay 198s 2d +90s excess)	288s 2d pw
Merit pay	35s 0d pw
Ship repair allowance	<u>1s 6d pw</u>
	<u>324s 8d pw</u>

Piecework prices used to be based on the same general system as Job Contract Price, but in 1951, the Admiralty decided to make the experiment of relating piecework prices to the minimum rate, now 198s 2d for craftsmen. Overall percentage additions were then made to the prices current to allow for this. Piecework on this basis was clearly simpler to understand than JPC, but when pricing was out of date or on the easy side, it could produce disproportionately high earnings.

### Dockyard Incentive Bonus Scheme (DIBS)

There was general dissatisfaction with the Job Price Contract Scheme which was terminated after 31st December 1965. MOD (Navy) agreed with Trade Unions to implement the Dockyard Incentive Bonus Scheme. This was applicable to all suitable work other than piecework and could be undertaken by all except the First & Second Year Apprentices. Under this system a contract time was negotiated between the Estimators and the Trade Union representative for each job. A bonus was paid in addition to the full- time rate for the week, derived from a Bonus Index (BI) calculated from the formula:

$$BI = \frac{\text{Contract Time}}{\text{Time Taken}} \times 100$$

A bonus table gave the bonuses for each index and a portion is given on the next page:

<sup>1</sup> This was introduced in 1952 to replace the 45% of the basic rate. Trade Union requests for JPC working to be similarly operated was turned down by Admiralty.

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Bonus Index	Craftsmen & 5th year Apprentice	Skilled Labourer II & above Labourers	Skilled Labourer I & Ordinary 18/19 Yard Boys	3rd/4th Year Apprentices	Women on Women's work
50	Nil	Nil	Nil	Nil	Nil
80	41s 5d	36s 11d	35s 5d	28s 10d	20s 5d
100	69s 0d	61s 6d	59s 0d	48s 0d	34s 0d
120	101s 1d	90s 1d	86s 6d	70s 4d	49s 10d
150	149s 3d	133s 0d	127s 7d	103s 10d	73s 6d

(The table included the allowance of one shilling paid to the negotiator who received an allowance of 1s 9d per hour.)

When a 3rd or 4th year Apprentice or a Yard Boy aged 18/19 was included, the Bonus Index was made greater by including only 90% of the time taken by the Apprentice or Boy. The latter was paid the appropriate bonus rate at the index for the actual time he was charged for the job. After the 20 January 1967 the abatement for an Apprentice was increased to 25% and the Apprentices' bonus was abated by 25%.

If a job was completed in the contract time the BI would be 100 and a craftsman would earn a bonus of 69s for 40 hours work. If 30 hours were worked at the same index, the bonus earned would be  $30/40 \times 69s$ , i.e., 51s 9d.

If he completed in 40 hours a contract totalling 60 hours the index would be  $60/40 \times 100 = 150$

If he worked 40 hours and a mate, a Scheduled II Labourer, 20 hours, on a job of 60 contract hours, the index would be  $60/60 \times 100 = 100$ .

The bonus earned by the craftsman for 40 hours work was  $69 \times 40/40 = 69s$   
 the bonus earned by the labourer would be  $61s\ 6d \times 20/40 = 30s\ 9d$ .

The estimating of Job Time was carried out by TB III Estimators in the Trade Office of the Division. The Chief Standards Officer was responsible for maintaining the quality of the estimating and the provision of standards. The overall co-ordination was carried out by the Headquarter Audit Group which operated in the Yard, but was part of the Headquarters Organisation. (CED).

Piecework continued to be measured by Measurers of the Finance Department which bore the measuring costs.

Recorders were responsible for recording the work for costing and wages settlement. They reported daily to the Trade Planning Office to check their records with those on the Daily Muster Sheet filled in by the chargemen.

Difficulties arose over the bonus paid by the DIBS and piecework after the wages scale revision of July 1967 when the revised basic rate of 327s for Craftsmen Grade II was introduced. The pay increases derived from the NPIB Report No 18 were confined to timeworkers. DIBS and piecework bonus continued to be added to the pay before July 1967, the fall-back rate when not on PBR being 327s.

Craftsmen's pay (pre-July 1967)	277s	285s	292s	314s	324s
Bonus of 69s (BI 100) <sup>1</sup>	69s	69s	69s	69s	69s
Craftsmen's pay on DIBS after July 1967	346s	354s	361s	383s	393s

<sup>1</sup> The average BI at Chatham was just over 100

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Thus a craftsman on the old rate of 277s earning a bonus of 69s would only get 19s above the new basic rate for Craftsman Grade II. The old 'Timeworkers' Differential' had reappeared ranging from 50s for the lowest paid craftsman to 3s for the highest paid on the old scales. All additional allowances were not affected by DIBS including overtime and shift allowances.

In 1968 to eliminate some of these anomalies a revised DIBS bonus of 42s was added to the basic rate of 327s. Since those on the basic rate of 314s and 324s on the old wage structure would have received less than hitherto, supplements of 20s for those in receipt of 314s and 24s for those in receipt of 423s were introduced.

With all the additional complications, men were still being paid unequally for the same amount of work performed under the same conditions.

In 1970, to improve the efficiency of the Yards a general incentive bonus was given to the men. In return they were expected to accept certain reforms in working practices, e.g. reduction of overtime working and relaxation in some working practices. The latter included the demarcation of labour, breaks in working hours, retraining to avoid redundancies, etc.

Hooters replaced the bells of the Yard and the townspeople were aware of the stopping and starting of work. The breakfast break of twenty minutes persisted at least until June 1981. Initially the breakfast break was from 9.00 to 9.20 am. In April 1981 the industrial staff took their break from 7.30 to 7.50 am. It was to disappear in June 1981.

In February 1970 the men of the Port Auxiliary Service were paid for the first time an efficiency bonus of £2 4s a week. In October 1970 the rest of the Yard, craftsmen and labourers, were paid under the productivity agreement a £3 per week bonus together with a lump sum of £20 to cover arrears. The deal was supposed to be self financing; 26s for the goodwill that had existed in the past and was continuing; 23s for a 35% reduction in overtime and 11s for relaxation in working practices.

### **Holidays of the Dockyardmen**

When the Yard closed down payment was given for the days of the recognised holidays only. In 1926 the Yard closed from Friday 24 December to Wednesday 29th December. The Monday, 27 December, was declared a public holiday, but wages were checked for Saturday 25 December and Tuesday 28 December. The boys attending school in the Yard were given their wages for this period. In 1928 the Yard closed on Good Friday, 6 April, and Saturday, 7 April; Saturday was regarded as a closed day for which no wages were paid.<sup>1</sup> Holidays for many of the lower paid workers and their families were restricted to places such as Upnor Beach, Gillingham Strand, etc.

During the Labour Government, 1929-31, the workmen in the Yard were granted a week's holiday with pay and an extra holiday, Boxing Day. The first paid summer holiday started 16 September 1929 and it is believed that only Established Men were paid for the week. In the following year Hired Men<sup>2</sup> as well were paid for the week provided that they had no break in their Yard employment for twelve months before the beginning

1 Since the beginning of the 20th century, the week was regarded as 5 1/2 days, thus the loss of Saturday's pay was that of half a day.

2 Parliamentary answer, July 1930. There were 3,289 persons who served for ten years without establishment in Chatham Yard.

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of the closed week. The Yard closed from 2nd to 11th August 1930 and Navy Week 1 was held from the 2nd to the 9th of August, omitting Sunday, 3rd of August. A pattern was set for the closing of the Yard during the August Bank Holiday week and the holding of Navy Week during this period. Easter Monday 2 was given as a public holiday in place of the August Bank holiday. Later staggered holidays for the Yard workmen were allowed, when they could take their holidays to suit their own convenience. Navy Weeks were then splits into Navy Days, held when the Yard was closed down.

By 1967 the paid annual leave of all industrial employees was a minimum of two weeks in each leave year. In addition to the annual leave, 8½ days' paid holiday was granted to work people working a five day week: Maundy Thursday afternoon, Good Friday, Easter Monday, Queen's Birthday, (Friday before Spring Holiday), Spring Holiday, late summer Bank Holiday, Christmas Day, Boxing Day and the remaining day on a date decided upon by local agreement.

By 1927 the leave for Constructive, Engineering and Electrical Draughtsmen was as follows:

Senior Draughtsman	28 days
1st Class Draughtsman	24 days
2nd Class Draughtsman	21 days rising to 24 after 5 years service in established grade
Acting 2nd Class Draughtsman	21 days
Assistant Draughtsman	21 days if established 18 days if unestablished
Temporary Draughtsman	18 days

### Honours for Dockyardmen

#### The Imperial Service Medal

Members of the permanent established Civil Service who were not Senior Draughtsmen, members of Grade I of the Technical Class and did not belong to the clerical or administrative branches were eligible for this award if they had served not less than 25 years in the UK or not less than 16 years in a country abroad where service counted for 1½ times its actual length for superannuation.

In the Honours List would occasionally appear notice of the award of the MBE or OBE or higher honours to Dockyard Officers and the BEM to Dockyardmen.

1 The first Navy Week was held from Tuesday, August 14 to Saturday, August 18th, 1928. Visitors were allowed to see the ships in the Basins, the battleship, *Marlborough*, at Sheerness and some of the Shops at Chatham. The men worked as usual. Mr Palmer, a chargeman, had his wallet containing £33 10s stolen, whilst showing visitors over the Electrical Shop.

2 In April 1930 the Dockyard closed for Easter Monday. Good Friday and Easter Monday were holidays with pay, but the workmen lost pay for Saturday morning.

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### **Periscope**

(The Dockyard Newspaper)

In October 1965, a Dockyard newspaper, 'Periscope' was produced. There were articles on many of the activities of the Yard, including progress on the refitting of ships as well as social and sporting news. Both official and staff representatives contributed their points of view in matters affecting the work force of the Yard. The first edition of 'Periscope' appeared on 29 October 1965, price 3d. By the end of 1982, the price had risen to 5p (12d); the copies of January to June 1983 were free. Publication then ceased.

The other Yards followed this project: 'Trident' at Portsmouth, 'Spotlight' at Rosyth, 'Devonport News' at Devonport.

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**'dead on the job'**

### **DOCKYARD GENERAL ORDERS**

#### **Decease during working hours**

1. It has come to the notice of the Management that Employees have been found dying on the job and either refusing or neglecting to fall down.
2. This practice must cease forthwith
3. Employees found dead on the job in an upright condition will be immediately dropped from the pay roll. Should an Officer notice an Employee who has made no movement for a period of one hour, it will be his duty to investigate as to the cause, as it is impossible to distinguish between death and natural movements of some 'Employees.'
4. Officers are cautioned to make very careful investigation by holding a pay packet in front of the suspected corpse. This is considered to be the most reliable test, however, cases have been known where natural instinct has been so deeply ingrained that the hand of the corpse has made a spasmodic clutch after rigor mortis has set in.
5. A secondary test is to whisper 'Sunday Work,' this test has been known to restore animation to a corpse which has been motionless for a week.
6. **The foregoing tests should not be applied to Foremen, Inspectors, Chargemen or Recorders, as in these cases movement is entirely unnecessary.**



## CHAPTER 4 APPRENTICES

### **Scriptural Precept: Teach thy son a trade and he shall have a kingdom**

An apprentice is one bound by agreement to serve an individual, his master, for a specified time, in order to be instructed in some art or craft. This agreement is termed an indenture and is legally binding on both the apprentice and his master.

From the 12th century to 1563 apprenticeship was controlled by the Guilds. Statutory apprenticeship was set up by the Statute of Artificers, 5 Elizabeth, 1562. This assumed:

*. . . until a man grows into 23 years he for the most part, though not always, is wild, without judgment, and not of sufficient experience to govern himself.*

After the age of 24, having served his apprenticeship, he was at liberty to marry and either to set up a business of his own, or to become a journeyman for hire.

The apprentice lived with his master who drew his wages and kept and clothed him. In return the Shipwright, for example, trained his apprentice in the trade, art or mystery of the shipwright during the seven years of apprenticeship.

The Act provided:

*It shall not be lawful to any person or persons, other than such as now do lawfully use or exercise any art, mystery or manual occupation, to set up, occupy, use or exercise any craft, mystery or occupation . . . except he shall have been brought up therein seven years at least as an apprentice.*

The Kent Quarter Sessions dealt with cases such as practising a trade without serving an apprenticeship.<sup>1</sup> The informer received a share of the resulting fine. This offence is found among the indictments as late as the second decade of the 19th century.

There were 61 trades or mysteries in the Statute. This, based on a limited number of trades, was not repealed until 1814, but its provisions as applied to apprentices had long before ceased to be widely effective. An Ordinance of 1654 admitted ex-servicemen to any handicraft or trade. By an Act of 1698 all discharged soldiers were allowed to practise their trade regardless of failure to comply with the requirements of their craft guilds, e.g., interruption of apprenticeship by service.

By 1700 the practice of requiring premiums was introduced. Apprenticeships have been voluntary since 1814 when the Apprenticeship Acts were repealed.

### **Apprenticeship System up to 1800**

When the master was impressed into Admiralty service his apprentice followed him in to the Yard and left when the master's services were no longer required. Phineas Pett,<sup>2</sup> apprenticed to Richard Chapman in 1590, was allowed 46s 8d per year to find his tools and apparel; when Chapman died, Phineas was discharged from the service. The list of shipwrights to be discharged in 1712 at the end of the War of the Spanish Succession

1 Kentish Sources: Crime & Punishment edited by Elizabeth Melling.

2 The famous Master Shipwright who became the first Resident Commissioner of Chatham Dockyard

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included their servants. After the strike over task work in 1775, eight men and their servants were discharged from Chatham Yard.

The Report of the Commission of 1608 indicated some of the abuses of the apprenticeship system in the Yard. The Commissioners reported:

*Phineas Pett, hath, for instance, had youths and boys, ten at least, upon the King's allowance of 17d a day, that filled up the numbers but worked little.*

The Commission recommended that:

*. . . no man's servant should be enrolled without pressing for that purpose by the Master Carpenter or without a certificate that he had served a year at the trade and had been enrolled in the Hall of Carpenters.*

This restriction was not enforced since every apprentice would have had to begin his training elsewhere. Another recommendation was that no workman should have more than one apprentice paid by the King, but that the Master Shipwright might have two.

On 3rd November 1664 the Navy Board issued new regulations regarding apprentices or as they were termed servants. An increase of wages was granted to the servants of shipwrights, caulkers, boatmakers and mastmakers of the Royal Dockyards: the daily wages were then:

1st year	14d	5th year	19d
2nd year	15d	6th year	20d
3rd year	17d	7th year	22d
4th year	18d		

At this time shipwrights were paid 25d and labourers 13d per day. The boys had to be 16 years of age at the time of their being bound.

*A servant might be entered for any person approved by the Master Shipwright that there may never be a want of able workmen to service his Majesty hereafter. The more than ordinary industrious ones to be capable of having 1d or 2d more extraordinary allowance allowed them as their deserts appear to the Principal Officers and Commissioners then present at the pay. Persons that have been to sea as Carpenters Mates, being otherwise equally qualified should be preferred before others for the benefit of a servant.*

Thus the apprentice in the Yard served for seven years; <sup>1</sup> his wages were paid to his master who gave him board and lodging or an allowance in lieu. There were no tests imposed on entrants except as regards age and stature until the 19th century. The minimum height was 5 feet, lowered in 1765, owing to the difficulty in securing apprentices, to 4 ft 10 ins.

By Navy Board Order, 9th September 1748, the pay of shipwrights servants was to be the same in all Royal Yards, viz, 1st year 14d; 2nd year 15d; 3rd year 17d; 4th year 18d; 5th year 19d; 6th and 7th years 20d. by a similar order dated 1st August 1780, all shipwrights servants were to be allowed 4d a tide when they work extra. (A tide was a period of overtime of 1½ hours.)

<sup>1</sup> The period of apprenticeship for shipwright apprentices was reduced to 6 years in 1889 and to 5 years in 1918. In September 1967 the period of apprenticeship was reduced to 4 years. The age of entry was lowered from 16 to 15 years in 1765 and to 14 years in 1769. The age limit was fixed at 13/15 years in 1860, to 14/16 years in 1885 and raised again to 15 years in 1916. The minimum age of entry was at the end controlled by the school leaving age.

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In reply to a Navy Board enquiry concerning the reduction of overtime, Commissioner Charles Brown wrote on 15th April 1747:

*If it shall be thought necessary to allow shipwright apprentices nothing for working extra with their masters, the first two years of their apprenticeship, and debar the elderly men from working any extra, there is a very great reason to apprehend the artificers will mutiny as they have often done when they thought themselves deprived of any of their (supposed) rights.*

On 11th August 1674, the Clerk of the Checque, replying to a Navy board request of an account of the number of servants belonging to officers borne in Chatham Yard, wrote:

	<i>Number of servants claimed</i>	<i>Number borne at present</i>
Phineas Pett, Master Shipwright	Unlimited	4
Joseph Lawrence, Assistant MS	4	3
Robert Lee, Master Caulker	3	3
Wm Wyborne, Master Mastmaker	3	2
James Marsh, Boatmaker	3	2
Thos Tunbridge, House Carpenter	4	3
John Chapman, Bricklayer	3	2
Francis Button, Sailmaker	4	2
Jno Attewell, Boatswain at Yard	1	0
Nath Taylor, Pumpmaker	1	1
John Howting, Porter	1	0
Each Carpenter of a ship	1	1

By an Order of 26 November 1680 the maximum number of apprentices indentured to each of the various officers of the Yard were:

Master Shipwright	5
Assistant Master Shipwright	3
Master Caulker	3
Master Mastmaker, Master Boatmaker, Master Joyner, Master House Carpenter, Master Blockmaker	2 each
Master Bricklayer, Master Sailmaker, Foreman of Shipwrights and the Quarterman	1 each
For each of the deserving workmen approved by the Master Shipwright	1 each

There was a temptation for the Master Shipwright to take fees for entering servants together with a proportion of their wages.

The number of apprentices allotted to the Dockyard Officers was regulated from time to time by a series of Navy Board Orders; a procedure which terminated at the beginning of the 19th century.

Navy Board Order, 9 December 1700:

*In future three servants to be allowed to the Master Ropemaker and two to Foremen. None to others. (ropemakers)*

On 21 January 1711/12, Isaac Lock, Foreman Afloat at Chatham, was making application, which was approved by the Navy Board, to be allowed two servants. When

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Mr Pilgrim, Master Joyner, asked in May 1715, for an additional servant to make his number up to two, according to the Regulations, it was directed that any vacancy must not be filled, *but the present established number continued . . . including the said servant.*

Navy Board Order, 13 May 1718:

*Master Sailmaker<sup>1</sup> to be allowed two servants in addition to the one already allowed and the Leading Man one servant at day wages and tide. The wages of the sailmaker apprentices per day: 1st year, 12d and 1<sup>1</sup>/<sub>2</sub>d (tide); 2nd year, 13d and 11<sup>1</sup>/<sub>2</sub>d; 3rd year, 14d and 2d; 4th year, 15d and 21<sup>1</sup>/<sub>2</sub>d; 5th year, 16d and 3d; 6th year, 18d and 4d; 7th year, 19d and 41<sup>1</sup>/<sub>2</sub>d.*

Navy Board Order, 20 June 1728:

*Principal Leading men of Sailmakers to be allowed two servants, i.e., one in addition to the one already allowed.*

Navy Board Order, 2 November 1771:

*All foremen of Smiths whose pay is 13s to be allowed servants.*

The Navy Board approved the employment of apprentices; they argued thus:

*When an apprentice had served three years he was an able man . . . and his labour was the cheapest in the Yard. (27 February 1747)*

The officers and men of the Yard were anxious to secure the financial advantages of apprenticeship<sup>2</sup> and it became necessary to limit the numbers of apprentices in the Yards.

Navy Board Order, 13 July 1711:

*By Establishment of 26 November 1680 one servant was allowed to each workman; in future the number of servants of shipwrights and caulkers are not to exceed one-sixth of the whole number of workmen and servants at any time borne.*

This order was repeated in 1722 when the number of servants allowed to carpenters of 4th, 5th and 6th rates, shipwrights, and widows, was not to exceed one-sixth of the number of working shipwrights and carpenters of 4th, 5th and 6th rates and servants together.

In September 1735 the entry of apprentices to deserving shipwrights was again encouraged but again the number of servants to the workmen was not to exceed one-sixth part of the number of working shipwrights and their servants.

1 In 1716 sailmaking was carried out by day work in the Royal Yards instead of by contract. After 1759 sailmaking work was performed by the Great or Task i.e. definite amount of work for a day's wages. All apprentices who had served one year of their apprenticeship were expected to perform work in proportion to their wages.

2 William Spavens (See Chatham Chest in chapter 17) stated that if a lad were bound apprentice to the sea and either entered or was pressed into the Royal Navy his master was entitled to his wages for all the time he had to serve his Master at the time of his entry on board to the expiration of his indenture. When Spavens was paid in May 1659. "My master having searched the books at the Admiralty Office to know what ship I belonged to previous to the time of payment sent my indentures down to Commissioner Rogers at Plymouth.... I was forced to take £19..1s in lieu of the £45..13s..6d which was due to me "

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By May 1742 the number of apprentices was too high and a directive was sent that no more servants were to be entered for working shipwrights and only the allowed number of servants to officers, foremen, quartermen and carpenters of ships till the number allowed to working shipwrights was reduced to one-sixth of the number of working shipwrights and their servants.

By the last quarter of the 18th century this number was increased to about one apprentice to three shipwrights. Old men were often given apprentices to compensate for loss of earnings. After the introduction of superannuation this policy was discontinued and any person on the superannuation list was deprived of the privilege of an apprentice. Superannuation was in 1764 given to one in fifty; in 1771 to one in forty; and in 1792 a large supernumerary list was added.<sup>1</sup>

In the 18th century the apprentices were as high-spirited as those of today (the 1970's). They indulged in rough pastimes annoying the public at large. In 1739, Commissioner Mathews gave instructions to the Master Shipwright and the Clerk of the Checque:

*You are hereby directed and required to discharge Joseph Pucket, servant to Melchior Smith, Quarterman, for frequent neglect of duty, particularly for leaving the Yard after his call the 17th inst and going with a large treenail, gilt at each end, to the Mayor of Rochester's election, to create a disturbance, together with James Jarrett, servant to Widow Gore, and Horace Fare, servant to Henry Bycraft, Quarterman, calling themselves Dragons, abusing and beating one Thomas Burford, a Freeman, in a gross manner, as the said Burford has sworn before Justice Walter, particularly against Jarrett and Fare both of whom you are likewise to discharge for the above-mentioned reason. Dated at Chatham Dock, this 21st September 1739.*

This lapse must have been forgiven for a further letter followed from the Commissioner:

*You are hereby directed and required to discharge Joseph Pucket, servant to Melchior Smith, Quarterman, and James Jarret, servant to Widow Gore, from this Yard for frequent neglect of duty, particularly for absenting themselves from the Yard without leave and going to Woolwich<sup>2</sup> at the time of the late disturbance there, and to enter another servant to Widow Gore in room of the said Jarret. Dated this 27th day of November 1739.*

These apprentices were discharged but then there was more trouble. On 28 November 1739,

Commissioner Mathews wrote:

*This morning came unto my house George Page, servant to the Widow Lamb, Ed Fryer, servant to the Carpenter of the **Colchester**, Francis Nelson, servant to the Carpenter of the **Britannia**, and William Edwards, servant to Henry Leake, Quarterman, and in an insolent manner told me that they came in the name of all apprentices and demanded to be discharged alleging their reason for doing so was because I had discharged Pucket and Jarret.*

1 In 1978 it was estimated that in the Ministry of Defence there was one apprentice for every 5.3 craftsmen compared with an average for the engineering and shipbuilding industry of one for every 9.5.

2 The men at Chatham had gone on strike in August 1739 claiming that they had been unjustly fined and deprived of their perquisite of chips. The men at Woolwich then went on strike and Chatham men went to Woolwich to support them.

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The Commissioner ordered the apprentices to return to work and sent for their masters. Nelson's master reported that in the recent trouble in the Yard his apprentice had become uncontrollable and went off to admonish him for the behaviour shown to the Commissioner that morning. Shortly he returned saying that he had been threatened by the apprentice and felt in danger of his life. He asked that the apprentice should be discharged. The Widow Lamb seemed unwilling to let her apprentice go and told the Commissioner that if he did not turn up for work she would go to Justice Walter and get him punished. Fryer's master could not be reached as he was at sea.

Commissioner Mathews reported to the Navy Board, 28 November 1739:

*Fryer is a very insolent youth and was the spokesman and told me that the old men would not stand by them; I have therefore discharged them and hope the Board will not only approve of what I have done but be pleased to give directions that none of them be entered at any of his Majesty's Yards which I hope and believe will break the neck of the rest of the apprentices' insolence.*

With the issue of a warrant for the discharge of the leaders of the apprentices' dissension, the threat of revolt was brought to a conclusion.

The above letter indicates the method of discharging an apprentice who was troublesome to his master and the authorities; the Commissioner, subject to the approval of the Navy Board, would order discharge. Alternatively, the master of the apprentice would haul him before the local magistrate and put forward a case for the cancellation of his apprenticeship. This is illustrated by the following letter dated 15 February 1743.

*Petition of Shipwright James Dafforne who had secured the discharge of his apprentice. Whereas your Honours have been pleased for some considerable time theretofore to indulge Your Petitioner with a servant in his Majesty's Yard name Thomas Weller who after about three years and two months servitude grew immoral and disorderly in Life and conversation, and in such wise, that Your Petitioner might receive no blame by retaining so dissolute and idle person in his service whose example might prove detrimental to other youths by corrupting their minds and morals, as well as to his Majesty's service for neglect of duty; to prevent which your Petitioner thereby conveyed his said servant to the sitting of the Justices on Friday the 3rd instant February who on hearing and examining of sundry articles alleged against him by your Honours' Petitioner, the said Justices were pleased to discharge him from his said apprenticeship.*

If the master died, the apprentice could be allowed to stay on to provide an income for the widow. When this apprentice came out of his time the Navy Board might grant the widow a further apprentice for her continued support. An account of the shipwrights' servants borne in Deptford Yard in June 1742 shows that 21 were apprenticed to Dockyard Officers, 115 for working shipwrights, 44 to widows and others not in the Yard. Of this 44, about 30 were apprenticed to widows or executors of deceased shipwrights, the rest belonged to Navy officials; the Surveyor of the Navy always had a few - and political favourites.

In 1749, the Admiralty, studying the lists of servants at Chatham, noted that the late Master Caulker's widow had three servants in her name and criticised the Navy Board for its generosity:

1 The relation of the apprentices and the elderly men is worth noting. These two groups often found that they were deprived overtime on many occasions.

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*As it appears this encouragement is calculated more for the benefit of the persons concerned than the Public, let the Navy Board be admonished to be less liberal of the Favour for the future.*

Widows servants were a constant disciplinary problem and with no master frequently failed to report to work. In Commissioner Brown's out-letter book (1742/53) there were many widows petitions for assistance in connection with their erring apprentices. In a letter to the Navy Board dated 31 July 1739 dealing with a complaint from a widow about her apprentice, Commissioner Hughes of

Portsmouth Yard wrote:

*I find upon enquiry at the Clerk of Checque's office, and searching the muster books that her servant has lost no less that 193 days time in the two years that are past. As this is a terrible hardship on the widow, in regard that her husband was a very sober, good, diligent man, and there being no prospect of reclaiming him (the apprentice), I hope that the Board will be pleased to make an example of him, by ordering him to be discharged and another servant entered in his stead, for the better support of the poor widow.*

Soon after the beginning of the second half of the 18th century further orders were issued about apprenticeship.

Navy Board Order dated 27 February 1758:

*No shipwright was to be entered in the Yard over 45 years of age and no shipwright having served his time in the King's Yard shall have a servant until he has been two years out of his time. No shipwright who shall be entered in the King's Yard not having served his time there shall have a servant in less than 5 years service in the Yard.*

Navy Board Order dated 17 March 1761:

*Having taken into consideration the disadvantage artificers apprentices have by not having board wages when entered for themselves as artificers as allowed to all now entered men the better to contribute towards their support until they came in course of payment. In future Board Wages are to be paid to all such artificers who have served as apprentices in HM Yards when entered for themselves until they come in course of payments.*

Navy Board Order dated 26 April 1779:

*Servants in the Yard are to be allowed six weeks trial before the signing of indentures.<sup>1</sup>*

In peace time the entry of apprentices was severely restricted but during War there could be as many as one apprentice to three shipwrights. During the War of American Independence the following order was issued:

*Intending an order for the entry of shipwright and caulker servants you are to recommend to us (Chatham, 15 shipwrights and 6 caulkers). The qualifications of the men recommended are to be Sobriety, Honesty, Diligence and Good Abilities, Good Morals, of Quiet Deportment and not likely to join in disturbances in the Yard. The men who are ex-Yard apprentices are to be two years*

<sup>1</sup> In 1807 it was ordered that the period of trial was not to be counted as part of the seven years of apprenticeship.

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*out of their time and outside men, five years service. The usual injunction in our warrant for entry of servants of their living with their master which hath not been so particularly attended to as it should have been, be observed in further unless the boys have a father or some near relation with whom he lives and not to be dispensed with other ways without our particular permission.*

The condition that apprentices live with their master is illustrated by a letter from the Navy Board dated 27 February 1739/40, in reply to a petition from John Hughes, shipwright to take an apprentice.

*Application have been made unto us that a servant may be entered for John Hughes, a shipwright belonging to HM Yard at Chatham; these are to direct and require you to enter him a servant accordingly, provided he is duly qualified and that he lives with his master during the time of his apprenticeship.*

However, this stipulation was not strictly adhered to for it was reported in 1737 that servants to artificers belonging to Portsmouth Yard when put out to board were allowed in some cases, 3s 6d a week, and in others, £10 a year. In the Indenture (see opposite page) of Leonard Cooper apprenticed to his father, Sixth Foreman of Blacksmiths at Chatham Yard, dated 29 October 1800, it was agreed that should the apprentice choose to board himself, the father would allow him six shillings a week during the term of apprenticeship.

For the poorer classes, entry into apprenticeship was difficult unless a boy was apprenticed to his father. The boy could not enter into apprenticeship before he was 16 years of age (reduced after 1765) and he might have to pay a premium and give his wages to his master to whom he was bound for seven years.

The officers apprentices would most likely come from good families with a tradition of shipbuilding. The Master Shipwright and his Assistant would require a high premium from the parents of their apprentices; their apprentices would be trained in drawing and design and from their numbers would be picked the future Officers of the Yard. The normal fee for apprentices under the Master Shipwright was 20 guineas and higher; those under the Assistant Master Shipwright paid 15 guineas. In addition the fee was increased in some cases to include board and lodging. Thus the father of Richard Parnell paid 100 guineas to George White, at that time Master Shipwright at Sheerness, in lieu of board. The fee payable to a foreman was usually of the order of £10.

Although the apprentice had to live with his master unless he lived with his father or near relation, there are instances where senior Dockyard Officers disregarded the rule. Mr Rosewell was appointed Master Shipwright at Harwich from being First Assistant Master Shipwright at Chatham and a warrant dated 22 December 1701 allowed Rosewell's servants to be borne at Chatham; there was no business at present at Harwich for his servants. In 1775, Mr White, Master Shipwright at Sheerness, complained that he could not find a suitable apprentice at Sheerness and requested that one might be entered for him at Plymouth, a request that was granted.

The prospects for a lad apprenticed to a Master Shipwright were very bright. Such was the case of Martin Ware who gave evidence to the Commission of Fees and Gratuities, 1786/1788. Ware was the Master Shipwright at Deptford. He had been apprenticed in 1731 to Joseph Allen, Master Shipwright at Portsmouth for a fee of £30, his friends finding him in clothes and tools during the whole time. Three years after coming out of his time he was appointed Quartermen at Portsmouth. In 1742 Allen went to Deptford and took Ware with him, with the Board's permission. He was a working shipwright again for five weeks only before he was appointed Quartermen and delineating the drafts of



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An Indenture dated 20th December 1800

**This Indenture** witnesseth that Leonard Cooper doth by and with his own Free Will and Consent put himself Apprentice to his Father Mr David Cooper Smith, Foreman of the Blacksmiths in His Majesty's Yard at Chatham, to his Executors, Administrators and Assigns to learn his Art, and with him (after the Manner of an Apprentice) to serve from the twenty ninth day of October 1800 unto the full End and Term of Seven Years from thence next following to be fully compleat and ended. During which Term the said Apprentice his Master faithfully shall serve, his Secrets keep, his lawful Commands every where gladly do: he shall do no Damage to his said Master, nor see to be done of others; but to his Power shall let or forthwith give Warning to his said Master of the same; he shall not waste the Goods of his said Master, nor lend them unlawfully to any; he shall not commit Fornication, nor contract Matrimony within the said Term; he shall not play at Cards, Dice, Tables, or any other unlawful Games, whereby his said Master may have any Loss; With his own Goods or others, during the said Term, without Licence of his said Master he shall neither buy nor sell; he shall not haunt Taverns or Playhouses, not absent himself from his said Master's Service Day or Night unlawfully: But in all Things as a faithful Apprentice he shall behave himself towards his said Master and all his family during the said Term

And the said Master his said Apprentice in the Art of a Blacksmith which he useth by the best Means that he can, shall teach and instruct or cause to be taught and instructed finding unto the said Apprentice Apparel, Washing, Lodging, Board, Mending and Making the full ? . . . But it is agreed that in Case the said Apprentice should chuse to Board himself, the Father will allow the said apprentice Six Shillings per Week during the said Term

And for the true Performance of all and every the said Covenants and Agreements either of the said Parties binded himself unto the other by these Presents. IN WITNESS whereof the Parties above named to these Indentures interchangeably have put their Hands and Seals the Twentieth Day of December in the Year of the Reign of our Sovereign Lord George the Third by the Grace of God, of Great Britain, France, and Ireland, King Defender of the Faith, and in the Year of our Lord 1800.

Sealed and delivered (being first )  
duly stamped) in the presence of ) Sd David Cooper

J Kincaid (?) E Kiloliter (?)

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ships on the Mould Loft Floor. Four years later Allen was appointed Surveyor of the Navy and Ware accompanied him. His progress slowed when Allen left the service and Ware stayed at the minor post of Master Mastmaker at Portsmouth for 18 years. He was appointed second Assistant Master Shipwright at Plymouth in 1773 and First Assistant Master Shipwright in 1778. After an unsuccessful application to Lord Sandwich in 1779 for a vacant First Assistant Master Shipwright at Deptford he was made Master Shipwright at Sheerness in 1784 at the age of 67. He made the customary progress to Woolwich and Deptford, the latter at 70 years of age. He retired seven years later.

However, since the Master Shipwright had five apprentices and the Assistant Master Shipwright three apprentices, not all apprentices reached the highest posts in the service. Thus William Drew, Painters Measurer to the Clerk of the Check, Portsmouth, at the time of the Commission of Fees and Gratuities, had been apprenticed to Edward Hunt, Master Shipwright at Sheerness (1767/72) twenty years before, to whom his friends had paid 20 guineas and seven years board, the value of which he estimated at 250 guineas. Hunt took him to Portsmouth and after three years out of his apprenticeship he was appointed to his present post, with the rank of Quartermen, by Mr Snell, Clerk of the Check, Portsmouth, after recommendation by Hunt, the Master Shipwright.

For the ordinary apprentice promotion in the service was possible. At the end of his time he would become a tradesman and after working for one or two years in the Yard, a shipwright would be considered competent for employment as an overseer of shipbuilding in the merchant yards. In 1743 the naval overseer was paid his shipwright's daily wage of 2s 1d plus 5s a day for overseeing. He had the opportunity of promotion to quartermen and then to foreman; the next step was to become a junior officer; Master Caulker, Master Boatbuilder, Master Mastmaker, in one of the Yards. He might then either remain there until a vacancy occurred for the higher posts of Assistant Master Shipwright or Master Shipwright, or else go to some other and bigger yard in the rank he already held. The prospects of rising beyond the rank of Master Shipwright were, of course, very slight. The highest post open to the shipwright was that of Surveyor of the Navy. There have been instances of a shipwright attaining the rank of Resident Commissioner at one of the Yards.

A portion of the Account of Chatham Extra, Christmas 1774, gives the pay of apprentices and others, when the pay of quartermen was 30d per day and shipwrights 25d a day.

### *Apprentices Pay 1774*

Samuel Bentham	20d a day	(See next page*) Servants to Mr Gray, Master Shipwright
Wm Lowes	19d a day	transferred from Woolwich to Chatham
Martin Ward	15d a day	in 1773
Wm Beaumont	14d a day	
Jno Hodgekin	20d a day	Servants to Jos Harris, former Master
Isaac Dudd	18d a day	Shipwright
Rich Martin	17d a day	
S Bonnewell	17d a day	
Steph Dudd	16d a day	
Jno Spence	18d a day	Servant to Thos Mitchell, Assistant Master Shipwright, Deptford
Jno Broomfield	18d a day	Servants to Hy Peak, 1st Assistant
Thos Strover	14d a day	Master Shipwright
Jno Peak	20d a day	

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### *Apprentices Pay 1774 continued*

Simon Ledbury	19d a day	Servants to Wm Paine, 2nd Assistant
Edwd Rockliff	18d a day	Master Shipwright
Wm Ward	18d a day	
Robert Dunn	16d a day	Servants to Wm Gauntlett, Foreman
George Elliott	14d day	
Jas Frith	24d a day	Servants to Hartly Larkin, <sup>1</sup> Foreman
Wm Jones	19d a day	Afloat (superannuated 1781 @£40 pa)
Jno Barnaby Sr	25d a day	
Robert Barnaby	19d a day	Servant to Josh Drawbridge
Wm Finnis (Furnes)		Servant to Jno Barnaby Jr
James Freed <sup>2</sup>	24d a day	Servants to Edw Clements, <sup>3</sup> Carpenter
Henry Elvy	14d a day	of the <b>Formidable</b>
Jno Elvy	20d a day	Servant to P Hudson, Quarterman
Steph. Dadd <sup>4</sup>	19d a day	Servant to Robert Dudd, Quarterman
Wm Dann Banes		Shipwright
Jno Pett		Second Foreman of Blacksmiths
Jas Muddle	22d a day	House Carpenter

\* Samuel Bentham

Samuel Bentham was the son of an attorney and brother of Jeremy Bentham. He was placed at Westminster School at the age of six. He wished to become a naval constructor and was bound apprentice to Mr Gray of Woolwich some months before he reached the legal age of 14. Samuel entered HM service as soon as he reached his 14th year. He was boarded at the house of Mr Gray to whom was paid the very ample sum of £50 besides a considerable apprentice fee.

The occasional absence from the dockside of apprentices of the Dockyard Officers whilst they received academic and professional training was winked at, though the master received from the government the full wages for them. Much abuse of this privilege arose and Samuel Bentham was later to cause its abolition. He received lessons in mathematics privately.

After the death of Gray, Bentham was apprenticed to Israel Pownoll, who succeeded Gray as Master Shipwright at Chatham. Bentham was interested in the theoretical aspect

1 Chatham News Friday February 1 1929 "Stray Notes"

Major W J Elvy ISO MINA Principal Ship Surveyor to the Board of Trade, an ex-Chatham Dockyard apprentice had in his possession the indentures of one of his ancestors Thomas Elvy, who was bound on the 23rd October in the eighteenth year of the reign of our Sovereign Lord George III as an apprentice to Mr Hartly Larkin Foreman Afloat in His Majesty's Yard at Chatham for seven years.

2 James Freed was discharged 15 November

3 See Section on Officers of the Constructive Department in chapter 5

4 Stephen Dadd became Foreman at Chatham in 1802 and assistant Master Shipwright at Sheerness in 1813.

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of his training and had difficulties with Pownoll who believed that manual labour was necessary for the understanding of the theory of shipbuilding. Bentham, whose avowed aim when still an apprentice, was to become Surveyor of the Navy, was irked by the traditional ideas with which he had to work in the Yard. He pointed out that even the favoured shipwrights were given no training in design, merely being required to transcribe ships draughts on the Yard Mould Loft. Forced to work with his hands when he wished to be at the drawing board and frustrated at every point by the conservatism of the Navy Board he was unwilling to remain in the Yard. It seemed certain that there was no possibility of rising to the place of Surveyor without serving an apprenticeship and passing through every inferior grade, but he proved the exception to the rule. He finished the term of his apprenticeship in Chatham Yard and after a year and a half in the Dockyards went to the Naval College at Portsmouth. He subsequently went to sea and travelled in foreign countries gaining information on naval architecture. He then served as a Brigadier-General in the Russian service and in 1791 obtained leave from that service to visit the principal manufactories in this country. He then obtained permission from Admiralty to visit the different Dockyards. He was appointed Inspector-General of Navy Works in 1796. For further details of his career see section on the Administration of the Navy.

### Naval Apprentices

Apart from the Dockyard apprentices there were naval apprentices. The masters of these were the warrant officers of warships: Gunners, Boatswains, Carpenters and Pursers. These officers were standing officers who were in the same ship for years on end, unlike commissioned officers and the ships company, who left when the ship was paid off.

The Carpenter's apprentice might rise via the rating of a Carpenters Mate to be the Carpenter. In the days before Continuous Service many ships Carpenters would work as Shipwrights in the Dockyard; in some cases the Carpenter obtained a Dockyard appointment and rose to the post of Master Shipwright.

The Master Carpenters of the larger ships were allowed two servants, the elder to be borne in the Yard and the other with his master in the ship. During their training those borne on the Yard books were employed on new construction and ship repair work and were given training in caulking, etc. This apprenticeship system ceased after 1779 when the ships Carpenters were no longer allowed to have apprentices borne on the Yard books. The Carpenter was then allowed one servant on the Ordinary Books whilst the ship was in the Ordinary, and during her time in commission, he was allowed an additional apprentice borne in the ship.<sup>1</sup>

### List of Apprentices and the premiums paid

The Inland Revenue Stamp Duty Payment List gives the premiums paid to masters in Admiralty Service and, for comparison, some outside the service.

<i>Master</i>	<i>Apprentice</i>	<i>No of years</i>	<i>Sums &amp; Value given</i>	<i>Duty Stamp Paid</i>
Ben Rosewell M S Chatham	Jasper, son of Jas Paul, Chatham, Scavelman	7 years from 15 May 1710	£45	22s 6d
Hy Ward, Sr Master Joiner Chatham	George Dixon, son-in- law of Wm Powell of Rochester	7 years from 8 May 1710	£22	11s 0d

<sup>1</sup> See section on Naval Shipwrights in this chapter

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<i>Master</i>	<i>Apprentice</i>	<i>No of years</i>	<i>Sums &amp; Value given</i>	<i>Duty Stamp Paid</i>
Israel Pownoll, AMS Chatham	John, son of Alexr Miller of Gillingham Shipwright	7 years from 19 July 1710	£23 10s 6d	11s 6d
Henry Leake of Chatham, Ship- wright	Richard, son of Matthew Spray of Chatham, Bricklayer	7 years from <sup>1</sup> 1 Sept 1710	£20	10s
John Bycraft, Chatham, Ship wright	Thomas, son of John Knock of Chatham labourer to ropemakers of HM Yard.	7 years from 24 June 1710	£ 8	11s 6d
Samuel Pett, Woolwich, Joiner	John, son of John Simpson 1	7 years from 6 March 1746/7	£10	5s
John Day Chatham, Sailmaker	William, son of Susannah Bush	7 years from 6 April 1747	£10	5s
Jno Woolcombe, Plymouth Dock, Surgeon	Geo. son of George Marten	5 years from 13 Nov 1743	£46 5s	£1.3.1 <sup>1</sup> / <sub>2</sub> d
Jacob Acworth Navy Office, Surveyor of Navy	Samuel Holman	3 years from 25 April 1747	£150	£7 10s 0d
Wm Guy, Rope- maker, Chatham	John, son of Maurice Delamare	7 years from 3 March 1746	£ 12	6s
Nich. Stanbridge, Sailmaker, Chatham	William, son of 7 Thomas Martin	years from 29 June 1747	£ 10	5s
Nath. <sup>1</sup> Hawes <sup>2</sup> of Rochester, Surgeon	Fra. son of Thos Button of Gillingham	7 years from 11 Dec 1718	£ 80	4s
Wm Clother, Block- maker, Chatham	Thos Durham	7 years from 13 April 1758	£ 12	6s
John Simpson Surgeon, Chatham	Jonathan Monkton	7 years from 11 June 1755	£200	£18.0s 0d
Will Yates, Attorney Rochester	William Baker	5 years from 6 May 1757	£150	£7.10s 0d
Thos Pool Parminter, Clerk of Check, Chatham	Chas, son of Chas Walwin of Maidstone Clerk	6 years from 24 June 1716	£ 86	£4.6s 0d
Paul Stigant, Master Shipwright, Sheerness	Jno, son of Capt Ralph Eaglefield of West- minster, Gentleman	7 years from 6 Sept 1715	£10. 15s	5s 4 <sup>1</sup> / <sub>2</sub> d
Julius Caesar, Strood, Apothecary	Henry, son of Jno Pearce of Dartford Gentleman	7 years from 12 June 1711	£ 50	£1.5s 0d
Jno Shales, Agent Victualler of V O Chatham	Henry, son of Prudence Lock of Rochester, Widow	5 years from 1 Nov 1711	£ 86	£4. 6s 0d

1 The apprentice would be trained at Deptford

2 See Medical Officers in chapter 12

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<i>Master</i>	<i>Apprentice</i>	<i>No of years</i>	<i>Sums &amp; Value given</i>	<i>Duty Stamp Paid</i>
Jos. Hasted Painter, Chatham	John, son of Thos Cole of St Mary Overy, Southwark, Brewer	7 years from 13 Dec 1710	£ 4	2s
Jno Southerden, Chatham, Master House Carpenter	Mathew Spray	7 years from 15 Dec 1753	£ 20	10s
Rich. Chichley, Chatham, Carver	Pymon Hammond	7 years from 5 May 1758	£ 20	10s
Jno Vinall, Chatham Bricklayer	Richard Lloyd	7 years from 27 Feb 1758/9	£ 9	4s 6d
Hy Leake, Master Caulker, Chatham	Christopher, son of Christopher Robinson Strood, Mariner.	7 years from 4 Feb 1716	£ 20	10s
Ezekiel Pomeroy, Clerk of Survey, Woolwich	James Todd	6 years from 21 Jan 1758	£ 86	86s
Thos Larcum Carpenter, <b>Royal Sovereign</b>	John Russell	7 years from 15 Nov 1763	£ 12	6s
Wm Rosewell, Deptford, Shipwright	Thos, son of Ed. Clark dec'd.	7 years from 10 Feb 1718/9	£ 30 <sup>1</sup>	15s

### Ropemaker Apprentices

The entry of Ropemaker apprentices caused industrial unrest during the 18th century. A condition peculiar to the Ropemakers trade was that it was:

*. . . required and expected as much work should be performed by every servant entered during the term of his apprenticeship as when out of his time and became a man for himself*

The Ropemakers objected to the fact that most of the boys taken on could initially be of no assistance in the skilled tasks of hatchelling and spinning and hence had to be employed in the laying house. This could be hazardous:

*It is customary for boys to be careless and addicted to play knowing no danger so fear none, and should a hook overpower us we can expect nothing but death or grievously wounded, which may render us incapable of getting bread for life.*

The Ropemaker opposed any increase of the number of apprentices entered for they feared redundancies at a later date. In wartime they could earn as much money as they wanted without the additional burden of apprentices and the fear of dismissal at the end of hostilities.

By Navy Board Order dated 18 July 1729 the following number of servants were to be allowed to the Ropeyards: Master Ropemaker, 5; Clerk of the Ropeyard, 4; Foreman of Ropery, 3; one to each of the three layers. At Woolwich the Ropemakers went on strike mainly in protest against the number allowed to the Clerk of the Ropeyard and on 25 July this Order was revised to enter two servants to the Clerk of the Ropeyard. By an Order of

<sup>1</sup> This sum included £15 in money and one and a half years diet valued by the Com. at £15

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12 June 1730 no apprentices were to be entered for this officer. There was further trouble in 1745 when the Ropemakers at Woolwich and Chatham went on strike, for to step up production, it was decided to enter one new apprentice for every eight Ropemakers.<sup>1</sup>

The Ropemakers and their apprentices on St Catherine's Eve dressed up a pretty boy as a girl and carried him round with pipes and drum collecting money for a supper. By 1859 the outing was confined to a visit to a public house followed by cricket on the Lines.<sup>2</sup>

### Other apprentices

Up to 1723 Smiths work was carried out by contractors; after this date Smiths working in the Yard under the Master Smith were Dockyard employees.

By Navy Board Order of 8 December 1727 the Master Attendants of His Majesty's several Yards were each to be allowed two servants to be borne on the Ordinary as other shipkeepers are with the usual allowance of victuals and the pay of OS until they have served four years and the wages of an AB during the remaining three years of their apprenticeships. They were to be brought up in the Rigging House in order to qualify to serve as Boatswains in the Royal Navy and to assist the Master Attendants in performing their night duty afloat.

The apprentices were to be 16 years on entry and five feet in height and were to be bound for seven years. They were to be employed in the Rigging House in preparing, converting and fitting the rigging from 7 am until 5 pm from Lady Day to Michaelmas, and from 8 am to 4 pm the remainder of the year. They were to be borne and to lye every night on board the ships where the Master Attendant lodges. The Master Attendant was allowed two or more Sailmaker apprentices in 1790.

Instructions were issued on 20 April 1730 for the entry of apprentice clerks. They were to be 15 or over and capable of writing a plain legible hand and understanding the common rules of arithmetic. No clerk was to have more than the lowest salary in the office until he had served three years and was full 18 years of age. They were not to be discharged without authority.

During the 18th century the recruitment of Joiner, House Carpenter, Ropemaker and Smith apprentices presented few problems because workmen of these descriptions could generally be readily enrolled. The recruitment of Shipwright apprentices was an important issue.

### Apprentices of the Dockyard Officers

Until the 19th century the money received by Dockyard Officers in the form of premiums and apprentices wages,<sup>3</sup> less the amount of their board, was a valuable addition to their income. In the Quarter ending Lady Day 1685 the Master Shipwright of Portsmouth received £30 14s 4d in wages from five apprentices. These perquisites were investigated by a Commission of Enquiry appointed in 1785 whose findings were published in The Reports of the Commissioners appointed by Parliament to enquire into the Fees, Gratuities, Perquisites and Emoluments which are, or have been lately, received in the several Public Offices therein mentioned.

The Commission examined the case of William Peek, Master Caulker of Chatham. He

1 See Dockyardmen in chapter 3

2 On St Clements Day a Smith apprentice dressed up as an old man was carried round the Chatham streets by the Smiths and their apprentices who collected money for a supper

3 By Navy Board Order of 23 March 1775 under the Shipwrights scheme of taskwork, servants who had served one year at their tools were to be divided among the task gangs and have their usual proportion of earnings.

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and his ancestors had spent upwards of 200 years in the Shipwright branch in HM Yards. He had three servants whose earnings in 1784 amounted to £109 10s 6d out of which he paid £39 for their board (5s per week for each apprentice).

The Commission recommended that Dockyard Officers receiving a salary should not be allowed to take apprentices and that apprentices wages should be reduced. This was implemented and from the beginning of the 19th century there was a drastic change in the Dockyard Apprenticeship system and by Order in Council of 17 June 1801, no officer receiving a salary was to be allowed the benefit of an apprentice.

The Dockyards at this period were investigated by two other Commissions: the Commission of Naval Enquiry of 1803 and the Commission for revising and digesting the Civil Affairs of the Navy appointed in 1805. Among the recommendations which were implemented was the payment of salary instead of day pay for the Inferior Officers of the Dockyards: Foremen of Shipwrights in 1802, Quartermen of Shipwrights, the Masters of Trades other than Shipwrights and their Foremen, in 1804 and later.

The range of subordinate officers who were placed on salary instead of day pay was gradually extended during the early part of the first decade of the 19th century and these officers in turn lost the benefit of their apprentices.

At first it was decided to distribute the apprentices who had to part from their masters among deserving artificers of the Yard. The First Lord, St Vincent, consulted Bentham about this procedure. The latter, who had himself served an apprenticeship in the Yard, advocated that apprentices should be given theoretical as well as practical training in ship-building. His plan was adopted without careful study by the authorities. The apprentice was re-bound to the Principal Officer of his Department and the workers with apprentices were renamed Instructors. The latter were responsible for the practical side of apprentice training and for this work they were allowed two-thirds of a single days pay of the apprentices irrespective of whether piece work or overtime was worked. Unfortunately there was no provision made at the time for the theoretical training. Schools were not introduced in the Yards for reasons of economy and the outbreak of war.

By Order in Council of 14 September 1808:

*The principle of not allowing any part of the emolument of the Professional Officers who are now allowed salaries to arise from apprentices is now to be extended to those inferior officers who have not hitherto been allowed salaries*<sup>1</sup>

*. . . But in order that the individuals who have hitherto enjoyed the advantages arising from apprentices may not be deprived thereof without previous notice all persons having apprentices are to be continued on the same footing as at present until the expiration of the period for which their apprentices are indentured when they are to be placed on the salaries hereafter specified; but in the event of any new officer being appointed he is to be allowed the salary assigned for the situation he is to fill instead of any part of any Emoluments being permitted to arise from apprentices. It will be observed the Pro-Quartermen of Shipwrights and Caulkers are to be allowed the benefit of one apprentice. As there are several inferior officers in the Dockyards and Ropeyards who have now two Servants entered at different dates and whose apprenticeship will of course expire at different times the officer in the intermediate time is with one servant only and his earnings consequently reduced. A compensation is to be made to such officers from the expiration of the first apprenticeship to the expiration of the second equal to what he will be entitled at the latter period when placed upon the new establishment.*

<sup>1</sup> The order provided schedules of the salaries of these inferior officers.



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*The regulations concerning the retention of apprentices may however be dispensed with in favour of such persons having apprentices who conceive that their situation would be improved by relinquishing their apprentices and receiving the new rates of salary or pay in which case they are to be permitted to do so and their apprentices are to be turned over the government but it is necessary that they decide at once whether they mean to avail themselves of the permission given.*

All apprentices entering the Yard were then bound to the Principal Officers of the trade to which they belonged and were allotted to Pro-Quartermen and deserving workmen who were termed Instructors. The apprentices were paid the old day pay rate, but two-thirds of his wages was given to the instructor, and one-third went to the apprentices parent or guardian. The new form of indenture stated:

And the said Master (Principal Officer of the selected trade) for and in Consideration of the Work and Service to be done and performed by the said Apprentice, him the said Apprentice in the Art of a (Name of trade) which he now useth, shall cause and procure to be taught and instructed by (name of an elected craftsman) of the (Trade Group to which he belongs) in the said Dockyard, who shall be, and be called, his Instructor, and have the Care and Charge of teaching him his Business; and whose lawful Orders and Commands the said Apprentice shall, at all Times and in all Things, relating to his Business, willingly perform and obey . . .

And the said (Parent or Guardians name) doth hereby covenant and agree to and with the said (Master Craftsmans name) to find and provide for the said Apprentice sufficient Meat, Drink, Wearing-apparel of all Sorts, Lodging, and all other Necessaries; also Working tools such as shall be approved of by the said Master, during the whole of the said Term; the said (Name of Master Craftsman) hereby covenanting and agreeing with the said (Parent or Guardians name) to pay or cause to be paid during the whole of the said Term the whole of the Earnings of the said Apprentice in the proportions allowed by the Commissioners of the Navy and in Quarterly Payments at the Period when the Yard is paid; which Earnings it is hereby agreed between all the said Parties to these Presents shall be divided and paid in the Manner following; that is to say, two equal Third-parts thereof unto the Instructor for the Time being, in consideration of the Care and Trouble he will have in teaching the said Apprentice his said Art and Business; and the remaining equal Third-part thereof unto the said (Parent or Guardians name) . . .

Provided also that if by Idleness or Neglect of Duty the said Apprentice shall absent himself from his Work, the Number of Days he shall lose by so absenting himself shall be served at the Expiration of (number of years) years, from the date of this Indenture . . .

Provided also that in case the said Apprentice shall during the said Term receive a Cut or Hurt in His Majesty's Service, he shall be entitled, according to the custom of the Service, to a Surgeon's Note; and the Time he may be on the said Note shall be considered as part of his Apprenticeship.

(After 1951 the apprentice was bound to serve the Secretary of State in the particular trade or occupation. The indenture was signed on behalf of the Secretary of State by the Head of Department until 1960 when the Personnel Manager signed for all apprentices.)

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The Chatham Commissioner, Robert Barlow, in an instruction to his officers, ordered on 3 February 1807:

*Every artificer of every class who is deserving of the indulgence shall be rewarded with an apprentice and therefore direct you to send us a list of every man who in your opinion comes under this description without regarding whether they have an apprentice before or not.*

In April 1808, 16 shipwrights, two caulkers, three joiners, two house carpenters and one sailmaker were allowed one apprentice each.

On 21 February 1811, Mr Abel Hubbard, Foreman of Sailmakers, and instructor to three apprentices, was superannuated. The Master Attendant wrote:

*Agreeably to the 2nd Article, page 87 of the 8th Report we beg leave to recommend the under mentioned sailmakers three of which to be instructors to the said apprentices .*

Hubbard was succeeded by Thomas Rencker and on 2nd March 1811 the Master Attendant wrote:

*By 2nd Article, page 97 of the Report Rencker lost his own apprentice.*

### **Proposals for Changes to the Training of Apprentices**

Prior to 1801 some of the apprentices, particularly those of the Master Shipwright and their Assistants received instruction which fitted them for careers as professional officers in the Dockyard service. When this privilege was withdrawn the standard of entry of apprentices declined and there was a lack of provision of formal training to those who entered. One attempt made to correct this state of affairs was contained in the Admiralty Order dated 9 March 1804:

*Their Lordships are desirous of giving encouragement to the theoretical as well as the practical part of shipbuilding in HM Dockyard s, and that it is their anxious wish that an adequate number of the most clever boys selected from apprentices in the different Yards should be trained in the mould loft to draw plans and qualify themselves under proper instruction for the higher branches of their profession.*

The Commission for Revising the Civil Affairs of the Navy painted a rather gloomy picture of the apprentice position in their Third Report of 1806. Many apprentices could not read or write, few had much education, and the examination on entry was confined to checking their age, 14 at entry, their height, four feet ten inches; and passing the medical examination. During their apprenticeship they were taught nothing but their business as shipwrights, apart from a favoured few employed in the cabins and mould lofts.

By the end of their apprenticeship they spent two or three years as shipwrights, after which they were commonly employed as overseers of ships building in the merchant yards. They were then appointed quartermen, having the superintendence of a gang of 15 shipwrights and four or five apprentices. They could then progress to the grades of Foreman, Assistant Master Shipwright and Master Shipwright; from the latter the Surveyors of the Navy were chosen.

They had no opportunity of acquiring even the common education given to men in their rank in life and yet they became responsible for the construction of ships on which national safety depended without any provision for instruction in mathematics, mechanics and naval architecture during their career.

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Their report stated that prior to May 1801 Master Shipwrights and their Assistants had been allowed to take private apprentices of rather a better condition and more education but on account of the abuses to which it led they were deprived of the privilege and this superior class was entirely lost.

There had been a second class rather better than those bound to common shipwrights who were bound to foremen and quartermen, but on account of irregularities the privilege was stopped for the former in 1802 and the latter in 1804.

Before 1802 the Shipwrights to whom the apprentices were bound were required to maintain them if their parents were unable to do it, and in return the whole of their earnings were paid to their masters. According to the Commission the advantage derived amounted to about £70 p.a. for the period of the apprenticeship. The wages of the apprentices were inflated by overtime and piecework in time of war. The Shipwrights endeavoured to obtain boys whose parents were in good circumstances and to recommend themselves by taking pains in their instruction.

In 1802 the apprentice was bound to the principal officers of the branch of the Dockyard in which he was to be brought up and trained by an artificer, his instructor. In consequence of abuses occasioned by extra wages to apprentices it was established that they were no longer to have more than a single days pay, two-thirds of which amounted to about £16 a year, to be paid to the instructor, and one-third, amounting to £8 per annum to the parents or guardian of the apprentice for providing his food, clothes and tools.

1st year Shipwright apprentice	14d a day	£18 2s 0d per annum
2nd year	15d	£19 5s 0d
3rd year	17d	£22 1s 0d
4th year	18d	£23 4s 0d
5th year	20d	£26 0s 0d
7th year	20d	£26 0s 0d

The pay for apprentices of other trades was between 12d and 20d a day.

By this Regulation the wages were so much reduced that it was hardly worth the while of a shipwright to instruct an apprentice and the trifling allowance for their support during the first three and a half years of their apprenticeship could induce none but the most indigent classes to offer their sons to the Dockyards.

The Report declared that those who have come into the Dockyards since the change were without education and unfit to be brought in the mould lofts. If the system were to be continued good working shipwrights would hardly be found. No blame was imputed to the officers whom they believe to be good builders of ships even if they had little knowledge of the theory of naval architecture. The government was to be blamed for not having provided any place of instruction.

There were heavy discharges of workmen after the Treaty of Amiens and this was balanced to some extent by an increased entry of apprentices; 15 shipwright apprentices were entered at Chatham in November 1802 and between 1 January 1802 and 14 May 1804, 79 apprentices of various trades were entered at Chatham. There were then, in Chatham, 411 shipwrights and 123 apprentices; the corresponding figure for Sheerness, 137 shipwrights and 48 apprentices.

Despite the gloomy picture painted by the Report there are examples where the sons of Dockyard Officers were bound to their fathers. Oliver Lang, appointed Master Shipwright at Chatham in 1858, had been privately bound to his father who was successively Master Shipwright at Sheerness and then Woolwich. He received no pay as an apprentice and

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was not borne on the books of the Yard. On coming out of his time in 1828, he was employed initially in the mould loft at Woolwich. By 1834 he had been appointed Foreman; ten years later he was transferred to Chatham as Assistant Master Shipwright. In 1853 he moved to Pembroke as Master Shipwright, returning to Chatham again in 1858.

John I Fincham who was an Assistant Master Shipwright under Lang had served his time with his father who was Superintendent of the School of Naval Architecture and then Master Shipwright at Sheerness. He was not on the Yard Books and received no pay until the last year of his apprenticeship when he was paid 2s a day as an ordinary apprentice. He was entered as a Shipwright at Sheerness in 1835 and a year later was transferred to the mould loft as a single-stationed man receiving 5s per day. After passing through the grades of Inspector and Foreman, he was appointed Assistant Master Shipwright at Chatham in June 1849.

In the Report on the Economy of Her Majesty's Dockyards in 1858 evidence was given that there were apprentices in the Factory at Sheerness; they were not indentured but borne as boys in the fitting department and that it was possible for a boy to be indentured to his father. Zachariah Sylvester, First Leading Man of Millwrights, aged sixty two and a half and paid 8s a day, stated that whilst at Sheerness he had two apprentices and was given £20 apiece for instructing them. They were not allowed pay from the Government until after the third year. They were bound by a lawyer in the term for seven years. He did work outside and occasionally carried out work on windmills after Yard hours.

In his book *Shipbuilders of the Thames & Medway* Philip Banbury stated:

*Thomas Ditchburn (1801/1870) had been an apprentice under Sir William (sic) Seppings and had left the Royal service to become manager of Fletcher and Fearnall. According to the Thames Ironwork Gazette of 30 Jun 1901 Ditchburn went into partnership with C J Mare in 1837 forming the shipbuilding firm of Ditchburn and Mare initially at Deptford and later at Blackwall.*

Hardly the poor quality apprentice pictured by the Commission of Revision . . .

The Commission of Revision highly commended the action of the officers of Chatham Yard, who had, on their own initiative, formed evening classes in 1802 for the instruction of apprentices. Mention of this school was made later by Captain (afterwards Baron) Dupin <sup>1</sup> of the French Corps of Naval Engineers, who came to this country in 1816 on behalf of his government to investigate the condition of prisoners-of-war in the hulks on the Medway. He visited the Yard establishment and wrote in 1818:

*For several years past the officers of Chatham Dockyard have subscribed to form at their own expense a school where the young apprentices are received in the winter evenings. They were taught reading, writing and arithmetic, and even, as I understand, the first elements of geometry. They are admitted without any deduction and free from all expenses but dismissed on the first serious fault they commit, or merely if they cease to be punctual.*

It was observed that the teacher of the voluntary school was a shipwright who had no other reward for his labours than the prospect of getting an apprentice. Dupin also noted:

*It is at Chatham that the Government has established, within these five or six years, a practical school for the Corps of Artificers of the Engineers.<sup>2</sup>*

1 Two excursions to the ports of England, Scotland & Ireland in 1816, 1817 and 1818

2 The Royal Engineer Establishment founded by Major Charles William Pasley as Director, in 1812, named the School of Military Engineering in 1889

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### School of Naval Architecture

To secure the admission of a better type of apprentice into Admiralty service the Commissioners of Naval Revision recommended in their Third Report of 1806 that a superior class of apprentices should be entered to qualify ultimately for the highest professional posts at the Dockyard and the Admiralty. Entrants would have to pass an educational test and be able to read French in order to study books on Naval Architecture in that language. <sup>1</sup>

The apprentice was to be indentured for seven years and to receive a salary rising from £60 in the first year to £140 in the sixth and seventh years, less a tuition fee of £8 per year.

The first class of apprentices was admitted, (after an examination in Arithmetic, first three books of English, vulgar and decimal fractions) to the School of Naval Architecture which was opened in January 1811 and integrated in 1816 with the Royal Naval College, Portsmouth. This Institution, originally the Naval Academy founded in 1733 and renamed the Royal Naval Academy in 1774, provided instruction for boys preparatory to their entry into the Royal Navy. In 1806 the Academy was enlarged and retitled the Royal Naval College. The College was transferred to Greenwich in 1873.

The apprentices worked at their tools in Portsmouth Yard for three days of the week. Instruction in laying off and making drafts of ships was given during the forenoon of each of the first three days of the week and also every morning before breakfast. Academic studies were conducted during the afternoons of the first three days of the week; preparatory courses of algebra, geometry, trigonometry, mechanics, hydrostatics, and differential and integral calculus. Examinations were conducted every Christmas.

Until 1817 the students lived out and were taught in the same building as the cadets of the Royal Naval College. In that year a new building equipped <sup>2</sup> and constructed at a cost of £18,000 came into use and the students received food and accommodation in lieu of a part of their salary.

The students were bound for seven years to the Superintendent of the School of Naval Architecture and were also bound by a bond of £500 to serve for ten years in Admiralty service after the commencement of their apprenticeship.

After leaving the School of Naval Architecture students were sent to the Navy Office, to offices in the Dockyards and to sea in experimental and other ships. After training they could expect to be appointed to the grade of Foreman and they were expected ultimately to fill the higher positions in the service.

From the Navy List of 1830: School of Naval Architecture, Royal Naval College, Portsmouth:

Professor Rev James Inman, DD appointed 16/3/1808;

Assistant Professor Charles Blackman, MA appointed 1/11/1811;

First Mathematical Assistant Peter Mason, MA appointed 27/1/1823;

Supt John Fincham, with the rank of Foreman of the Yard, appointed 9/8/1816.

Dockyard Apprentices with not more than three years service were allowed to compete for entry into the School of Naval Architecture, but those who entered in this way appeared to be confined to a few in 1811; the standard of the entry examination was a bar to the entry of Dockyard Apprentices.

<sup>1</sup> In 1819 a Select Committee of the House of Commons recommended that French should not be taught at the School of Naval Architecture lest students should be tempted to take service with a foreign government.

<sup>2</sup> This building was designed by Edward Holl and was built in the period 1815/1816.

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In 1811 fourteen students were entered and the entries between 1812 and 1816 brought the total of students to 24; thereafter the numbers declined. Francis Laire, Master Shipwright of Chatham from 1844 to 1858, was a member of the first entry.

William Henwood entered the service in 1815 at the School of Naval Architecture. In 1822 he was attached to Chatham Dockyard as a student of Naval Architecture and in the following year moved to Portsmouth in the same capacity. After service as draughtsman at the Navy Office and as Foreman at Pembroke and then Portsmouth, he was appointed Master Shipwright at Malta in 1848. In July of 1853 he came to Chatham as Assistant Master Shipwright.

At times the relations between Dockyard Officers and the ex-students were rather strained; it was felt that with the emphasis on theoretical studies the potential Dockyard Officers lacked the practical knowledge of shipbuilding. The School of Naval Architecture was closed in 1832 by Sir James Graham, the First Lord.

### **Instruction of Apprentices**

The Commissioners for regulating the Civil Affairs of the Navy had also recommended in the Third Report of 1806 that candidates for entry as ordinary apprentices in the Dockyards should be able to write and understand the rules of arithmetic, and that one or more teachers should be appointed in each Yard capable of instructing the boys in reading, writing and arithmetic. They suggested that the most deserving apprentices might be taught French, the language in which the most valuable works on Naval Architecture were, written, with a view to qualifying for the higher posts.

The changes in the system of apprenticeship resulted in a drop in quality in the recruitment of apprentices. Parents found that the £8 a year they received for the keep of their sons was insufficient: they had previously received in many cases £10 to £30.

The 1801 regulations provided that boys previously apprenticed to officers should be allowed any allowances from their masters that had been stipulated in their indentures. In February 1804 boys previously indentured to officers but not covered by this clause were given an extra 1s a day provided that they had served half their time (3 1/2 years) and could do a mans work.

The standard of practical instruction given by the instructors gradually fell for they began to regard apprentices as a handicap rather than an asset. Such instructors were usually found in Task and Job Gangs and they found they earned less because the very young apprentice could not perform the work of men or earn more than day pay.

From April 1804 all apprentices who had served half their time were allowed the whole of their earnings by Task and Job; both parents and instructors received more.

The proposals for the introduction of Dockyard Schools for the ordinary apprentices were not adopted until 1842 and the entry of apprentices into the Yards was determined to a large extent by influence, personal or political. The Commissioners had set too high an educational standard for the times, the first decade of the 19th century; Captain Hope of Chatham Yard expressed his doubts whether any of the boys would be able to write or to perform simple arithmetical calculations. When it is remembered that such boys were not of the poorest class and were 14 years of age the very low educational standard of the times becomes apparent.

The Commissioners recommended revision of the rate of pay of apprentices and a fresh division between instructor and apprentices parents; giving the latter one-half instead of one-third. This was to encourage the entry of lads without Dockyard connections, but preference was always given to the sons or orphans of Yard or Navy men. The recommendation concerning pay was adopted by Orders in Council in 1809.

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The wages of apprentices were slightly reduced in 1833 and altered again in 1841, when they were rated from 10d a day for first year apprentices to 2s 4d a day for those in their seventh year; out of this the instructor was paid 4d a day. By 1873 their wages ranged from 3s to 12s per week. In 1914 wages were from 4s to 15s per week, but the instructors allowance of 2s per week was no longer deducted from the apprentices pay; this allowance was payable during the first four years of apprenticeship. In 1960 the instructors allowance was 7s 6d per week; and was raised from 10s to 15s per week in 1968. The apprentice was taught by different instructors during each phase of his apprenticeship.

### **Education of Boys before Apprenticeship**

The low standard of the education of Dockyard apprentices at the beginning of the 19th century was due mainly to the scarcity of schools and the inferior quality of the instruction given by the teachers in them. Although the famous Education Act was passed in 1870, compulsory attendance at school up to the age of 10 was not enforced until 1880, to the age of 11 in 1893, to the age of 12 in 1899 and to the age of 14 in 1918. No attempt was made to provide secondary schooling until the second Education Act of 1903. Fees in public elementary schools were abolished in 1891, although Church and Higher Grade Schools charged until 1918. The school leaving age was raised to 15 in 1947 and to 16 in 1971.

Up to the time of investigation of the apprenticeship system in the Royal Dockyards by the Commissioners for regulating the Civil Affairs of the Navy, the elementary education of boys in the Medway Towns had been provided by Dame Schools, Private and Charity Schools, Sunday Schools and parental teaching. Secondary education was provided mainly by the Kings School, Rochester, a public school whose foundation was restored by Henry VIII in 1540, and the Mathematical School of Rochester founded under the will of Sir Joseph Williamson in 1701 to provide education for the sons of the Freemen of Rochester, together with institutions set up by private organisations. As far as is known there have been only two boys who entered as shipwright apprentices in Chatham Dockyard from the Kings School; the famous Phineas Pett who was apprenticed in 1590 to Richard Chapman of Deptford and served two years in Chatham Yard, and Mr Mander who entered in 1951. Many of the pupils from the Mathematical School have sought apprenticeship in Chatham Dockyard.

The Report of the Commissioners on the Education of the Poor, published in 1819 recorded that Elizabeth Petty by her will of 1723 left an emolument, out of which, in 1819, was paid 3d a week for each of eight poor children of Chatham and seven of Gillingham to two widows in the respective parishes who taught them reading and writing from the age of four to twelve. In a similar charity in Gillingham where the bequest had been neglected, the Commissioners found that the school-mistress had about 18 to 20 scholars who each paid her 4d a week. <sup>1</sup>

In 1786 Robert Raikes had inaugurated the Sunday School Union. The primary object of these schools was religious and moral instruction, for which purpose children were taught to read, the New Testament being the primer. Some of the schools taught writing, and a few arithmetic.

The Church of England wanted control of education and caused the delay of the introduction of a public system of education. The Church of England established in 1811 The National Society for the Education of the Poor in accordance with the Principles of the Established Church; with the aim of promoting the building and maintaining of voluntary day schools called National Schools. The British and Foreign School Society

<sup>1</sup> The charity was established by Phillip Tidd, a shipwright in Chatham Dockyard in 1773

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formed about the same time helped to establish similar but undenominational schools known as British or Lancastrian Schools. Both schools probably employed the monitorial type of teaching.

The first National School of Gillingham was established in 1816 and stood in Pier Road; this was replaced by the school built in Forge Lane in 1872 known in the 20th century as the Gillingham Church of England School. The National School on the New Road, Chatham was built in 1808; in 1857 it was transferred by the Dean and Chapter of Rochester to the parish of Chatham and enlarged and restored by public subscription. In 1838, 172 boys and 104 girls whose ages ranged from six to fourteen, attended this school. By about the middle of the 19th century there were additionally in Chatham, the British School in Duncan Place, founded in 1846 and rebuilt in 1891, and the National Schools associated with the churches of St Mary and St Paul, and the National School in Luton.

After 1833 government grants were available for education; additional schools in Gillingham were built including St Marks, a Church of England School, and the Wesleyan School, both of which provided a large number of apprentices for Chatham Yard, Holy Trinity National School, Brompton and Roman Catholic Schools.

The Education Act of 1870 aimed at covering the country with good schools; School Boards were established for each district with the power to raise rates and build schools where voluntary provision was inadequate. Gillingham resisted the introduction of a School Board until 1893 by extending the existing voluntary schools, but the huge increase in population in the last part of the 19th century was too much for voluntary effort. After the establishment of the School Board a number of Board Schools, Byron Road, Barnsole Road, Richmond Road and Napier Road, were built; these were termed Council Schools after 1903.

There was no School Board in Chatham <sup>1</sup> but Rochester School Board opened Troy Town School in 1873 after rebuilding the Lancastrian School built in 1774 and enlarged in 1808.

### **The Dockyard Examination**

In the 19th century candidates for apprenticeship in the Dockyard were required to satisfy another condition for entry, viz, the passing of a written examination in school subjects. Parents came to expect the schools to prepare the boys for the Dockyard examination.

An advertisement appeared in "Chatham News" of 23 December 1882 for Sir Joseph Williamsons Mathematical School, Rochester:

*A special class will be formed to prepare boys for Engineer Students, Dockyard apprentices, Boy Clerks and other Junior Civil Service Examination. The ordinary school course is adapted to the requirements of boys who leave school at 15 or 16 for business or professional life.*

The charge for fee-paying pupils attending the Mathematical School <sup>2</sup> in 1889 ranged from £4 10s to £7 15s a year according to age; the fees at St Johns National School were 2d a

<sup>1</sup> By Sandon's Act of 1876 School Attendance Committees were established in every area where there were no school boards. In Chatham in 1876 compulsory school attendance for the Children of Chatham was from the age of 7 to 11; up to Standard IV. This standard of proficiency existed until September 1894 when Standard V of the code of 1893 was defined as the standard of proficiency, on the attainment of which children of 13 might be employed full time.

<sup>2</sup> The sons of Freemen attending the Mathematical School received free education.



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week for the children of labourers, 3d a week for the others, apart from those receiving advanced instruction for which the charge was 6d a week.

Gillingham Technical Institute was opened in 1893 having been erected by Gillingham Local Board with the aid of a grant from the Kent County Council. From about 1910 to 1923 boys in the age range 12+ to 15+ attended the Gillingham Junior Technical School, the classes being held in the Technical Institute in Gardiner Street. In 1923 Gillingham Secondary School for Boys, later known as the County School, was opened in Third Avenue. Some of the masters and the boys from the late Junior Technical School were transferred to the new school. Among the boys who entered the Yard from Gillingham Junior Technical School was Sir Rowland Baker who had a distinguished career in the government service.

Chatham Technical Institute was opened in 1894. The Junior Technical School at Holcombe, Maidstone Road started in 1913; the science classes were held initially in the Technical Institute. In 1929 extensions were built at Holcombe and the school was unified. A similar school existed in Rochester with premises opposite the old Rochester Museum. The Junior Technical Schools provided many excellent candidates for entry as apprentices in Chatham Yard.

It became the aim of the candidate for Dockyard apprenticeship to get as high an examination mark as possible to ensure that he entered the trade he wanted and acquired a place in the highest class of the first year in the Dockyard School: both of these were dependent on the candidates position on the entry list.

In November 1899, the Gillingham School Board agreed to provide at Byron Road, Evening Continuation Classes for boys for the Dockyard Examination. A school which had a wonderful reputation for successes in the Dockyard Entry Examination was the Wesleyan School.<sup>1</sup> This school admitted pupils from Chatham and ran a special Dockyard class. The pupils in the Dockyard class paid 6d a week to attend school and 7d for evening classes, three per week, and Saturday morning school. It was designated a Higher Grade School in 1889.

In the local paper, The Observer dated 25 July 1908 appeared:

*The Gillingham Wesleyan School has again done well in the Dockyard examinations. Twenty five places were secured out of the fifty eight, including the first three, and eight out of the first thirteen. Boys from this school secured the highest marks of the local competitors in arithmetic (346), geometry and algebra (269), elementary science, (245, two boys were equal). During the last fourteen years, out of 1512 places, 731 have been secured by boys from this school.*

*Ten boys from the Mathematical School, Rochester, were successful, including the fourth, fifth, and sixth places, ten boys from the Gillingham Council and provided schools passed, four from St Marks and three from the Gillingham Technical Day Classes.*

The Wesleyan School was later handed over to Gillingham Education Committee and renamed Arden Street School; it is now closed.

<sup>1</sup> Press Notice 1870 Wesleyan School Arden Street

Master Mr Phipps salary £75 p a

Fees Infants 2d. Boys and Girls 3d Superior Tuition 6d per week

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In 1924 Mr Thomas James Coast (Admiralty Overseer & Foreman in the Yard) gave £100 to the Corporation of Gillingham to provide each year a watch for the boy educated in one of the Gillingham schools who passed out highest in the list of candidates for entry as Shipwright apprentice.

Adult education was catered for by both Evening Classes and the Mechanics Institute, High Street, Chatham. In the "Chatham News" of 25 September 1869 appeared the notice:

*St Johns Boys School, New Road*  
*Night School for men and boys above twelve are held four nights a week:*  
*7-9 pm Monday, Tuesday, Thursday and Friday*  
*Charges: under 16, 3d; over 16 (including Euclid and Algebra), 6d*

The Chatham, Rochester, Strood & Brompton Mechanics Institute was established in the High Street, Chatham, January 1837, for the promotion of useful knowledge among the working classes.; It occupied the lower part of the premises of the Chatham & Rochester Philosophical & Literary Institute founded in 1827.

*The gas was on in the Institute*  
*The flare was up in the Gym*     A Shropshire Lad by John Betjeman

The subscription was two shillings a quarter, and in 1847 there were 463 members. There was a reading room housing the library, open from 6 to 10 pm and a lecture room. In 1858 its activities were transferred to a Lecture Hall and Opera House, built by Messrs Whitehead and Vennel on the site of the old Chatham Market (just east of the Pentagon).

Lectures were given on various subjects including those of particular interest to Dockyard men. Readings were given by Charles Dickens who was President of the Mechanics Institute at one time. When the activities of the Institute became more literary, social and recreational, the mechanic element became discouraged and interest waned; the Institute was closed in 1876.

For the children of the Officers of the Dockyard there were private schools and the public school, Kings School, Rochester. In 1887 this school advertised that education was provided for the Universities, Naval and Military Services, and the Professions, and that the tuition fees were between £15 and £20 according to age.

An example of the private school is the Chatham & Rochester Classical, Mathematical & Commercial School situated between Hills Terrace and the Maidstone Road, Chatham, which was instituted in 1827. Shareholders of the School were entitled upon payment of £6 per annum to send one pupil to it. In 1885 the Principal was Mr W Dunstall. The premises were opened in 1893 as the Catholic Boys School.

The majority of men in the Yard would send their children to the schools mentioned earlier. For the very poorest there was the Ragged School in Chatham. In the S.E. Gazette January 27, 1883, appeared the Notices:

*Chatham Ragged School*  
*The subscribers to this institution held their 34th annual meeting on Tuesday evening in the School room, The Brook, Chatham. The High Constable (Mr A J Knowlton) was in the chair. It appears that there is an average attendance of 60 children in the school nightly. The institution is entirely self-supporting, receiving no government grant.*

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Pupils at the school paid their way by odd jobs such as making bundles of firewood, etc. The building with the date 1858 worked in the brickwork still stands.

Some would-be entrants to the Dockyard were coached for the entrance examination by men employed in the Yard, e.g., the night school run by Mr Grubb in Ordnance Place.

### **Establishment of Dockyard Schools**

The decision of the Admiralty to establish Dockyard Schools for the education of apprentices in 1842 may have been influenced by the desire to set an example to other employers of labour. The Dockyard Schools were, until closure in 1971, the oldest part-time day schools in the country; it was towards the end of the 19th century that other enlightened private employers followed the State example.

A Whig Ministry had closed the School of Naval Architecture in 1832 but Lord Minto, First Lord in Melbourne's Whig Ministry, gave consideration to the provision of educational facilities for Dockyard apprentices. On relinquishing his office in 1841, Lord Minto announced:

*A plan is also under consideration for the establishment of schools in the Dockyards for the education of junior apprentices, which I trust it may be found practicable to effect, as well as the institution of occasional lectures and instruction in naval architecture for the benefit of such young men and artificers as may be disposed to take advantage of them.*

The Dockyard Schools largely owe their inception to the efforts of Sidney Herbert who was Secretary to the Admiralty in Sir Robert Peel's Administration. Throughout his political career he was concerned with educational reform. Whilst at the Admiralty, Herbert completely reorganised the RN School at Greenwich and later, when he was Secretary of War, he undertook the reform of the Army educational system including the foundation of a school similar to the Dockyard Schools at the Royal Arsenal, Woolwich in 1857.

A letter dated 28 November 1842 was sent to Superintendents of the Yards authorising the establishment of schools to provide apprentices with a religious and professional education at Portsmouth, Chatham, Devonport, Pembroke, Woolwich, Deptford and Sheerness Dockyards. The aim was to provide an average level of instruction for the majority, but to provide opportunities for those possessing talent.

If the general average of instruction be put too high there is a danger of giving the apprentice an officers rather than a workman's education, and he will afterwards find a better market for his abilities than the Dockyards can afford, and thus the Public would have been educating him not for their service but for the advantage of others, and all return for the expense of this education would be lost. To eliminate the necessity of elementary teaching an indispensable condition of admission for an apprentice thenceforth was that he should be able to read and write and be acquainted with the first three rules of arithmetic. A Schoolmaster was to be appointed upon whom all apprentices were to attend every afternoon for three hours commencing an hour and a half before bell ringing, the end of the working day.

The School was to be divided into five classes. The three lowest classes, namely the Third, Fourth and Fifth, into which all apprentices were to be placed according to their attainments, were to occupy the first three years of apprenticeship, the promotion from

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class to class being made by annual examination. In these classes instruction was to be given in reading, writing, arithmetic, scripture, English, history and geography. At the end of the third year the most able shipwright apprentices were to be selected by examination for a two years course of higher instruction in the Second Class; those who failed were to remain in a similar course of instruction to that of the Third Class. In addition to this general education, instruction in ship construction was to be given to the Second Class. Two or three of the best of the Second Class were to be selected for the First Class to enter the Mould Loft to learn the laying-off of ships, ship construction, Mechanics, Hydrostatics and Mathematics. The Chaplain was to give religious instruction on Sundays in the School. The rules for Devonport Dockyard School are given in Appendix 1 and a Digest of Daily Instruction in Appendix 2 (at the end of this chapter).

The organisation of the school was to be dealt with by a committee consisting of the Superintendent, the Master Shipwright, the Chaplain, and Ô any other intelligent person connected with the Service whom they may recommend.

An Order in Council, dated 1 February 1843, authorised the appointment of school-masters at salaries from £70 to £100 a year, according to the amount of emoluments which the persons selected for the post might receive from any other appointment held in the Yard. The post of schoolmaster was initially considered as a part-time appointment similar to that of the Lower School Masters of the later period of the Schools.

The Chatham Schoolmaster mentioned in the annual report of 1849 was James McGarahan, but neither the date of his appointment nor his background is known; he was in office in 1845. According to the report of the Commissioners appointed to enquire into the state of Popular Education in England (1861) some of the first Dockyard School-masters . . . were originally Foremen of the Yard, men of good attainment, who for the most part received their education in the School of Naval Architecture.

Robert Rawson of the Portsmouth School assisted in research on the stability and oscillation of floating bodies. On the other hand, Robert Rae of Devonport School was educated at Hawick Grammar School and was a pupil of Dr Rutherford, MA, of Woolwich, Mathematical Master. He entered the service in 1839 as a Third Grade Clerk. In July 1849 he transferred to the post of Schoolmaster at Devonport School after having been employed as Second and then First Master of the School which was then an evening school. At Devonport initially most of the teaching was done in the evening. The other master with Rae at Devonport was trained at the National Society's Training School at Battersea.

### **First Dockyard School Building**

John Fincham, who, as Superintendent, had taught shipbuilding subjects at the School of Naval Architecture, was the Master Shipwright of Chatham from 1839 to 1843, and mainly by his efforts the first Dockyard School was started at Chatham Yard in 1843. The first classrooms were over the Treenail House, but these and the Schoolmaster's house at the east end of the building were destroyed in the Yard Fire of 1845.

This fire broke out at about two o'clock in the morning of 11 February 1845. It was first seen in the Joiners Pound which was full of seasoned mahogany and other materials for ships cabins etc. It then extended on one side to the Joiners Shop and afterwards on the other to the Treenail House, over which was the Apprentices School, forming a range of buildings on the east side. The Joiners Shop was gutted. The Treenail House was also gutted and the roof of the building with a great portion of the books, instruments, etc, belonging to the School completely destroyed. The Schoolmasters house, at the east end of the building, was also ruined <sup>1</sup>.(No 1 Joiners Shop was rebuilt in 1846.)

<sup>1</sup> See 1844 Map of the Dockyard

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The number of apprentices who attended the school in 1844 was 136. Contrary to the original order, each apprentice attended school on alternate afternoons; in view of the large numbers for one master a monitorial system of instruction was probably employed. The schoolmaster was not provided with an assistant until 1855.

Elementary instruction was given in the three Rs, history, geography and scripture; the latter was taught by the Chaplain on Saturday mornings. The religious aspect of the apprentices education tended to be neglected.

In his inspection of Sheerness Dockyard School in 1848 the Inspector of Schools was surprised to find that prayers were not said at the commencement and at the close of school. Dr Woolley, the Admiralty Inspector of Schools, reported in 1857:

*The knowledge of the Holy Scriptures displayed by the generality of the apprentices is very indifferent. Indeed an apathy, if not distaste, is manifested in the religious instruction which renders the chaplains labours both difficult and irksome.*

### **The Second Dockyard School Building**

To house the school after the fire of 1845, the Naval Estimates of 1846/7 included for Chatham Dockyard a sum of £1,100 for the erection of a school for apprentices. The school, which consisted of two classrooms, was built in the Sail Field, between the Sail Loft and the Dockyard Wall in 1847. (The building was later used as the Management Training Centre.)

### **Inspection of Dockyard Schools**

Admiralty allowed the School Committees time to get their schools functioning and then imposed a system of annual inspection. A letter, dated 27 June, 1846, to the Yards, stated that the Inspector of Greenwich Royal Hospital School had been directed to inspect the Dockyard Schools and to select, by examination in Arithmetic, the first three books of Euclid and Algebra up to quadratic equations, a number of apprentices who had completed their fourth year at the Dockyard for a three-year course at a School in Portsmouth Yard to be called the Central Mathematical School. The number to be selected annually in all Yards was to be limited to eight, a number estimated to fill half the yearly vacancies in the superior grade of Dockyard Officers; the remaining posts were to be filled by apprentices who remained in the Yards. Two were to be selected from Portsmouth, two from Devonport, one each from Chatham, Sheerness and Pembroke and one from either Deptford or Woolwich. To enforce discipline in the schools the same letter authorised the Superintendents of the Yards acting on reports of the School Committee to fine apprentices guilty of misconduct or neglect a sum up to a months pay or as an alternative to work extra time without pay.

The Dockyard Schools were inspected from 1846 to 1853 by Rev Henry Moseley, MA, FRS. Moseley was the Senior Inspector of Schools under the Committee of the Council on Education (predecessor of the Board of Education) and had been appointed Inspector of Greenwich Royal Hospital School; his reports appeared in State Papers 1845/53. In his first inspection he reported chaotic conditions at Chatham as well as the antipathy displayed by the Dockyard Officers. At that time the selection of boys for entry as apprentices was limited almost completely to the sons of persons connected with the Yard. These lads possessed such a wide range of scholastic attainment that it was almost impossible for one master to handle them. To remedy this the Inspector proposed that the selection of boys for apprenticeship should be made on the result of an educational examination. Further he proposed the abolition of the monitor system and the appointment of two masters at Chatham, one for mathematics and one for English subjects.

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### **Changes to the promotion procedure**

Before Admiralty took action on their Inspectors report the status of the Dockyard Schools was raised by a complete alteration in procedure for the promotion of officers and workmen in the Dockyards.

An Admiralty Circular dated 27 February 1847 laid down conditions for promotion by merit in the Dockyard service. Hitherto promotion had depended largely on seniority and personal or political influence. A regular system of reports embracing every man in the Yard was to be introduced and certain educational attainments were laid down for the various Dockyard Officers. Promotion was to be based on these reports and an examination which included educational as well as professional subjects. Personal or political favour was no longer to be exercised.

For promotion to Leading Man, the shipwright, in addition to a thorough practical knowledge of his trade, had to be able to write a legible hand and understand arithmetic as far as vulgar and decimal fractions. To be an Inspector, the Leading Man had, in addition to be able to measure plane surfaces and cubes and to understand the laying-off of ships on the Mould Loft floor. Foremen were expected to have a competent knowledge of simple equations in algebra and to be able to work through problems deduced from the first three books of Euclid, while the Assistant Master Shipwright had to pass an examination at the Naval College in quadratic equations, the first six books of Euclid and the general principles of mechanics and hydrostatics. For promotion in other trades the educational standard was somewhat lower, and the examination for Leading Man of Shipwrights was considered sufficient for an Inspector of Caulkers or Joiners. (Promotion examinations were to be held for the next hundred years.) The last of the Foremans examinations was held in 1950 and the others were finished before 1970.

The Circular also ordered that no apprentice who had served his time was to be entered upon the Establishment without a written report from the Master Shipwright to the Superintendent as to his character and qualifications, and to the document the school report was to be appended.

### **Modifications to the Organisation of the Dockyard Schools**

A Second Circular dated 29th November 1847, modified the organisation of the Dockyard Schools. The office of Schoolmaster was divorced from other duties in the Yard and he was to rank equal with the Foremen of the Yard, i.e., immediately below the Assistant Master Shipwright.

The Circular also included some amendments relating to the method of entry of apprentices. A list of candidates for apprenticeship was to be made out by the Superintendent, the Master shipwright and his Assistants in January of each year with reasons for their recommendation, service of father, etc. If 20 apprentices were to be entered, 40 names were to be submitted. No boy was to be placed on the Superintendents list of candidates for apprenticeship after 1st January 1848 whose age exceeded 15 at the time of the examination for entry which was to take place in all Yards between 5th and 12th January. The boys were to be examined in the presence of the Superintendent and the Principal Officers of the Dockyard by the Schoolmaster; no boy was to be admitted to the Yard without a competent knowledge of reading, writing and the first four rules of arithmetic. None was on the Superintendent's list whose parents were not employed in the Dockyards or other departments of the Navy, but their Lordships reserved the right of entering children of parents outside the yards in the list from which apprentices were to be selected. The best educated boys were to have preference over the others irrespective of claims of long servitude by the father or near relative, but special consideration was given to the sons of men who had lost their lives or

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earning capacity on active service in HM forces or to candidates who had claims on account of long and faithful service of their parents. The selection of successful candidates was made by Admiralty.

Apprentices were to attend school during the first four years of their apprenticeship and were to be divided into two divisions. During the winter months the Upper Division was to attend one afternoon and three evenings a week; the Lower Division, two afternoons and three evenings. During the summer months each Division attended an additional afternoon in place of an evening. The afternoon school hours were 1.30 pm to bell-ringing (5 pm), and evening school hours were from bell-ringing to 8 o'clock in the winter and to 8.30 pm in the summer. School attendance after the fourth years was to be permitted in certain approved cases.

After his inspection in 1850 Moseley reported that the hours of attendance at Chatham were fewer than those prescribed by the regulations. In the summer and winter months the First Division attended 12 hours per week and the Second Division 15<sup>1/2</sup> hours.

### **Central Mathematical School (School of Mathematics and Naval Construction)**

The first selection for the Central Mathematical School was to be made in January 1848. This school was housed in the building used by the School of Naval Architecture, closed in 1832. £800 was provided in the 1848 Estimates to cover the cost, and to the Committee examining the estimates it was explained that the school was intended to furnish a class of young men from whom efficient officers of the Dockyards may hereafter be selected. This School was also known as the School of Mathematics and Naval Construction. The Principal was Rev Joseph Woolley, MA, Fellow of St Johns College, Cambridge, who taught Mathematics and gave religious instruction; Mr Herbert, Dockyard draughtsman, taught professional subjects every other day, and Mr Hay, an Admiralty chemist, gave occasional lectures on chemistry.

A wonderful opportunity was offered to the apprentices; an apprentice could enter the Yard at 15, and after attending the Dockyard School for four years he might be selected at 19 for the Central Mathematical School at Portsmouth. At 22 he might return to the Yard as Leading man with a rise to Master Shipwright open to him. EJ Reed and Nathaniel Barnaby, Sheerness apprentices, who reached the highest posts in the Construction side of the Service, were both students at this school which was closed in 1857.

Moseley's second inspection of Chatham Dockyard School was conducted in February 1848 when John G Moore was selected as one of the eight candidates for the Central Mathematical School which was opened in 1848. Moore became Foreman at Sheerness Yard and retired from that post in 1872.

The inspection revealed that there were 132 apprentices at Chatham School; about one-third had some knowledge of geometry and algebra, and about one half had not advanced in their studies beyond arithmetic. The Inspector complained that the subjects of instruction were too elementary. The school had been recently built and Moseley commented on the roof of corrugated iron (this material was introduced about 1844). The roof was later covered with slates.

The school was again examined in May 1849 when the apprentices were examined orally in religious knowledge, reading, grammar, history and geography and also subjected to a written examination - the first in its history. Out of the 92 apprentices attending the Chatham school only one had reached a respectable degree of attainment in elementary Mathematics. He was William Owen who was selected for admission to the Central Mathematical School.

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Owen gave evidence at the Dockyard Enquiry of 1858. He was then Inspector of Shipwrights, aged 31 with a salary of £125. When he attended the Central Mathematical School there were 16 students. He spent three afternoons at his tools on new work, three mornings at drawing and laying off, except once a fortnight when he spent one morning in the laboratory with the Chemist, Mr Hay. The remainder of the week he studied mathematics but one day in the week, after a long forenoon, the students had the afternoon for themselves. Studies commenced at 7 am, breakfast at 8 am, Mathematics at 8.30 am, drawing 9 am. The mathematics class ceased at 11.30 am and those for drawing at noon. In both cases studies recommenced at 2 pm and were broken off at 5.30 pm in summer and before darkness in winter. Supper was served at 9 pm and Dr Woolley read prayers, mornings and evenings. The apprentices were victualled by the government, paid apprentices wages and found their own clothing and washing; they wore no uniform.

On return to Chatham, Owen was borne as a third-class supernumerary draughtsman at 5s per day. He was frequently employed as an acting Inspector and on overseeing. In 1855 he was receiving second-class draughtsman's pay, 6s a day, and in 1857 he was made Inspector after a competitive examination. He finally rose to be Chief Constructor at Portsmouth.

In the following year (1850) Moseley was informed that Admiralty did not propose to make any addition to the Central Mathematical School, as the number of appointments falling vacant annually in the Yards did not warrant the maintenance of a complement of 24. From the result of the examination, the Inspector singled out for praise, apprentices Pearce (see below) and Fielder.

An Admiralty Circular, dated 1st January 1851, reduced the period of compulsory attendance at the Dockyard School from four to three years. The best of those finishing the third year, about one-third, were allowed to attend school for another year. By the same Circular, the number of those attending the Central Mathematical School was to be reduced to 16, four at the end of their third year being admitted annually and remaining there four years.<sup>1</sup>

Moseley inspected the Schools for the last time in 1851. There had been a gradual diminution in the number of apprentices attending the Dockyard School:

	Number		Number
1848	132	1851	81
1849	92	1852	40 compulsory, 16 voluntary, out of 104 apprentices in the Yard.
1850	100		

The decrease in numbers attending school was due partly to the reduction of the period of attendance at school, but the other reason was the very limited number of apprentices admitted to the Yard. In 1851 there were only four vacancies for apprenticeships at Chatham; however the number admitted in 1854 included seven shipwright and three caulker apprentices.

### **Sir William Pearce**

William Pearce was born in Manor Street, Old Brompton, in 1833. His father was a shipwright officer at Chatham Yard and he was entered as a shipwright apprentice at Chatham in 1847. After completing his apprenticeship he was for some time employed in the office of Oliver Lang, the then Master Shipwright of the Yard. In 1857 he was appointed Leading Man, in 1858 a draughtsman, and in 1861 an Inspector. He assisted in the construction of the ironship, **Achilles**.

<sup>1</sup> The Central Mathematical School was closed in 1853



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Pearce left the Yard in 1863 when the rank of Inspector was being abolished and was appointed a Surveyor of Shipping for Lloyds. In 1864 he joined the firm of Napier & Sons as manager of their shipbuilding Yard at Govan. In 1870 Pearce became the Managing Director in what was known as the Fairfield's Shipbuilding & Engineering Co.

During the time of Pearce's connection with the firm, 222 ships were built there, including many famous Atlantic liners. Sir William Pearce received his baronetcy in 1887, was MP for the Govan division of Lanarkshire and Deputy-Lieutenant for the county. He died in 1888 at the age of 55 and is buried in the Grange extension of Gillingham cemetery. Lady Pearce, his widow, erected a rood screen in Gillingham Church in his memory. "Chatham News" of 2 March 1889 reported that the gross estate of Sir William was £1,069,669 15s 1d.

Pearce is probably the only ex-Dockyard apprentice to have a statue erected to his memory. This stands with other buildings bearing his name in Govan.

### **Changes in the Entry System**

...Moseley noted that when the number of vacancies for apprenticeship was curtailed, influence rather than examination result decided the choice. In January 1852 the Superintendent's list contained only eight names for four vacancies and excluded perhaps many good candidates. One objection to the education test was that it took no account of the strength and fitness of the boy - this was remedied later.

By Order in Council of 14 March 1853, one half of the admissions to apprenticeship was bestowed with reference to the claims of parents, provided that the apprentice had a competent knowledge of reading, writing and the first four rules of arithmetic. This form of admission of apprentices by the service of their parents, entry by nomination, was criticised in 1858 by the Inspector of Dockyard Schools and in the Report of the Commission on Popular Education in England 1861. Evidence showed that those who entered by competition were far superior to the others. The proportion entering by nomination was gradually reduced and finally lapsed during the changes in the methods of entry which took place after the Second World War. Up to that time nominated candidates had to sit the entry examination and reach a given standard to secure entry into the Yard. (1940: 240 marks out of 900.)

The competitive examination for entry to the Yard had a stimulating effect on the local schools, a concept of this may be gained from Neil Bell's book *The Winding road*. Neil Bell (otherwise Stephen H Critten) attended St Mark's School and was a shipwright apprentice for about a month in 1901; he left after an unpleasant initiation incident in Chatham Yard.<sup>1</sup>

### **Promotion by ability**

The number of candidates admitted to the Central Mathematical School was reduced from four to two per year owing to the lack of posts for those passing out of the school and the students leaving the Central Mathematical School were employed as Supernumerary Draughtsmen instead of Leading men, partly because of their deficiencies in practical training and partly because of the reduction of numbers of Leading Men in the Dockyards. Opposition to the promotion of these students came from the Dockyard Officers, many of whom had been educated at the School of Naval Architecture. The latter had been selected by an examination which was not limited to the sons of Dockyard employees, and the successful candidates had generally received a liberal education and were the sons of the middle classes. In 1859, Oliver Lang, giving evidence to the

<sup>1</sup> 1901 No 18 Critten Stephen Henry born 22/2/1887 Entered 23/07/1901 Left 22/8/1901

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committee of the Dockyard Economy declared:

*I do not object to a considerable infusion of the working class and their being allowed to rise to the highest office in the branch. I complain that the sons of gentlemen are shut out entirely.*

The Central Mathematical School was closed in 1853 by order of Sir James Graham, the students remaining were transferred to Portsmouth Dockyard School. Its influence was felt for many years; a number of apprentices had had to be selected each year for an advanced course of instruction and the selection was made by a test in subjects in which they had been accustomed to reason. in Moseley's words:

*Their education has been forced in a mathematical direction which is that the examination cannot but take.*

This approach characterised the Dockyard Schools until the competitive examinations with a mathematical bias were replaced by those which verified that a candidate had reached a certain attainment in each of the technical subjects he had studied, e.g., National Certificate Examinations.

The democratic concepts of the Central Mathematical School were too advanced for the time; the system which allowed Frederick Barnes,<sup>1</sup> son of a Pembroke Dockyard Messenger, to have the same privileges and opportunities of promotion as Richard Abethell, son of Pembroke Master Shipwright<sup>2</sup> was condemned.

### Inspection of Schools

In 1853 Moseley was presented to a residential canonry in Bristol Cathedral on quitting the post of Principal of the Central Mathematical School. In 1853, Dr Woolley was appointed Admiralty Inspector of Schools.

He inspected Greenwich Hospital Schools, the Royal Dockyard Schools and was responsible for examining the men appointed to clerkships in the Yard and candidates for promotion to the posts of Assistant Master Shipwright and Foreman and Inspector of Shipwrights.

An Order in Council of 25 February 1856 ordered that the Education Department of the Privy Council should be charged with the duty of inspecting the above schools, and of reporting thereon to the Admiralty. Dr Woolley undertook these inspections, and reports of these were published in Accounts and Papers of the House of Commons, 1859/62. By 1863 schools belonging to the Army, Navy and Poor Law Authorities,<sup>3</sup> were withdrawn from the jurisdiction of the Education Department.

Dr Woolley inspected the Schools twice yearly and conducted examinations held at Christmas and Midsummer. After 1861 the inspection was made annually but the schoolmasters were then made responsible for conducting the examinations at June and Christmas. The examination papers were sent from the Education Office, Downing Street, by post and the scripts sent back to the Department for marking.

From 1853 boys, other than apprentices employed in, among other places, the Ropery and the Foundry, were allowed to attend three evenings a week at the School. These boys were allowed to leave work at 5.25 pm and to attend school at 6.30 pm.<sup>4</sup> It was

1 See Administration of the Navy chapter 23

2 1844/1852 Master Shipwright Pembroke 1853/1856 Lloyd Surveyor

3 In the Chatham News of 31 January 1863 appeared an advertisement for a schoolmaster for the workhouse in Chatham. He had to be single or a widower without encumbrances. The pay was £35 pa and rations, washing and furnished apartments were included

4 In the report of the 1851 inspection it was stated that Mr McGarahan attended the school for 27½ hours per week.

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considered a great privilege to be allowed to attend but their standard of education was so low that their progress was very limited.

*In 1849 two apprentices a year were to be entered in the Ropery, displacing two House boys a year for the first four years of this scheme, after which it was presumed that apprentices would take a man's share of the work as a spinner. Preference for apprenticeships was to be given to house boys and the apprentices were allowed to share in the general earnings of the Ropery in the same manner as apprentices in the Trade; the salary being according to the years of service generally.*

In 1855 Mr Buttery, transferred from Devonport, was appointed as assistant to Mr McGarahan and was made responsible for the mathematical instruction. In 1858 the salary scales were fixed at £150 x £10 to £200 for the Schoolmaster and £100 x £10 to £140 for the Assistant. At Portsmouth and Devonport the Schoolmaster's scale was £200 x £10 to £250. For comparison the salary of a Foreman was £250, Senior Foreman, £300 and of a First Class Inspector £150. Mr McGarahan had been allowed to retain a £50 house allowance in addition. At the time of Mr Buttery's appointment there were 61 apprentices in normal attendance and 59 boys who volunteered to attend three evenings a week. The subjects of instruction were: Arithmetic, Mensuration, Algebra, Euclid, History, Geography, Grammar and the elements of Physical Science and Mechanics. The two Divisions assembled at separate times for instruction with the exception of one afternoon a week in which one hours Religious Instruction was given by the Chaplain. More advanced instruction was given to volunteers attending the school.

The attendance at Midsummer 1857 was:

Year of service	6	5	4	3	2	1	Total	Hired Boys
Number	1	1	11	32	20	19	84	48

In this total of 84, there were shipwright, caulker and smith apprentices. In 1863, millwright, joiner and ropemaker apprentices are also mentioned.

The relations between Mr McGarahan and his Assistant were far from harmonious and matters were brought to a head when a charge of drunkenness was levied against the Schoolmaster by his Assistant in 1858. The Superintendent intervened to settle the dispute. Discipline was poor at the school at this period and there was difficulty in enforcing silence and correct behaviour during the Christmas examination of 1858, the admonitions of Dr Woolley and the Chaplain being of no avail. The Schoolmaster reported the matter to the Superintendent of the Yard who suspended the chief culprit for three weeks.

Mr McGarahan was superannuated in 1859 and was succeeded by J J Robinson from Pembroke Dockyard School. McGarahan carried on teaching and in the "Chatham News" of 25 August 1860 appeared the following advertisement:

*Mr McGarahan, late Headmaster of the Dockyard School, Chatham respectfully begs to inform his former Friends & Inhabitants of the Town generally that he has opened a school at the house of Mr Burke, Newsagent in The Brook, Chatham. The course of instruction comprises French, English and an entire course of Mathematics which prepares students for Naval and Military Examinations as well as the Civil Service.*

Mr Robinson had served for nine years under Mr Rawson of Portsmouth Yard and was transferred to Pembroke Yard in 1859. He was described by Dr Woolley as a talented

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mathematician possessing an Admiralty Certificate. In 1866 Mr Buttery was appointed Headmaster at Pembroke Yard and Mr Morrison was appointed in his stead.

In 1863 the Schoolmaster of the Yard, Mr Robinson, was designated headmaster and took rank immediately above that of Foreman of the Yard.

The Dockyard School timetable at that time was similar to the one in force for the Upper School apprentices until the Second World War.

<i>Senior Division</i>	Monday & Thursday	1.30 to 4.30 pm	6 to 8 pm
<i>Junior Division</i>	Tuesday & Friday	1.30 to 4.30 pm	6 to 8 pm
<i>Both Divisions</i>	Wednesday	7.15 to 8.15 pm	

### Superior Course of Instruction

After the closure of the Central Mathematical School encouragement was given to the apprentices by the award of prizes and by the granting of scholarships or exhibitions. Dr Woolley had recommended the former incentive and the first set of prizes were given in 1853. The Inspector was directed in 1857 to select from the results of the Fourth year examination, suitable apprentices to attend a Superior Course of Instruction of two years' duration based on attendance at School and the Mould Loft. The apprentices selected as Exhibitioners were granted £20 a year; they were attached to the Mould Loft and attended the Dockyard School four mornings a week. Apprentices from Woolwich, Deptford and Sheerness were sent to Chatham <sup>1</sup>for this course. The subjects pursued during the two years included: Advanced Mathematics, Mechanics and Hydrostatics, Descriptive Geometry, Calculation of displacement and the stability of ships, etc.

In 1861, the Exhibitioners award was halved and the £10 paid to the Schoolmaster for instructing the Superior Class; in 1868 the £10 paid to the Exhibitioners was stopped except for those already on the course. In 1864, there were three on this course; by 1866 the number had increased to six.

Sir Thomas Mitchell, who was knighted in 1906 for his part in securing the rapid construction of HMS **Dreadnought** at Portsmouth, J G Wildish and H N Deadman, were Exhibitioners; their names appear on the Roll of Honour.<sup>2</sup>

The Committee on the Economy of HM Dockyards which published its report in 1859 opposed the system of promotion in the Dockyards.

*They consider that the selection from an inferior class, placing the person so selected in a position superior to all his connections around him, as was the case with the apprentices educated in the Central Mathematical School, has a bad effect upon the individuals in a greater or less degree.*

In like manner they opposed the introduction of the Superior Class of Instruction and suggested that one-third of the posts above the rank of Foreman should be filled by upgraded workmen and the remainder by Superior class pupils entered between the ages of 16 to 18 by Open Competition.

1 Apprentices could be transferred from one yard to another. Henry Deadman, an apprentice at Deptford Yard was transferred at the end of the fourth year of his servitude to Chatham to undergo the Superior Course of instruction. Another example is a widow of a Royal Marine with a son apprenticed at Woolwich, married a hammerman at Chatham Yard and was given permission in July 1862 to transfer her son to the latter yard. The character of the hammerman Mr Vallum was first investigated: Vallum is a steady attentive man, he is likely to be retained until the completion of the Achilles

2 See Roll of Honour at end of this chapter

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This Committee also proposed that no apprentice should be entered on the Yard Books after he was out of his time unless the officers certified that he was capable of taking a mans share of the work during at least the last year of his apprenticeship. At the same time all men from private yards were to serve a months probation.

The Inspector of Dockyard Schools also voiced the fear of the authorities by pointing out in his Report of 1857 there was a danger that mental culture would lead an apprentice despising the performance of manual labour and of leaving the service to more gainfully employing his skills acquired at Admiralty expense.

The type of writing material used in the Dockyard School is shown by the stationery demand of 1855 which, apart from pens and paper, included an order for five dozen slates with frames and six large sponges.

### Civil Service Entry Examination

From 1860 onwards boys who wished to enter the Yard as apprentices were examined not by the Schoolmaster, but by the Civil Service Commissioners. In 1854 appeared the famous Northcote-Trevelyan Report on the Organisation of the Permanent Civil Service. One of the recommendations was the examination of candidates for the Civil Service by a Central Board of Examiners. Before this, appointments in the Civil Service were made largely by patronage. There had been criticism of the public service at least from the end of the 18th century; but the Crimean War and the administrative incompetence which it revealed, led to the implementation of the Northcote-Trevelyan proposals.

The following is an extract from the "Chatham News" Saturday, 28 April 1860:

*Dockyard Apprentices New Admiralty Regulations respecting the reception of apprentices were published at Chatham Dockyard yesterday.*

*Candidates for the apprenticeship shall not be less than 13, nor more than 15 years of age at the time of examination. Each candidate must possess these physical qualifications: Height 4 ft 8 ins. Weight 90 lbs. Girth of Chest 26 ins. The examination will be in Arithmetic, Spelling, Writing, Reading, Grammar, English Composition, Geography, Euclid (first three books), Algebra (up to and including Quadratic Equations), Mathematics (Arithmetical and Geometrical Progressions)*

The entry examinations were held twice yearly in June and December, until 1873 when one examination a year was held for entry in June or July. The entry fee for the examination was 1s, raised to 2s 6d in 1908.

The first of such examinations took place in June 1860 and the first six Chatham candidates were offered apprenticeships. The allocation of marks was as follows:

Arithmetic	300;	Compound Addition	50;	Orthography	100;
Handwriting	100;	Mathematics	300;	Medical Marks	200.

Out of a total of 1450 marks, the top boy at Chatham secured 850; incidentally he was the only Chatham candidate to secure any marks in Mathematics (Geometry and Algebra). The standard of the Chatham candidates was very low compared with those of other Yards and the Inspector complained year after year of this failing. However, note the range of the subjects of the examination and the disadvantages suffered by the Chatham entry in the lack of teaching in the subjects of Algebra and Geometry. (See Appendix 3)

The numbers entered as apprentices at the half year entries in January and July were very

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low, usually of the order of six. The examination results came from the Admiralty by letter:

*Admiralty, 22 February, 1862*

*Captain Superintendent,  
Chatham.*

*I am desired to transmit the enclosed table for you to be copied and returned, and I am to inform you that the 8 vacancies for apprentices as authorised by Admiralty Order of the 30th December are to the boys according to their standing on the list.*

*The result of their selection is to be reported and they are to be reminded of their liability to serve at sea.*

*The unsuccessful candidates are to be informed.*

*Admiralty, 8 April, 1862*

*My Lords desire me to inform you that there is a vacancy for a joiners apprentice at Deptford for which there was no qualified candidate at the recent examination and it is to be offered to the boys who did not obtain an appointment at Chatham according to their seniority on the examination list.*

It was announced in the same year (1862):

*No entry of apprentices will take place in June 1862 as the number of apprentices in the Yard at the end of that year will be in excess of the establishment.*

### **Leave of Apprentices**

At this period the teaching staff of the School was entitled to six weeks leave per year; three weeks at Christmas and three weeks in the Midsummer. The apprentice attending school whose conduct had been good, together with the School Messenger, had two days leave during each of these holiday periods in addition to general holidays granted to the workmen of the Yard. Bad conduct and absence from school and work was punished by loss of leave.

The Wages of the School Messenger were 17s 6d a week. He asked for an increase, complaining of the long hours of duty and of:

*. . . the introduction into the School of Philosophical Apparatus which occasioned me a considerable amount of labour.*

He was informed that he was borne as a single-stationed labourer at 2s 6d a day for 7 days a week; by 1883 his wages had risen to 21s a week.

#### 1 Minute Book of Dockyard School 1878

Geo Evans No 2268 is to be mulct one day's pay and forfeit the usual school holiday at Midsummer next for absenting himself from work aboard Garner

By A S Order on Chief Constructor's Report of 21.2.1878 on Superintendent Police Report of 18 February 1878

2 The 'philosophical apparatus' was provided for the Dockyard Schools for the first time at this period; it was primarily for demonstration purposes. Presumably it was introduced to meet a criticism in the Report of the Committee on Dockyard Economy that the standard of Science teaching in the Dockyard School was low and a recommendation that chemistry and drawing should be taught.

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In 1861 the Head Draughtsman of the Mould Loft started drawing classes for fifth year shipwright apprentices; these classes were held two nights a week and the Head Draughtsman was paid £20 per annum for this duty.

The apprentice was not only subject to the rules of the Yard but he could be punished by the local magistrates if he absented himself without leave from work under the law of Master and Servant. "Chatham News" reported on 3 August 1861:

*John Hallet, an apprentice in HM Dockyard at Sheerness, in the Blacksmiths Department, was charged by Mr Venning, the Master Blacksmith, with absenting himself without lawful leave. The defendant pleaded guilty and the Bench ordered him to pay 15s expenses and 20s to be deducted from his wages, or to be imprisoned for two calendar months.*

### Sea Service

Mention has been made of the liability of the apprentice to serve at sea. From 1861 to 1872 all apprentices of the Master Shipwrights Department, except millwrights, were liable to be employed, during a part or the whole of the last two years of their seven-year apprenticeship at sea.

In the "Chatham News" of 23 November 1861, the following appeared:

*Employment of Dockyard Apprentices on board HM Ships in commission.*

*No apprentice will be allowed to serve on board any vessel if he has less than 18 months or more than two years of his time to serve. The apprentices will be borne on ships to which they are attached as supernumeraries and will be paid at the rate of £18 5s per annum, besides the usual tool money, rations, allowances, etc. The number of apprentices selected to serve on board ship is 28 of whom 20 are shipwrights. The whole of these are to proceed to the Mediterranean on **Firebrand**, under Commander Bruce, and will be distributed to the various ships composing the squadron.*

*Each apprentice is to be allowed to attend school under the government schoolmaster. Their Lordships express belief that HM ships will ultimately be supplied with well educated and efficient dockyard artificers . . . and will enable the C in C's in the different stations to repair to a greater extent than at present damage to spars, hulls, &c by means of artificers of the Fleet.*

In Chatham News' of 18 February 1865, appeared:

*Thomas Mitchell, shipwright apprentice, completed his apprenticeship on board Royal Oak, 35, 800 hp and was ordered to be entered as a shipwright in the Yard*

In December 1864 only eight candidates presented themselves for the entry examination for apprenticeship held by the Civil Service Commissioners. "Chatham News" commented:

*The falling off is attributed to the regulation by which Dockyard apprentices must serve two years at sea*

In April 1866 the Board of Admiralty announced that apprentices entered in the future would not be compelled to serve any portion of their apprenticeship at sea, but those desirous of doing so, would be permitted.

In April 1870 shipwright apprentices at Chatham who had volunteered for service on the screw corvette, **Clio**, 18, 400 hp were ordered to join the vessel.

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In February 1872 William Thomas, shipwright apprentice, was ordered to complete the remainder of his time on **Druid** preparing for sea. Eight other apprentices appeared to be at sea and had petitioned Rear-Admiral Ryder asking him to intercede on their behalf as there was no advantage remaining in the Navy. Finally "Chatham News" reported on 10 August 1872 that orders recently issued by Admiralty requiring shipwright apprentices in the Royal Dockyards to spend a portion of their apprenticeship at sea on board one of HM ships had been rescinded.

### **Alteration in Promotion Procedure for Dockyardmen**

After 1860 promotion examinations for Dockyard personnel were held annually. For the next seven years the Headmaster was responsible for conducting examinations for the selection of many officers of the Yard, such as Foremen, Inspectors, Draughtsmen, Leading Men, Storehousemen, Writers, &c. In addition he had to mark the educational papers of candidates for the more subordinate posts. After 1867 the Civil Service Commissioners conducted these annual examinations for promotion which were held in the Dockyard School. There were complaints from the School Inspector that these promotion examinations held in the schoolroom caused discontinuance of the studies of the apprentices. Another extra duty was the examination of candidates for entry to the Lower School of Greenwich Hospital; the test initially was to read a Chapter in the Gospels, but later the candidates were examined in reading and arithmetic. Incidentally this duty was carried out in the Schools until the Second World War.

The Dockyard Schools were visited by members of the Commission on Popular Education in 1860. In their report they stated:

*It appears to our colleagues that there is a deadness which requires to be stimulated into life.*

The schools must have started to improve at this time, for when the Report of the Samuelson Committee in 1881 was published, Colonel Donnelly wrote:

*I do not think that you can have a better form of technical education than that provided for the engineer students and shipwright apprentices in the Royal Dockyards.*

### **Engineer Students**

The engineer students mentioned in the previous paragraph were apprentices training for service as engineers in the Royal Navy. Such apprentices were first trained in Chatham Yard in 1870 but they had been admitted many years before in Woolwich, Sheerness, Portsmouth and Devonport Yards where there were Steam Factories.

In 1857 the first steps were taken to provide a career structure for the naval engineer. Three classes of Engineers were introduced together with a five-year apprenticeship scheme to provide the men to fill these posts. Boys of 14 years of age and able to write and do simple arithmetic were entered as Engineer Boys or apprentices. They were to do their training at Woolwich Yard where the first of the Steam Factories was opened in 1839. Steam Factories in the other Yards, apart from Chatham, were opened in the 1850's and provided additional centres of training. They were allowed to attend the Dock yard School; during their fourth year the boys of 18 were instructed by the Chief Engineer in the principles of the engine and the boiler; in their last year they were employed as fitters under the control of the Resident Engineer of the establishments. They received training in the Factory Drawing Office. At the end of their fifth year, providing they were satisfactory, they were appointed Third Class Engineers and could rise to higher ranks during their naval service. A number were recruited from Greenwich



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Hospital School, but boys from the Medway Towns were entered at Sheerness as Engineer Boys. In 1863 fresh regulations were introduced for the training of Naval Engineers. The apprentices were renamed Engineer Students and were selected by written examination. The age of entry was 15/16 and the period of apprenticeship was raised to six years; they did not come under naval discipline and they wore no uniform. Their pay in the first year was 8s rising by 2s a week each year until the 6th year when they were paid 24s a week.

They received their practical training in the workshops and the drawing office of the Yard. During the first three years they attended the Dockyard School on two afternoons and three evenings a week; in their fourth year they attended school for two afternoons a week, and drawing classes (conducted by the Leading Draughtsman) for three evenings a week. During their fifth and sixth years they attended school three evenings a week.

Provided that they passed the necessary educational and practical tests they became Acting Second Class Engineers, RN. The best were also eligible for the more advanced education at the School of Naval Architecture and Marine Engineering.

After 1873 they were examined in their sixth year for entry to the Royal Naval College, Greenwich as Acting Assistant Engineers. The course at Greenwich was of one years duration and the Engineers were granted 1st, 2nd or 3rd Class Certificates. For a limited number, about three, the Greenwich course lasted three years and these were eligible for appointment in the Yards and at Admiralty.

The entry of Engineer Students at Chatham commenced after the closure of Woolwich Yard with its Steam Factory in 1869; in 1873 the Steam Reserve at Sheerness was transferred to Chatham.

About six Engineer Students were entered annually at Chatham but none was admitted there after 1877. The last mention of them in the School records is in 1882, when four of the Engineer Students who failed to Qualify as Acting Assistant Engineers were transferred to Portsmouth. The Engineer students were far superior in mental ability to the shipwright apprentices; four of these Students who attended Chatham Dockyard School at this period became Rear-Admirals.

The Cooper-Key Committee on the supply of Engineer Officers and Engine Room Artificers for HM Navy in 1877, criticised the recruitment and training of Engineer Officers. The idea that such officers should be recruited without reference to the social position of their parents appalled the Committee. As a result of their recommendations the old three-decker **Marlborough** was opened in 1877 as accommodation for 100 Engineer Students at Portsmouth; two years later the Training School for Engineer Students at Keyham was built. The Students carried out their training in the Dockyard Factory and attended the Dockyard Schools at Portsmouth and Devonport respectively. After 1888 the Students were trained at the Engineer Students Training School, later known as the RN Engineering College, Keyham, and **Marlborough** was closed.

This was the end of a period when the Naval Engineer was a workman in uniform; after this the manual work was done by Artificers working under the supervision of Naval Officers. "Chatham News" of 11 September 1877 carried the following notice:

*Civil Service Examination for the entry of 40 Engineer Students who will all be attached to Portsmouth Yard.*

*They must join with parents or guardians in bond for £500 to enter HM Service as Assistant Engineers.*

*Parents to pay £25 a year for each student during the first three years of training.*

*Students will remain for six years in the Dockyard and receive instruction in iron shipbuilding and then will be eligible for entry to RN College, Greenwich.*

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### **Royal School of Naval Architecture and Marine Engineering**

The Institute of Naval Architecture was formed in 1860. The Institute drew attention to the neglect of the teaching of Naval Architecture and Admiralty was urged to provide an advanced course of instruction in this subject. As a result of the efforts of the Institute an Admiralty letter was sent to all Yards on 17 June 1864 stating:

*My Lords Commissioners of the Admiralty having decided to adopt measures for imparting to some of the most intelligent of the Dockyard Apprentices and Engineer Students a more advanced and liberal education than the present Dockyard Schools are capable of furnishing have arranged in conjunction with the Committee of the Council of Education to establish a school of Naval Architecture for the training of Naval Architects for private as well as for the public service.*

The Royal School of Naval Architecture and Marine Engineering was originally situated at South Kensington; its activities were absorbed in 1873 by the RN College, Greenwich; the site in South Kensington is now occupied by the Victoria & Albert Museum. London was chosen for the College in order to take advantage of London's scientific talent and to attract support from private shipbuilders who would be reluctant to co-operate with a school too much under the shade of the Admiralty which would have been the case if the school was located in a Royal Dockyard. Although the School was under the control of the Department of Science and Art and not Admiralty, there was little support from the private yards and the majority of the students were Admiralty employees.

The School opened 1st November 1864 with 8 Shipwright Apprentices and 8 Engineer Students together with some private students. For entry to the course the limits of servitude of the Admiralty students were: shipwright apprentices 4/5 years, engineer students 3/5<sup>1</sup> years, and they were bound in surety of £250 to remain in Admiralty service if required for seven years after the completion of their apprenticeship.

The subjects of the examination for admission to the School of Naval Architecture included: Pure Mathematics, including differential and integral Calculus, Mechanics and Hydrostatics, Elementary Physics, Chemistry, English Composition and Grammar, Geography, History, French translation, Shipbuilding and laying-off for the shipwright apprentices and Marine Engineering for Engineer Students. The list shows the great advance made in the instruction given in the Dockyard Schools during an interval of about 16 years.

The course lasted three years; from November to April the shipwright apprentices worked at Kensington on pure and applied mathematics, laying-off and practical shipbuilding; and from May to October they did practical work in one of the Dockyards. The Engineer Students followed a similar course with emphasis on Marine Engineering. Dr Woolley acted as Director of Studies. At the end of the course Diplomas were awarded of Fellowships of 1st, 2nd or 3rd class, or Associateships, FRSNA or ARSNA.

The course of study comprised six mornings 9 am to noon; four afternoons 2 to 5 pm, special lectures 5 to 6 pm on two days and two hours compulsory private study on four evenings.

The students found their own accommodation; Admiralty students received a weekly wage ranging from 6s 6d to 12s and a lodging allowance of £1.1s. All fees were paid by Admiralty whilst the private student paid an annual tuition fee of £25 and all expenses.

1 Order 16/12/1870 Number of Engineer Students to be entered in the School of Naval Architecture to be four instead of five until further notice.

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When they left South Kensington the shipwrights were classed as Supernumerary Draughtsmen and employed as assistants to the Foreman of the Yard; they were eligible for promotion to higher posts. This rather unsatisfactory termination of their training was improved after the formation of the Royal Corps of Naval Constructors in 1883; the vast majority of the posts created for the Corps were filled by those who had attended the Central Mathematical School or the Royal School of Naval Architecture and Marine Engineering.

The accommodation at South Kensington was inadequate and in 1873 the courses were transferred to the RN College, Greenwich. Finally the Naval Architecture course was moved to University College, London, in 1970.

### **Educational Standards (and economies) at Chatham 1863-1884**

An Admiralty Circular dated 12 October 1863 raised the educational standard required for the advancement of Engineer Officers of the Royal Navy and they were allowed to attend the Dockyard Schools for instruction. They were examined by Dr Woolley from 1864, examinations being held in June and December each year. After 1866 the Headmaster was granted £25 for this work after an unsuccessful application in the previous year. In 1873, Carpenters RN attended school on Tuesdays and Thursdays from 10 am to 12 noon (a class of about six). The Headmaster was paid a gratuity for this instruction but in the following year a First Class Draughtsman was appointed to instruct the Carpenters in the theoretical as well as the practical aspects of shipbuilding, drawing and school subjects; this avoided their attendance at the Dockyard School. His salary was £125 a year raised to £130 in 1873.

In 1886, a draughtsman, Mr Terry, engaged on such instructional duties, created a stir in the Dockyard. He was accused of selling information on Admiralty matters, drawings, etc to a foreign power and was discharged. No prosecution followed but his son was also discharged.<sup>1</sup> This case may have contributed with others to cause the passing of the first Official Secrets Act. Prior to this the only recourse open to the State in such matters was to charge the accused with larceny.

In 1864, Dr Woolley was appointed Director of Education for the Admiralty, a post created to co-ordinate all schooling in the Navy. He continued his inspection of the Dockyard Schools, aided by his deputy, Rev J B Harbord, who had been a curate of Lower Halstow, Kent in 1853. The office of the Director was changed from Downing Street to Somerset House. Incidentally, Harbord eventually became Chaplain of the Fleet and the Rev W E West became Inspector of Naval Schools. After 1888 the office of Chaplain of the Fleet and Inspector of Schools was combined.

By the economies of 1869, the post of Assistant Master in Chatham Dockyard School was to be abolished, a saving of £100 a year. The Headmaster's salary was £25 with an allowance of £25 for the instruction of Junior Engineers. Owing to ill health the Headmaster, Mr Robinson, was superannuated temporarily with an allowance of £91 3s 4d per annum in 1870 and Mr Morrison had charge of the school. The Headmaster returned to duty on 1 April 1872 and Mr Morrison left. The total number then attending the school was of the order of 70.

In 1868 Admiralty restricted the educational facilities offered to the senior apprentices. No school attendance in working hours after the fourth year was permitted apart from those competing for admission to the School at Kensington, who were allowed to attend afternoon and evening classes until the examination. A gratuity of £10 was paid to the Headmaster on account of any apprentices who passed a certain standard in the school

<sup>1</sup> The son transferred to Devonport and was awarded a Whitworth Exhibition of £100 in 1888

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(determined by the Director of Education) from the end of the fourth year. There was a relaxation of these conditions after 1873,<sup>1</sup> when others recommended by the Director of Education were allowed to attend afternoon school in their fifth year and evening school only after their fifth year.

There were two entries of apprentices a year up to 1873. The number entered at each examination was small. In the two entries of 1866 there were 12 shipwrights, a joiner and 3 smith apprentices; no apprentice was entered between February 1869 and July 1871 because of the closure of Woolwich and Deptford Yards. When recruitment was resumed there was a dearth of suitable candidates. In December 1871 there were vacancies for nine shipwright and one smith apprentice; there were 16 shipwright candidates and six only passed. One candidate out of the six passed the Engineer Students entry examination; it was proposed to fill the other five posts with successful candidates from other Yards. Actually the School Register showed an entry of one shipwright and four Engineer students in January 1872. In June 1872 there were 17 applications for 10 shipwright vacancies, 4 only passed. In February 1873 the entry is recorded of three Engineer Students only, although there were, in addition, vacancies for 10 shipwright apprentices. The apprentices were examined by the doctor before being admitted to the examination. After the medical examination there were only five candidates for apprenticeship eligible to take the educational test. One only passed this test and presumably did not enter the Yard. In the School Register in August 1873, 6 shipwright, 1 joiner and 1 smith apprentice and 4 Engineer students were entered.

In July 1874, six shipwright apprentices and 1 joiner apprentice were entered in place of the 26 required; five Engineer students were also entered.

In August 1875, 5 Engineer Students, 20 shipwright, 2 smith, 2 joiner and 2 sailmaker apprentices were to be entered. Only 12 passed the entry examination and it was proposed to fill the vacancies from other Yards. Actually 15 shipwright, 3 joiner and 2 smith apprentices were entered on the School Register.

These results led to arguments for the introduction of School Boards to raise the standard of education of the young in the Medway Towns. The candidates at Chatham were certainly of lower educational attainment than those in the other Yards.

From 1872, there was a stricter supervision of the School Examinations: the Chaplain, a member of the School Committee, relieved by the Accountant and the Cashier, supervised the candidates.

The examination papers set were common to all apprentices and Engineer students attending the School: each paper was divided into a large number of sections so that all could answer some questions.

The Pure Mathematics Paper of June 1865 for Engineers, RN Engineer students and Dockyard apprentices had 12 sections. The first question of Section 1 was:

*Multiply 125 acres, 3 roods, 27 perches by 27, and divide £2,726 6s 81/4d by 43*

The first question of Section III was:

*Expand to four terms in powers of  $x$  by McLaurin's Theorem,  $e^{\cos x}$*

<sup>1</sup> In the estimates 1872/3 the Headmaster's allocation was £250 a year salary, £25 for instructing Junior Engineers and £40 for instructing students in the Advanced Course (R. Watson, T.C. Read, J. H. Cardwell and W.H Gard in 1873)

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Until 1879 the examination results appeared as a list drawn up for all apprentices in the various years of service in all Dockyards. In 1878 the marks obtained varied from 0 to 6,152 out of a total of 8,500. All the papers were set and marked by Mr Goodwin of RNC Greenwich. In 1879 this system was replaced by an examination divided into two sections, one for the Lower Division, apprentices up to three years service, and the other for the upper Division.

In 1874 the office of the Director of Education was abolished. A saving of £2,249 was estimated, Salary, £1,100; Clerical assistance, £400; travelling, £120; Chaplain, £429; Civil Allowance, £200. The School Committee was abolished and the discipline and control of the School became the responsibility of the Admiral Superintendent. The super-vision of the course of instruction in the Dockyard School was undertaken by Dr Archer Hirst, the Director of Studies of the RN College, Greenwich.

The salary of the Headmaster in 1875 was fixed at £300 x £15 to £350, but all allowances were stopped. By contrast the Headmaster of Sir Joseph Williamson's School, Rochester, received a salary of £300 and a house, and was allowed to take private boarders.

Mr Robinson, the Headmaster, was beginning to deteriorate both mentally and physically owing to ill-health and drink. He was suspended and Mr Watson attempted to carry on his duties. In 1876, at the age of 47, Mr Robinson died of an overdose of chloral.

"Chatham News" of 15 July 1876 announced that J Henry, BA of the RN College, who had been appointed Headmaster of the Chatham Dockyard School, had been presented with a silver inkstand by the Gunnery Lieutenants at the RN College. Henry had been an Assistant Master at Devonport and Headmaster of Sheerness Dockyard School. He was on the staff of the RN College, Greenwich, as Instructor in Mathematics and lecturer in Descriptive Geometry.

The examination results of Chatham Dockyard School were poor compared with those of the other Yards. The average marks for the 1875 July examination are given below:

	Engineer Students Max mark 6,000	Apprentices Max mark 6,000
Chatham	1491	494
Sheerness	1821	731
Portsmouth	2050	667
Devonport	1829	684
Pembroke	-	802

There was no great improvement in the next six years. In 1881 the following comparison of Christmas examination results were made:

	Portsmouth	Devonport	Chatham	Sheerness	Pembroke
Above 75%	2	2	0	2	2
Below 15%	13	15	34	4	2

The reasons were the poor quality of the candidates for apprenticeship and the lack of teaching staff. In the 1876 entry examination J J Welch <sup>1</sup> secured top marks among Chatham candidates, 715/1150: the lowest mark of the successful candidates was 240/1150. <sup>2</sup> 18 out of 29

1 J J Welch became Professor of Naval Architecture at Durham University

2 Reading was omitted and the medical mark abolished in 1874

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candidates were entered from the list; afterwards one candidate who failed in spelling was entered as a shipwright, and six others who had failed the examination were offered apprenticeships in the minor trades, joiner, smith, etc. In the entry examination for Engineer students, two out of eight passed; the others were brought from Devonport and Portsmouth to fill the vacancies at Chatham.

There was a gradual improvement and the South Eastern Gazette of 28 June 1884 reported:

*In the recent examinations in Chatham Dockyard where there were 68 candidates and only 26 vacancies, the four boys at the head of the list were all pupils of the Mathematical School at Rochester. The first, W G Tonbridge, son of the Inspector of Police in Chatham Dockyard, made the highest number of marks ever known, 1018 out of 1050.*

"Chatham News" of 22 September 1888 reported:

*T Gibson, Luton Road, Chatham, has received a silver watch which Mr Cooper, Watchmaker, New Road, Chatham,<sup>1</sup> gives each year to the boy who is first in the Civil Service for examination for entry as an apprentice in Chatham Dockyard. During the last five years this honour has been won no less than four times by a lad educated at the Mathematical School, Rochester.*

The supply of apprentices came from the Technical Schools rather than the Grammar School after the first decade of the 20th century. The latter developed their sixth form work which prevented their sending their pupils to the Dockyard.

Mr Robinson had managed the School on his own since 1872. The School was divided into two Divisions which attended on alternate days, both Divisions attended on Wednesday evening. In 1876 Mr Henry complained to the Superintendent that the pupils did not pursue their studies together in classes; he found that in a class of 20, nine or ten different subjects were being read simultaneously by different pupils. Geometry had never been taught in the school within the recollection of the oldest pupil; descriptive geometry had been taken from the curriculum of the school, and mathematics, so essential of entry to the RN College, Greenwich, had been neglected.

In May 1876 there were 75 altogether attending classes: 34 Engineer Students, 38 Apprentices and 3 Yard Boys. He managed to group the pupils into classes studying the same subject together, although the groups were of apprentices and engineer students of widely differing ability.

Mr Henry petitioned the Superintendent for an office in the School, a good supply of books and the appointment of an Assistant Master. He quickly secured an office built on the north side of the school and an Assistant, Mr A J Walke, who was appointed in 1877 on a salary scale £120 x £10 to £180. Walke had to pass the Civil Service written examination in English, Geography, Science, Pure and Applied Mathematics, and pay a fee of £1.

Walke soon ran into trouble at School; the boys arrived late to his classes and were unruly. He was stoned by the boys at the Main Gate and at the Sally Port. The boys were punished by suspension but when further incidents occurred Walke was suspended by the Superintendent and later discharged. Mr Henry was again on his own and to add to his duties he was ordered to set and mark the Christmas Examination papers for the first

<sup>1</sup> Mr D C Cooper was an ex-Dockyard employee who had set up as a dealer in watches. It was reported in 1894 that he had presented the watch for the last nine examinations.

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time; a request to close the school for a fortnight to enable him to mark the papers brought a telegram from Admiralty forbidding such a step. In 1878 an Assistant, Mr Austen, was appointed to Chatham School.

Shipwright apprentices were still being admitted to the Royal Naval College, Greenwich, as a result of the Midsummer examinations: about three were admitted from all the Yards each year. From Chatham J H Cardwell gained entry in 1874 and W H Gard in 1875. <sup>1</sup>

The content of the School work at this period can be assessed by the examination programme of Summer 1879 together with the marks allocated to each subject, the details of which are set out on the following page.

As a result of this particular examination two distinguished old boys of this School, Engineer Students, J E Johnson and W E Pamphlett, secured entry to the Royal Naval College, Greenwich as Acting Assistant Engineers. Both became Engineer Rear-Admirals.

### Examination Programme of Summer 1879

#### *Upper Division (Engineer Students Apprentices*

#### *Lower Division (Engineer Students and Apprentices up to 3 years' service*

Arithmetic	600	400
Algebra	700	450
Geometry	800	500
Trigonometry	700	450
Differential Calculus and Conic Sections	750	
Mechanics and Hydrostatics	600	450
Physics & Chemistry	600	400
English Grammar & Composition	450	400
Geography & History	400	300
French	250	250
Practical Shipbuilding or Engineering*	2500	
	8500	3600

\*Taken only by candidates for entry to Royal Naval College, Greenwich

<sup>1</sup> In his memoirs Admiral Fisher wrote that the concept of the Dreadnought came to him in 1900. He was then C-in-C Mediterranean Fleet and the idea was developed in association with Mr W H Gard, Chief Constructor at Malta. Fisher took over the Portsmouth command and after Gard's appointment as Chief Constructor at Portsmouth Yard in September 1902 he was kept busy working out the various details of design of Fisher's proposed battleship. After leaving Portsmouth in 1904 Gard was appointed civilian member of the Committee on Design which was concerned with the proposed Dreadnought. Mitchell followed Gard as Chief Constructor Portsmouth in December 1904 and actually supervised the building of the Dreadnought which was laid down in October 1905 and launched in February 1906. Mitchell retired in 1907.

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### **Principal and Minor Trades Apprentices**

In 1878 a dual entry system of apprenticeship was instituted: Principal Trade apprentices, shipwrights and fitters, (mechanics entering the Engineering department had previously been recruited from men who had served their time outside the Yard and were tested in their trade on entry into the Yard), and some Minor Trade apprentices, caulkers, smiths, plumbers, coppersmiths, etc. Some of the latter were intended to take the place of the highly paid Trade Boys. The Minor Trades apprentices served a six year apprenticeship and were admitted as a result of a local examination in reading, writing and the first four rules of arithmetic, held by the Chaplain of the Dockyard.

The fitters of the Steam Branch, Engine Fitters, were apprenticed to the Chief Engineer; Ship fitters, entered for the first time in 1879, were apprenticed to the Chief Constructor. (Electrical Fitters were not admitted until 1904.)

By an Order of 1882, Minor Trades apprentices could be admitted at any time of the year. They were allowed to attend the Dockyard School two evenings a week during the first three years of their service. They worked from 7 am to 6 pm with 1 1/2 hours break at midday and attended school from 7.15 pm to 9.15 pm. From 1886, attendance at school for the first year was made compulsory for Minor Trades Apprentices. They were allowed to leave the Yard at 5 pm and attend school from 6.30 to 8.30 pm.

It was reported in the local paper June 25 1881:

*24 shipwrights and fitters apprentices entered in Yard. Examination of candidates for entry as apprentices in the Minor Trades will be held on 5th July at the Dockyard.*

To instruct the Minor Trades apprentices an Evening Teacher was appointed in 1880. The first, Mr Watson, who had occasionally deputised for Mr Robinson, received £25 a year, a sum increased to £35 when the boys were grouped in two classes attending two evenings per week. The Minor Trades School, or Lower School, produced by the conversion in 1883 of a lead store into a school,<sup>1</sup> and situated to the south of Main Gate, was finally vacated in 1938 and was used as a Naval Store. By 1902 there were two Evening School teachers paid £40 and £30 per annum respectively.

Mention has been made of the evening drawing classes for shipwright apprentices; similar instruction was given to the fitter apprentices after 1886 for which the payment was £20 a year.

Starting 1878 monthly lectures were given on Wednesday evenings to Engineer Students and apprentices on Marine Steam Engines and Boilers. The lecturers fee was two guineas per lecture.

By an Order of 1882 Engineer Fitter and Ship Fitter apprentices were eligible for entry to the Royal Naval College, Greenwich. After completing a three year course of study there, Fitter apprentices were appointed Supernumerary Draughtsmen and were eligible for Dockyard appointments.

The entry qualification for shipwright and engine fitter apprentices remained unchanged from those of 1860. Apart from the omission of marks for reading and physical qualifications the list of subjects was unchanged and the maximum mark 1150.

The weekly wages paid to shipwright apprentices are given in the table on the following page.

1 See Lead and Paint Mills Development in chapter 1. A room for the instruction of Carpenters in Ships in drawing was also provided



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### Wages of Apprentices

Year	1875	1881	1900	1913
1	3s 0d	3s	4s	4s
2	4s 6d	5s	6s	6s
3	6s 0d	7s	8s	8s
4	7s 6d	9s	10s	10s
5	9s 0d	11s	12s	12s
6	10s 6d	13s	14s	15s
7	12s 0d	15s	-	-

Hired Yard Boys 6s to 15s a week (1875)  
Hired Yard Boys 6s to 16s a week (1900)

The wages of a seventh year apprentice were about half of those of a shipwright. In 1873 Engineer Students received 8s a week in their first years and 24s a week in the sixth.

### Board Wages

Board wages were allowed in case of distress to boys whose fathers had been killed in the Naval service or in service under the Admiralty or where the circumstances of the family had altered since the entry of the apprentice in the Dockyard. For instance in 1874, R H Jackson, shipwright apprentice, was placed on board wages after the death of his father.

"Chatham News" of 26 March 1887, reported that for many years past, apprentices in the Dockyard whose mothers were widows, were allowed sustenance money increased pay. An Order had been received that such extra money was to be allowed only to those apprentices whose father had been killed in the service or died through injuries. The same paper reported on 10 February 1894 that board wages were to be resumed for apprentices in distress - up to 9s a week was to be allowed.

By 1900 board wages were paid where the father was unable to contribute sufficiently towards the support of the family through exposure or injuries received in the service.

In 1904, a boy, Alfred Cooper, in Strood Workhouse, passed the Dockyard apprentices entry examination. Upon application of the Board of Guardians, Admiralty made a special grant of 6s a week board wages in addition to the ordinary wages of 4s a week. The boy became a shipwright apprentice.

In 1941 total pay was made up to 14s a week (exclusive of bonus). Rate for 1st year apprentice 11s (basic rate) and 10s 3d (bonus)

### The Royal Naval College Greenwich

Candidates for apprenticeship were given information about the course at the Royal Naval College, Greenwich. An extract from the 1879 regulations is given:

*A limited number of apprentices who have passed five years at the Dockyard will be selected by competitive examination for study at the Royal Naval College, Greenwich. They will remain there three sessions passing the vacation each year between 30 June and 1 October at one of the Dockyards. . . . Bond of £250 to serve for seven years after the completion of their apprenticeship. At Greenwich, Dockyard apprentices will mess with Acting Assistant Engineers. They will be lodged and receive 1s 6d a day towards the mess. They will*

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*receive pay as follows: 1st year at Greenwich, 21s a week; 2nd and 3rd years, 22s 6d a week. There will be no messing allowance at own Dockyard during the vacation. On completion of course they may be sent to sea and will then be appointed Supernumerary Draughtsmen and employed temporarily as Assistant Foremen of Dockyard.*

After the formation of the Royal Corps of Naval Constructors in 1883 the shipwright apprentice at Greenwich, designated Student of Naval Construction, was admitted at the end of the course, if satisfactory, into the RCNC with the grade of Assistant Constructor.

"Chatham News" of 16 September reported that shipwright apprentices who were Students of Naval Construction were to receive 6s a day and 1s towards their mess expenses during the first session; and 7s 6d a day and 1s 6d for their mess expenses afterwards. Students had to provide their own uniform. The shipwright apprentice who became a Student in Naval Construction was required to join with his parent or guardian in a bond for £300 to enter into the Service as an Assistant Constructor if his services were required.

"Chatham News" of 16 May 1885 reported that the Assistant Constructor was not permitted to leave the Service until seven years expired after completion of his time at the Royal Naval College, Greenwich, unless he repaid the £300.

### **Masters at the Dockyard School**

The cost of running the School at this time was low: the annual estimate, without teaching staff salaries, was of the order of £100. The School Messenger received 21s a week.

In 1882 Mr Austen was transferred to Portsmouth Yard, the Headmaster, Mr Henry, again was on his own. In 1885 when there were 83 attending the Upper School, Mr Darlington, Shipwright, was appointed Acting Assistant Master to help the Headmaster. In addition there was the evening teacher for the Minor Trades School. The holidays of the full-time teaching staff were increased to six weeks in the summer, one week at Easter and three weeks at Christmas.

In 1888 Mr Darlington was appointed an established Assistant Master at Devonport. He was followed by Mr Masson, who had been an Evening Teacher, at the rate of £35 per year. Mr Masson was appointed Acting Junior Assistant Master, Upper School, at a salary of £120 per year; he was given the permanent appointment in 1897. Both these teachers had distinguished records whilst apprentices attending Chatham Dockyard School and both served ultimately as Headmasters at Chatham.

Mr Watson reported to the Headmaster in 1880 that there were in the Minor Trades School 75 apprentices, 17 in their third year, 28 in their second, and 30 in their first. They were formed into two divisions, each division attending school four hours a week. The Upper Division attended on Monday and Thursday evenings, the Lower on Tuesday and Friday evenings, from 6 to 8 pm in winter, and from 7.15 to 9.15 pm in summer. The subjects taught included arithmetic, elementary algebra and geometry, elementary science, grammar, history and geography.

Some of the boys in the Lower Division were troublesome and Mr Watson asked that those who made no progress in their studies should leave after the end of the second year instead of completing the three year course. By 1905 those attending the Minor Trades School or Lower School made an attendance on Wednesday mornings, as well as evening attendance.

Mr Watson was appointed Chief Builder at Bombay Dockyard in 1885 and was succeeded by Mr Colville, who later became Principal Ship Surveyor, Board of Trade.

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### Brassey Committee

In 1882 a Committee, headed by Sir Thomas Brassey considered the whole problem of the recruitment, training and promotion of Dockyard Officers. One effect of the recommendations of this Committee was a change in 1889 in the scheme for the examination and selection of apprentices for entry to the Royal Naval College, and for the class to class promotion of apprentices at the Dockyard Schools. Apprentices were to be selected for the Upper Division of the Upper School as a result of the Second Year examination and no apprentice was allowed to receive more than four years schooling.

"Chatham News" of 27 February 1886 reported that Shipwright apprentices were to be employed in the Drawing Office or Mould Loft in their fifth year and were to receive instruction in Naval Architecture in preparation for their examination at Greenwich. There had been complaints from the Royal Naval College that Admiralty Students in Naval Architecture were deficient in skill as draughtsmen. It was ordered that all candidates for entry to the College were to forward specimens of their unaided work as draughtsmen to Admiralty. This work was to be assessed and the marks added to those obtained in the educational and professional subjects. This tradition of preparing a Trial Drawing for the Midsummer Examination was carried on until 1960 by apprentices who attended the Fourth Year Upper School class. Whilst in this class they spent six months or a year in the Drawing Office of their Department.

The subjects of the examination in 1891 for Fourth Year apprentices were as follows:

	marks	<u>For Fitters</u>	marks
Statics and Hydrostatics	600	Steam & Steam Engine	800
Dynamics, Pneumatics & Hydraulics	600	Practical Engineering	700
Chemistry	500	Mechanical Drawing	500
Physics (Electricity & Magnetism)	600	Engineering (General Paper)	400
Physics (Heat, Light & Sound)	500		2400
Descriptive Geometry	600	<u>For Shipwrights</u>	
Higher Algebra & Trigonometry	500	Practical Shipbuilding I	600
Conics and Calculus	600	Practical Shipbuilding II	600
Higher Applied Mathematics	600	Laying-off	800
	5100	Drawing	400
			2400

Apprentices of the third Year took the educational papers only until 1900

Apprentices of the Lower Division (First & Second Year) were examined as follows:

Arithmetic	600
Algebra	500
Geometry	500
Trigonometry	500
Physics	600
Chemistry	300
Geography & History	500
French	400
Statics & Hydrostatics	500

This examination schedule was maintained until 1905.

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The scheme of the Lower School Examination in 1891 was as follows:

Arithmetic - separate papers for Upper and Lower Divisions.

Geography of England and Wales and an outline of Europe and British Possessions

History of England

Physics

Composition

Grammar, Parsing and Analysis

Dictation

Reading

Euclid Book I and Algebra - Upper Division only

(After 1902, Reading and Grammar were omitted.)

The term Minor Trades was abolished and the apprenticeship period for all apprentices became six years. After 1893 all apprentices were entered at the same time from the same Civil Service Examination and by 1896 were eligible for entry to the Upper School.

In 1891 there were between 60 and 70 candidates for the major trades and 25 candidates for 13 posts in minor trades who were examined by Rev S S Browne, Chaplain of the Dockyard. 1894 saw the start of the common entry examination for all trades. The table in Appendix 4 gives an idea of the number of apprentices entered annually in the various trades from the 1870's to 1939. 1923 was the peak of the depression when the total entry into the Yard was just 47. (In February 1931, in addition to the trades shown, 8 Drillers, 6 Riveters, 4 Iron Caulkers, 1 Welder, 2 Machinists and 3 woodworking machinists were entered.)

In 1889 the regulations concerning school attendance were modified; apprentices were to attend school in their first year and at the First Year Examination had to obtain 25% of the maximum marks to secure promotion to the Second Year. At each subsequent half-yearly examination they had to add 10% of the maximum marks or be discharged from School unless there were extenuating circumstances.

The latter cause was frequently invoked at Chatham. The Director of Studies at Greenwich who controlled the school courses pointed out that if the 1889 regulations were applied strictly,

*. . . the effect would be to diminish the Schools at Chatham and Sheerness to such an extent as to render it a doubtful question whether the Schools should be retained at all.*

In one instance 17 out of 39 apprentices attending the Upper School at Chatham would have been dismissed if the regulations had been adhered to strictly.

The cause was still the low academic standard of the Chatham entry compared with other Yards. In the 1890's the Headmaster complained that no candidate who was successful would have been entered at Portsmouth; (a later Headmaster pointed out that in 1947 the 20th boy at Chatham had the same mark as the 84th boy at Portsmouth.) The apprentices were well taught at the Chatham Dockyard School and those of ability suffered no handicap. In 1893 there were two Admiralty Prizes at Chatham.

### Prizes

There were incentives offered to the apprentices attending school; for a very few there was an opportunity to pursue their studies at the Royal Naval College, Greenwich; for others the prospect of promotion in the Service was improved. They competed for prizes adjudged on the results of the Midsummer Examination: these were allowed on the scale

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of 25s for each 10 Principal Trade Apprentices, and 12s 6d for every 10 Minor Trade Apprentices - later altered to 1s 6d for each apprentice. Principal Trade Apprentices were allowed to retain their textbooks if they secured 60% of the maximum marks in the fifth year Midsummer Examination: Minor Trade Apprentices had the same privilege if they secured 60% in their Third Year examination. These percentages were changed and after 1922 the qualifying percentage was raised to 66<sup>2</sup>/<sub>3</sub>%. In 1887 the system of Admiralty Prizes was instituted; a special prize was given to the apprentice of each years seniority who gained the highest educational marks in all Dockyards at the Midsummer examination.

The list of Admiralty Prize Winners shows the higher academic ability of apprentices entered at Portsmouth and Devonport Yards and the improvement of educational standards in the Medway Towns after 1920. Those named are Chatham apprentices; P = Portsmouth and D = Devonport.

### List of Admiralty Prize-Winners

Year	<u>Servitude</u>			
	1st year	2nd year	3rd year	4th year
1891	P	P	P	D
1892	P	D	P	P
1893	H J Wickham	P	P	N J McDermaid (S)
1894	Pembroke	P	P	D
1895	P	P	P	P
1896	D	P	P	P
1897	P	P	P	P
1898	A R Richardson	P	F Coast	P
1899	P	A R Richardson	P	D
1900	Pembroke	P	P	P
1901	Pembroke	Pembroke	Pembroke	D
1902	P	P	Pembroke	Pembroke
1903	P	P	Pembroke	Pembroke
1904	D	P	P	D
1905	P	P	P	P
1906	P	P	P	P
1907	A R Dewar	P	P	P
1908	Pembroke	D	Sheerness	D
1909	D	Pembroke	P	Pembroke
1910	D	D	Pembroke	P
1911	D	D	P	D
1912	D	D	D	P
1913	P	D	D	D
1914	P	P	D	D
1915	P	D	P	D
1916	P	P	P	P
1917	P	P	P	P
1918	D	P	P	P
1919	D	D	P	D
1920	P	D	P	P
1921	D	P	P	D
1922	P	D	P	V R Brown
1923	P	D	P	D
1924	P	P	A W Morley	D

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### List of Admiralty Prize-Winners

Year	<u>Servitude</u>				4th year
	1st year	2nd year	3rd year	4th year	
1925	D	P	P		A W Morley
1926	D	D	D		D
1927	P	D	D		P
1928	P	P	D		D
1929	P	P	D		P
1930	P	P	P		P
1931	P	H Summers	Sheerness		P
1932	D	P	H Summers		Sheerness
1933	P	P & WF Spanner	H J Meezra		H R Mason
1934	P	D C Spanner	P		P
1935	P	D	D C Spanner		P
1936	P	D	P		D C Spanner <sup>1</sup>
1937	P	P	D		R F Loft

The number of Admiralty Prizes gained give a comparison of the educational standards of the apprentices at the various Yards:

	Portsmouth	Pembroke	Devonport	Chatham	Sheerness
1898/1908	24	9	6	4	1
1909/1922	28	3	24	1	0
1923/1937	30 <sup>1/2</sup>	-	17	10 <sup>1/2</sup>	2

<sup>1/2</sup> = shared prize

The value of the prizes increased with the years. In 1953/54 the values were:

4th year Admiralty Prize	£20
3rd year Admiralty Prize	£15
2nd year Admiralty Prize	£12
1st year Admiralty Prize	£10 (split into £2 for each Dockyard Technical College)

In comparison the general prize money for Chatham was £35 for books and £15 for instruments.

### Royal Corps of Naval Constructors

The changes in the training and promotion of Dockyard Officers are now dealt with. In 1880, William White, Chief Constructor at Admiralty, submitted a confidential memorandum recommending the formation of the Royal Corps of Naval Constructors to the Director of Naval Construction and to Dr Hirst at Greenwich.

The Memorandum pointed out that since the abolition of the First School of Naval Architecture in 1832, the Constructive Staff at the Admiralty and the Dockyards had been recruited almost exclusively from Dockyard apprentices. At the conclusion of the Greenwich course, students were appointed supernumerary draughtsmen in the Yards and were subjected to normal competition for advancement. It was recommended that outsiders should be attracted to the Shipbuilding Department of the Admiralty and that men could gain adequate experience and ultimately become Constructors without going through the lower grades of workman, leading man, draughtsman, etc. The promotion of workmen to Foremen was accepted but the officer on whom the work of direction and

<sup>1</sup> See Roll of Honour at the end of this chapter

## APPRENTICES

supervision devolved (constructors and chief constructors) were to be drawn from a new force, Assistant Constructors. There were to be three classes of Assistant Constructors.

These proposals were ultimately referred to the Brassey Committee and the scheme was adopted. The Royal Corps of Naval Constructors was established by Her Majesty's Order in Council of 22 August 1883.

Hitherto, the first three shipwright apprentices from all Yards of the fifth year had been selected to proceed to the Royal Naval College, Greenwich, but after 1889 vacancies in the Royal Corps of Naval Constructors were to be filled by the Students of Naval Construction who received their training at Keyham College. These Students of Naval Construction were selected from Engineer Students by examination at the end of their Second Year. The numbers were to be supplemented by the appointment of such Dockyard apprentices to Studentships of Naval Construction as might at the end of their Fourth Year justify their transfer to Keyham to take up a course of study followed by the Students of Naval Construction.

After 1894 the best of the Shipwright and Engine Fitter apprentices were selected from the results of the Fourth Year Midsummer Examination for training for one year at the Royal Naval Engineering College, Keyham, as students of Naval Construction and Engineer Students, respectively. After passing the final examination from Keyham, the Shipwrights were appointed Probationary Assistant Constructors; and the Engine Fitters were appointed Probationary Assistant Engineers; and both attended the Royal Naval College, Greenwich. Those who failed, returned to the Yard. Shipwrights and Fitter apprentices, transferred to Keyham for their fifth year, received an exhibition of £25 tenable for one year.

The ambitious Engine Fitter apprentice of the Dockyard aimed at becoming a Probationary Assistant Engineer, and at least one instance is recorded of such an apprentice applying for a year's leave to attend Finsbury Technical College in order to qualify for the examination for Probationary Assistant Engineer.

After the three year course at Greenwich the Probationary Assistant Constructor was appointed an Assistant Constructor. Had he secured a First Class pass, he became a Second Class Assistant Constructor; a Second Class pass, a Third Class Assistant Constructor; and a Third Class Certificate, an appointment as a draughtsman without admission to the Royal Corps of Naval Constructors.

### **Cadetships**

The opportunity offered to the Engine Fitters was discontinued in 1904. This arose from the implementation of the Selbourne Report of 1902 which advocated that all Naval Cadets should receive the same broad instruction and at the end of this common training be distributed amongst the branches of the service; thus the entry of Engineer Students was stopped. This principle was abandoned in 1921, but the restoration of cadetships to Engine Fitter Apprentices was not carried out. As a result the highest post in the Yards available for an Engine Fitter apprentice, up to the formation of the Admiralty Engineering Service in 1963, was that of Senior Foreman.

The only concession made, was to allow the most promising of the Engine Fitter apprentices to transfer to the Constructive Department at the end of their second year. In 1914 the option of transfer to the Constructive Department was extended to other apprentices as well as Engine Fitters. A similar option was given to non-shipwright apprentices within the Constructive Department at the end of their third year in the Dockyard School.

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In 1903 the title of Student of Naval construction was changed to Cadet of Naval Construction. In 1913 Cadets were granted the relative rank of Sub-Lieutenant and wore the uniform of Probationary Assistant Constructors. They were given one year's training at one of the larger Yards before entry to Greenwich. In 1933, they were ordered to sit the special qualifying examination for entry to Greenwich and some assistance was given to the Cadets by the School of the Yard in which they were undergoing training. After 1937, the successful shipwright apprentice was appointed Constructor Sub-Lieutenant and spent one year at the Royal Naval Engineering College, Keyham (later Manadon) before entry to Greenwich. (He had to pass the Greenwich entry examination.) More precisely he was appointed to the Constructors Training Office in HM Dockyard Devonport, and lived in the RN Engineering College. His training was divided between these two establishments. <sup>1</sup>

From 1937 to 1950 the shipwright apprentice, who had just failed to secure a cadetship, was allowed to take the entry examination to Greenwich at the end of his fifth year and to enter as an external student. Provided that his progress was satisfactory he was appointed Constructor Lieutenant and completed the three years course; such appointments were designated A (ii). In 1956 a similar scheme termed D (ii) appointments for late developers was initiated for ex-Fourth Year Apprentices employed in the Drawing Office and Technical Grades of the Constructive Department; the upper age limit was 26. Additionally in 1956 a schools entry for those between 18 and 19 1/2 years and with appropriate A levels was started. Candidates had to satisfy a selection board; those selected followed a two year course of training at the RN Engineering College, Manadon and proceeded to the RN College, Greenwich. <sup>2</sup>

In 1970 the Naval Architecture course was removed from RN College, Greenwich to University College, London. Entrants to the RCNC who had not been to university took the Honours BSc (Eng) degree of London University in Mechanical Engineering. An option in naval architecture was introduced as a modification in the BSc (Eng) course. The latter subject was taught by members of the RCNC seconded to the College. After taking their degree the students took a one year post-graduate course leading to the MSc degree of London.

In 1937 there were three awards of Cadetships of Naval Construction to Chatham apprentices: R F Loft, L J Brooks and E C S Hepden.

### **Chatham Dockyard School at the turn of the century**

"Chatham News" of 2 January 1892 reported the death of Mr J Henry, the Headmaster of the Dockyard School, who lived at Gibraltar Terrace, Chatham. He died at the age of 56 and left a widow and eleven sons and daughters. There is a memorial to Mr Henry in the Dockyard Church. Mr Dawe was appointed Headmaster of the Chatham School and was succeeded by Mr Austen in 1898 on the appointment of the former to Portsmouth Dockyard School.

1 He received the pay and allowances of a Constructor Sub-Lieutenant and was required to join with his parents or guardian of £300 to enter HM Service and to remain there for not less than 7 years after the date of completion of the course at Greenwich. On passing out of Greenwich he was appointed Assistant Constructor, Second Class. He was usually appointed to a period at sea lasting about a year. After three years he was appointed Assistant Constructor First Class

2 The Electrical or Engine Fitter Apprentice who did exceptionally well in the Fourth Year Midsummer Examination might be offered a cadetship in Naval Construction and appointment as Constructor Sub-Lieutenant despite his lack of training in Naval Construction



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Just after 1900 the salaries of the teaching staff of the Chatham Dockyard School were as follows:

	<i>Salaries in 1900</i>	<i>Salaries in 1905</i>
Headmaster	£300 x 15 to £400	£350 x 15 to £450
Assistant Master	£120 x 10 to £180	£150 x 10 to £200
Lower School Senior Teacher	£ 40	£ 50
Lower School Junior Teacher	£ 30	£ 40

The Messenger received overtime for the first time: 1s 8d per day on five days per week.

The rates of pay for the apprentices have been given. "Chatham News" of 21 June 1890 reported that 12 shipwrights and 5 engine fitter apprentices had finished their time and entered the Yard on the following day: the shipwrights at 30s and the fitters at 32s.

Reference has been made to the leave of apprentices attending school. They were entitled to two days extra leave at Christmas and at Midsummer. By 1883 all apprentices, whether attending school or not, were entitled to this leave in addition to the general holidays granted to the workmen, the same leave was granted to the best of the Yard Boys. The two holidays provided by the Factory Act for young persons subject to its provisions, were included in the four days mentioned.

In 1893 the Fourth Year Apprentices attending the Dockyard School were granted six days leave after the Midsummer Examination. After 1913 all apprentices attending the Dockyard School were allowed six days leave with pay, in place of the two days formerly allowed; the Fourth Year Apprentices were then given 12 days leave. (The Boy Writers had 12 days leave per year.) By 1921, apprentices and boys under 18 attending school, were entitled to 12 days leave; the six days leave with pay at Midsummer, Christmas Day, Boxing Day and one other day at Christmas, together with the other three Dockyard holidays.

In 1894 there was a complaint from Admiralty about the poor quality of shipwright apprentices; this was due to the tendency of the better candidates to become Engine Fitters. In 1885, out of the first ten on the entry list, eight chose the trade of Shipwright and two that of Engine Fitter; in 1894, the first ten chose the latter trade. In 1897 there were 158 candidates for apprenticeship (two were excluded for copying) and 48 vacancies. The first 12 selected the trade of Engine Fitter. In turn the trade of Electrical Fitter became the most popular.

The rapid development of fighting ships between 1860 and 1880 had caused the majority of the Fleet to be outmoded and in 1889 the Government passed the Naval Defence Act to reinforce the normal shipbuilding programme by the construction of 70 vessels, including eight first-class and two smaller battleships. As a result, the labour force of the Yards was built up and there was a marked increase in the number of apprentices entered each year. Again, about the beginning of the century, the rebuilding of the Fleet was spurred on by the rising menace of German naval ambition.

The effect on the attendance at Chatham Dockyard School is shown below:

Year	Upper School	Lower School
1888	74	29
1896	87	48
1902	93	102

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To meet the ever increasing demand for apprentices two entry examinations were held each year after 1901; the successful apprentices entered the School after the summer vacation. To meet the staffing problem in the School a regulation introduced in 1899 directed that only apprentices in both Upper and Lower School who obtained not less than 40% in the first year examination were to be retained for a second year course. Attendance in the Lower School was limited first to two years and after December 1900 to one year only.

In 1898, Mr Ottewill was appointed an Evening Teacher; he left in 1902 and eventually became Shipyard manager of Fairfield Engineering & Shipbuilding Co Ltd. Mr Fiske, who later became Senior Assistant Master at Portsmouth School had been appointed as assistant to Mr Ottewill in order to deal with the large number of Lower School apprentices.

The Lower School was extended by the transfer to the School of the room for the instruction of Carpenters-in-Ships in Drawing - the accommodation of the Lower School was then one large and two small classrooms.

The Dockyard School system was attacked by Sir Edward Reed, a distinguished ex-apprentice of Sheerness Yard. Speaking in the debate on the Naval Estimates of 1887 he expressed his opinion:

*The Dockyard Schools are an anachronism in these days of advanced public education in the Board Schools. The Dockyard Schools should be closed under an arrangement with the Education Department who should take over the teachers and carry on the work outside the Dockyards.*

The passing of the 1889 Technical Instruction Act and the subsequent opening of Technical Schools and Colleges in the Dockyard towns intensified the criticism of the Dockyard Schools and in 1894 an Admiralty Committee was set up with the following terms of reference:

*To enquire and report upon the Schools for the instruction of Dockyard Apprentices, having regard to the character and quality of the education given in them, to the system under which the apprentices attend the Schools and to the opportunities of obtaining such instruction locally and how far any importance or inconvenience attaches to these Schools from a Service point of view.*

The Committee included Sir Robert G C Hamilton, Chairman, the Chaplain of the Fleet, the Director of Dockyards, J G Fitch, Esq., (representing the Education Department) and the Hon T A Brassey, (Secretary).

Some of the witnesses expressed doubts as to the expediency of maintaining the Schools on the grounds (i) Men trained outside are as good workmen as those trained in the Dockyard; (ii) that the studies especially of the Third and fourth Years produce a distaste for manual work; (iii) Men who have given time and effort to such studies and who, nevertheless, fail to find room in the higher branches of the service, become dissatisfied with their position.

The Admiralty Committee published amongst its recommendations:

*The Dockyard Schools are doing an important service to the Admiralty and the country at a very moderate cost and ought to be maintained.*

Incidentally, this Committee also investigated the Royal Marine School in Dock Road which had been opened in 1879. This school which provided some apprentices for the Yard also received a favourable report. There was strong support from the Royal Marines

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who wanted to be assured of the education that their children were receiving whilst the fathers were away from Chatham.

Apart from approaches which were made in 1906 to secure grants in aid of the Schools from the Board of Education, which, incidentally, were unsuccessful, the Dockyard Schools remained under Admiralty control without outside interference until 1970.

In the last decade of the 19th century there were many complaints about the voluntary system of education in Chatham. Letters to the "Chatham News" pointed out that few entered the Dockyard from Chatham Schools, and that there were no special facilities in Chatham for the special training of boys seeking apprenticeship. "Chatham News" of 24 April 1897, reported that on the Dockyard School Prize Day, the Headmaster drew attention to the absence of special classes in Chatham for training candidates for the Dockyard Apprentices Examination. By asking the boys to stand he showed that none of the 150 boys in the Dockyard School, Chatham, present at Prize Day, apart from one who had finished the course, had entered directly from Chatham Schools; there were over a hundred from the schools of New Brompton (Gillingham). In the 1898 Prize Day, the Headmaster, Mr Dawe, stated that 350 apprentices had been admitted in the last ten years; 276 of these came from New Brompton and Chatham had supplied only three. In the previous year only one came from Chatham.

There was a call for the establishment of a School Board at Chatham, but this, with the consequential increase in rates, was avoided by moving and expanding the existing voluntary schools. St Paul's School was moved from Hardstown to James Street in 1876 and then to Claremont Place in 1883; the boys section of St Mary's School was moved to Cross Street.

### **Naval Shipwright Apprentices**

Boy Shipwrights, or as they were known later, Naval Shipwright Apprentices, were admitted for training in the Royal Dockyards in 1899. After five years in the Dockyard the Naval Shipwright commenced twelve years service in the Royal Navy, reckoned from the age of 18. They wore civilian clothes during their training in the Dockyard and lived at home, unlike the boy Artificers mentioned in the next section. After 1912 there was an annual intake at Chatham Yard of the order of 16 in wartime and 10 in peacetime.

The craft training included all the arts of ship and boat construction, fitting out, and the joiner, blacksmith, plumber, painter and shipfitter trades. They attended the Dockyard School for three years and, provided their progress had been satisfactory, they were granted an Educational Certificate. All such apprentices from the Upper School were given this certificate and also those passing from the Lower School whose aggregate mark at the examination in the Second and Third years courses amounted to not less than 40% of the combined total marks for those examinations.

In 1918 the Carpenter Branch of the Royal Navy was restructured. The officers of the Carpenter Branch were renamed Shipwright Officers; the Chief Shipwright, the 1st, 2nd, 3rd and 4th Class Shipwrights were initially all Chief Petty Officers; the 5th class Shipwright ranked with Leading Seamen. In 1925 the 4th class shipwright reverted to Petty Officer status.

In the early 1920's the ex-apprentice was drafted to sea as Shipwright, 5th class, but accommodated in the Petty Officers Mess. Those who had passed a technical examination at the end of their Dockyard course and were in possession of an Educational Certificate could be recommended for accelerated promotion. Such might be advanced to the rank of Acting Shipwright, 4th Class, within a period of six to nine months instead of the customary twelve.

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From 1921 the 4th and 5th year Naval Shipwright apprentices were instructed for three hours in the afternoon at the Dockyard School in shipbuilding by a part-time lecturer who was paid £25 a year. A former Naval Shipwright Apprentice, Mr John Weight, outlined the programme of his training as a Naval Shipwright Apprentice from 1936 to 1941:

First Year	Repairing ships boats, cutters, whalers, etc in the Boat House, and mast making in the Mast House.
Second Year	Repair and maintenance work on destroyers (6 months): then attached to Ship fitters on new construction work, Submarines.
Third Year	Three months in the Joiners Shop and French Polishing Shop. Nine months on the New Construction (a new Cruiser in No 8 Slip in his case)
Fourth Year	A year with the Titalar Trades: Iron Caulking, Wood Caulking, Drilling, Riveting, Plumbers work, Painting, Welding (electric arc and gas), Smiths work.
Fifth Year	A month or two in the Drawing Office and then general ship repair work until reporting to the RN Barracks in April 1941 for service with the Royal Navy.

During the first four years he worked under the direction of a skipper who received two shillings a week for this task. He had a different skipper for each different trade; in his case, 17 skippers, including three different skippers covering the New Construction.

After each stage of the apprenticeship he was trade tested by a Shipwright Officer, RN, and the Trade Branch Inspector.

He had an odd memory of one section of his training. The period in the Blacksmiths Shop was programmed to include a week with the Locksmiths. The Locksmiths took one look at the Naval Shipwright apprentices and refused to entertain the idea of enlightening them how to open locked doors - even to the extent of packing up and preparing to go home. In the event, a compromise was reached and the apprentices were instructed how to make a key for a simple drawer lock.

During the Second World War the period of training was reduced to four years. The attendance of such apprentices at Chatham Dockyard School ceased in 1950. Such entrants to the Navy then commenced their initial training at HMS **Fisgard** at Torpoint, Cornwall, and then proceeded to HMS **Caledonia** at Rosyth.

It was proposed to amalgamate in 1969 the Shipwright and Marine Engineering branches of the Royal Navy; <sup>1</sup> the new entrant was to be called a Marine Engineer Artificer Apprentice.

### Artificer Apprentices

In 1868 a new class of rating, the Engine Room Artificer, was introduced in the Royal Navy. The new entrants were qualified tradesmen; engine fitters, boiler makers, smiths and coppersmiths, and worked under the orders of the Engineer Officers on the repair and maintenance of machinery. The Artificers were recruited from civilian craftsmen, who, in some cases, had served their apprenticeship in the Royal Dockyards.

The introduction of Boy Artificers, later known as Artificer Apprentices, was authorised by Order in Council of 28 March 1903. Five Boy Artificers for entry at Chatham were

<sup>1</sup> A Short History of the Shipwright Branch has been given in the Journal of Naval Engineering Vol 18 No 3 December 1960 by Lt Cdr R C Booker RN

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selected from the Civil Service Examination List of April 1903, as well as Dockyard and Naval Shipwright Apprentices.<sup>1</sup>

The Boy Artificers lived and were trained in the Hulks forming the Tenedos Training Establishment. The Map of Chatham Dockyard of 1907 shows Tenedos I, II and III and Acheron, berthed along the north wall of No 2 Basin. Acheron was a training ship for stokers. Similar groups of Hulks for the training of Boy Artificers were established in Portsmouth and Devonport. To utilise the Basins more effectively, the Hulks were removed two years later from Chatham Yard and the Boy Artificers were transferred to Portsmouth to HMS Fisgard, and to Devonport to HMS Indus. In 1931 the Artificer Apprentices were transferred from Portsmouth to Chatham and housed in the newly built Mechanical Training Establishment, HMS Pembroke. On the outbreak of the Second World War the apprentices were transferred to Torpoint, and the buildings renamed Collingwood Barracks, were used as an overflow for the RN Barracks, Chatham. Ultimately, these buildings were used to house the Dockyard School (by then known as the Dockyard Technical College) and the Fitter Apprentices Training Centre. No Artificer apprentices were taught at Chatham Dockyard School.

### Electrical Fitter Apprentices

In 1903 the Electrical Department was formed; prior to this the electrical work had been under the supervision of the Constructive Department. Ship Fitters from the latter department were turned over to the newly formed Electrical Department. Some Ship Fitter apprentices who entered the Yard in 1902 were transferred to the Electrical Engineering Department; Mr Frewen, who entered in 1902 as a shipfitter apprentice, was transferred to the EED and ultimately reached the rank of Superintending Electrical Engineer.

From the October 1903 entry examination two Electrical Fitter Apprentices, Messrs L S Sharman and A J Knight, were entered for the first time.

#### List of Apprentices to be entered in November 1904

Shipwrights	32	Boilermaker	20	together with 5 Boy Artificer
Painter	1	Coppersmith	2	apprentices to enter <b>Tenedos</b>
Plumber	1	Founder	1	
Sailmakers	2	Patternmaker	1	
Electrical Fitters	4	Ropemakers	3	
Engine Fitters	25	Total of	92	

After May 1905 one entry examination was to be held each year. Science and free-hand drawing were introduced in the entry examination after 1905.

#### Number of apprentices to be entered from the May 1905 examination

Shipwrights	40	Joiners	2	together with 8 Boy Artificer
Shipfitters	4	Patternmaker	1	apprentices to enter Tenedos
Boilermakers	15	Ropemakers	2	
Coppersmiths	2	Smiths	2	
Electrical Fitters	4	Engine Fitters	15	
Founder	1	Total of	88	

After the First World War some Electrical fitters were given the option of becoming Electrical Station Fitters and in 1928 a second type of Electrical apprentice was entered,

1 Dockyard Apprentices were admitted in the age range 14-16 before 1915 and candidates had, if necessary, two attempts at entry. The Boy Artificer had one attempt only, the lower age limit was 15 years

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the Electrical Station fitter. This apprentice, of which about two were entered a year, was trained principally in the generating and supply of electrical power on shore, whereas the other Electrical apprentices were concerned mainly with the electrical work of ships.

Electrical Fitter apprentices were not allowed to compete for Studentships at Keyham; they had to wait until 1910 for Admiralty Scholarships in electrical engineering which were initially awarded biennially and were tenable for two years at the RN College, Greenwich. This Scholarship was of value £40 per annum together with the minimum pay of an established Electrical Fitter. The holder of the Admiralty Scholarship was placed on the Establishment as an Electrical Fitter and after the two years course at Greenwich was to return to the Yard or Admiralty as a supernumerary draughtsman. After one years service he was eligible to compete for appointment as First class Draughtsman, Inspector or 2nd Assistant Electrical Engineer. He was eligible for selection as 1st Assistant Electrical Engineer after not less than three years service subsequent to his Greenwich training. M W C M Couch, who obtained such a scholarship in 1914, became Deputy Director of Electrical Engineering.

The course at Greenwich was extended to three years and the Electrical Scholarship was awarded triennially to the Electrical Fitter or Electrical Station fitter who secured the highest marks in the Fourth Year examinations held in the three year period.

After 1926, the designation, Electrical Scholar, was changed to Probationary Assistant Electrical Engineer, and the number of triennial electrical appointments to Greenwich increased - in both 1927 and 1930 there were three awards <sup>1</sup>. In 1938 this system was replaced by an annual appointment; the successful apprentices entered Greenwich in pairs, the elder one having to spend an additional year in the Dockyard before entry. Later, more than one was appointed each year; in 1948 three Fourth Year apprentices from Chatham were awarded Electrical Cadetships, Messrs, Swan, Hickmott and Tanner.

Up to 1960 the Electrical Fitter apprentice who was appointed PAEE spent one year at the Royal Naval College, Manadon, before entry to the three years course at Greenwich. He was given the relative rank of Sub-Lieutenant at Manadon. On the satisfactory completion of his training he was eligible for appointment as Assistant Electrical Engineer. In the early 1960's the RNES was formed with a grouping of officer posts with the Mechanical Engineers.

In 1950 a scheme was brought out whereby Electrical Apprentices in their Third Year at the Dockyard School became eligible for cadetships in the Electrical Branch of the Royal Navy which was formed in 1946. After training at the RN College, Dartmouth and in the Training Course, the Cadet was promoted to Midshipman (L) and then read Mechanical Sciences for three years at Cambridge. Mr Harpum <sup>2</sup> secured such a cadetship in 1952.

The scheme was extended to the Executive, Engineering and Supply & Secretariat Branch and for first appointments in the Royal Marines. Candidates had to have obtained 50% in English and an aggregate of over 60% in the Second Year Dockyard School Examination to secure exemption from the written examination. The twin sons of Mr Wright, the popular teacher at Chatham Technical School, who were shipwright apprentices, were appointed Naval Cades (Special Entry) at the Royal Naval College, Dartmouth in 1951. These schemes were introduced to recruit naval officers. The opportunities for Fourth Year apprentices mentioned elsewhere in this book were primarily for civil servants.

1 The PAEE received £120 a year for the first 18 months and thereafter £140 a year with a uniform allowance of £45. On completion of his course, if qualified the PAEE was appointed Assistant Electrical Engineer 2nd class (H Summers, El SF was appointed PAEE September 1933)

2 See Roll of Honour at the end of this chapter

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### **Reorganisation of the Dockyard School Courses**

In 1905 the Dockyard Schools were reorganised by Professor (later Sir Alfred) Ewing, FRS, who had been appointed to the re-established post of Director of Naval Education in 1903. Classes were started in Mechanical Drawing and Descriptive Geometry <sup>1</sup> for Second and Third Year apprentices and more emphasis was placed on laboratory work. Examination papers in educational subjects were set by examiners of University status, and qualified officers for the appropriate Dockyard Department set the professional papers. Mechanical Drawing papers replaced the French paper. The subjects of History and English were retained - the former was not studied after 1939, but interest in it was revived to some extent by the introduction of General Subjects into the Schools in 1950. French was reintroduced into the First and Second Year courses in 1950. An academic discipline was introduced by Ewing which he had initiated at Cambridge; it was a discipline which laid great stress on making the student work out a large number of problems and to become very practised in the application of the fundamental principles he was taught.

The concept of Divisions in the Upper School was abandoned and separate examination papers were set for apprentices of each year - there was a revival of this term later, for from 1922 to 1936, all apprentices spent their First Year in the Upper School, and an Upper and Lower Division of the First Year Class was formed in 1926. The examination papers for the Lower Division, except for English, were set by the Headmasters of the various Dockyard Schools.

The setting and marking of the Lower School Examination papers were divided among the Headmasters of the various Yards: Chatham, Portsmouth, Devonport, Sheerness and Pembroke.

The staff of the Chatham School in 1905 consisted of the Headmaster, Mr Austen, two Assistant Masters, Messrs Tinkler and Fiske, and two Evening Teachers. The appointment of Assistant Master by examination ceased at this time; the condition of appointment being the possession of a degree, and the appointment was confirmed after one years probation. Mr C W Fiske, Temporary Acting Junior Assistant Master, was confirmed in his post in 1905 after examination held by the Civil Service Commission. The Examination comprised English Composition, Mathematics and Mechanics including Elementary Applied Mechanics.

The teaching of professional subjects was included in the School timetable; in 1906 lectures in Naval Architecture and Marine Engineering were introduced in the Schools.<sup>2</sup> The fee paid to each Lecturer was £40 per year. Similar lectures in Electrical Engineering were started in 1909; these were initially of one hour duration per week, in 1919 these lectures were increased to two hours per week after a protest by the Portsmouth Apprentices and Ex-Apprentices Association. From 1909 papers in the professional subjects were set in the Midsummer Examination for apprentices attending Third and Fourth Year Upper School classes.

In 1908 it was ordered that selected apprentices, principally those attending Fourth Year Upper School classes, were to be employed in the Drawing Office for six months and to keep Drawing Office hours. In their Fourth Year of service all apprentices who had made satisfactory progress in their trade and in their studies at the Dockyard School were allowed to attend evening classes in Mechanical Drawing in the Dockyard Drawing Office.

1 The introduction of this subject had been advocated by the Committee on Dockyard Economy in 1859

2 J Rogers Assistant Constructor - Lecturer in Naval Architecture

W T Joyce 1st Class Draughtsman- Lecturer in Marine Engineering

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Lower School apprentices after 1906 were allowed to leave work at 4.30 pm to attend classes from 6 to 8 pm; they also attended the Dockyard School on Wednesday mornings. The Upper School attended two afternoons and three evenings (12 hours); the Lower School one morning and two evenings (7 hours). This pattern of work and attendance in both the Upper and Lower Schools was followed up to 1945, when full-time day attendance was introduced.

An extension to the School comprising additional classrooms and a laboratory was built in 1906. There still existed the disadvantage of the separation of the Upper and Lower Schools but this was not removed until the second extension was built in 1938.

A table of salaries and wages applicable at Chatham at the end of the first decade of this century is given below:

Manager, Constructive Department	£850 to £1,000
Headmaster	£350 x £15 to £450
Assistant Master	£150 x £10 to £200
Senior Assistant Master (from 1913)	£200 x £10 to £250
Mechanic	38s per week
Apprentice	4s to 15s per week

All boys employed in HM Naval Establishments had to attend classes for at least one year. In the case of Yard Boys, Messenger Boys and Boys employed in the Works Department, continuance at school after the first year was optional, but Boy Writers, Storehouse Boys and Laboratory Boys had to attend for three years. Attendance had to be at least two evenings a week for a period of not less than two hours each evening. Accommodation at the Dockyard School was very limited and the majority attended evening classes outside for instruction in Arithmetic, English, etc. Each boy was allowed 1s a week for payment of his class fees until 1911, when the Admiralty arranged with Kent Education committee to provide tuition and stationery at the cost of 12s per boy for a session of 30 weeks - this was found to be cheaper than extending the school and engaging more Evening Teachers.

In 1941 the post of Dockyard Welfare Officer was created and this officer, in place of the Headmaster, dealt with the Local Education Authority in connection with part-time day continuation and evening class education of juveniles employed in the Dockyard but not attending the Dockyard School. (This practice was peculiar to Chatham Yard.)

In 1912 two further classes of apprentices were admitted: Armament Fitter Apprentices from the Naval Ordnance Depot and Works Department Apprentices. (The first Torpedo Fitter Apprentices were entered in 1939.)

In 1913, 393 apprentices were attending Chatham School and in view of his increased duties, Mr Tinkler was promoted Senior Assistant Master. At the same time, Mr Norrie was appointed as an additional Assistant Master. Members of the Upper School teaching staff were given the rank of Superior Officer in the Dockyard and later, in 1928, the Headmaster was raised in status to Principal Officer.

1 At the age of 20 the Yard Boys would be rated as ordinary labourers

2 Welfare Officers were first appointed in 1940. The interest in industrial welfare was due to the need to get maximum production from the work force available, in 1964 the Yard Industrial Welfare Officer became responsible to the Personnel Manager. Three years later the post was re-designated Yard Welfare Officer and the holder assumed responsibility for all employees both industrial and non-industrial serving in the Yard. By 1969 there were two assistant Welfare Officers and some clerical staff

3 The Depot closed in 1959. In 1963 the Navy Works Department came under the control of Ministry of Public Buildings & Works instead of Admiralty



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The entry examination was held once a year and from the April 1913 list, 121 Dockyard Apprentices and 33 Boy Shipwrights were to be entered at Chatham. They were examined as follows:

Arithmetic	250
Mathematics	300
English	300
History & Geography	250
Science	300
Drawing	100
	1500

The results came out in July; the aggregate pass mark was 600 out of the total of 1500.

The age limit for the Dockyard apprentices was 14/16 years. Those above 15 could opt either for Dockyard apprenticeship or entry as Boy Artificer, if they were high enough on the examination list.

The examination programme of the Upper School from 1908 to 1951 is given below:

Fourth Year	Third Year	Second Year
Practical Mathematics I	Practical Mathematics II	Practical Mathematics III
Practical Mathematics II	Applied Mechanics II	Applied Mechanics III
Applied Mechanics I	Electricity	Mechanical Drawing
Applied Mechanics II	Mechanical Drawing I	Heat & Metallurgy II
Heat & Metallurgy	English & History	Electricity

(History dropped after 1939)

First Year	Practical Mathematics IV; Mechanics; Elementary Science; English & History (History dropped after 1939)
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In addition, Third and Fourth Year Apprentices took Professional papers relating to their trade. The Professional papers were:

Shipbuilding Ship Calculations and Laying Off	Fourth Year Shipwright Apprentices and those of kindred trades, including Ship Fitter Apprentices
Steam & Heat Engines I General Engineering	Fourth Year Engine Fitter Apprentices and those of kindred trades
Electrical Engineering I and II	Fourth Year Electrical Fitter Apprentices
Shipbuilding II Ship Calculations and Laying off II	Third Year Shipwright Apprentices and those of kindred trades
Steam & Heat Engines II) General Engineering II	Third Year Fitter Apprentices and those of kindred trades. The first of these to be taken by Electrical Fitter Apprentices

The professional paper for Third Year Electrical Fitter Apprentices was first introduced in 1937; prior to that they answered the Steam & Heat Engines paper only and their mark was doubled to give a comparison with apprentices of other trades who had answered two separate papers.

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Up to 1936 the lectures in professional subjects were given to Third and Fourth Year Apprentices together; they were then separated.

The examination programme of the Lower School (1907/1950) was as follows:

Third Year	Second Year	First Year
Applied Mechanics & Mechanism	Practical Mathematics Mechanics	Elementary Science Practical Mathematics
Metallurgy and Properties of Materials	Heat & Steam Mechanical Drawing	English
Electricity		
Mechanical Drawing		

### Junior Apprentices

In addition to Trade apprentices, another group called Junior Apprentices for the so-called Titular Trades, such as Ship Riveting, Iron Caulking <sup>1</sup> Ship Plate Machining, Machine Tool operating, Electrical Wiring, etc were entered after 1919. Initially they attended the Dockyard School, but later, owing to accommodation and staffing problems they attended classes outside the Dockyard. Such boys were entered as Yard Boys and employed as messengers and rivet boys. A number between the age of 15 and 18 were selected as Junior Apprentices and were given a five years' training in the trades mentioned above. No indentures were signed, but a certificate of competency was given at the end of their training. The other Yard Boys, at the age of 20, were graded as ordinary labourers and employed as such. The rates of pay of the Junior Apprentices were 8s per week for the first year, 10s the second, 14s the third, 20s the 4th and 30s for the fifth. War increases were also paid: 12s 9d for apprentices under 18 years of age and up to 23s 6d for apprentices of 18 and over.

In addition there were Junior Storehouse Assistants and Junior Laboratory Assistants who were entered by interview, and, if considered necessary, an elementary education test, for training as Storehouse Assistants in the Naval Stores &c and to Assistant Laboratory men in the Armament Supply Department. Appointment to Storehouseman in the Naval Stores &c and also to Laboratory man was made as a result of a competitive Civil Service examination confined to the Storehouse Assistants and Assistant Laboratory men and to recommended labourers of those departments.

### The Dockyard School between the Wars

The set-up of the Dockyard School in the interval between the wars was virtually unchanged, though the number of apprentices attending the School declined from the peak figure of the First World War. In 1923 all apprentices were put into the Upper School during their first year of service. In 1927 there were 162 Dockyard and Naval Shipwright Apprentices in the Upper School and 49 in the Lower School. 168 Dockyard and Armament Supply boys attended outside evening classes. In that year 47 Dockyard apprentices and 10 Naval Shipwright apprentices were to be entered.

In 1916 Sir Alfred Ewing was appointed Principal of Edinburgh University and after his departure the post of Director of Naval Education was abolished. The work of the

<sup>1</sup> The trade of wood caulker started to be absorbed in that of the Shipwright in 1911 (Replies to Petition 1910) The last Caulker apprentice seems to have been entered at Chatham in 1898. Mr Alfred Hollett was the last wood caulker apprentice to be entered at Portsmouth Yard. He entered in 1906 and completed his apprenticeship in 1912 when the pay of the caulker was about 32s a week.

In 1802 it had been ordered that shipwright apprentices should be instructed in the work of a caulker in their last year of training to overcome labour shortage.

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Admiralty Education Department was ultimately taken over by Mr McMullen, Second Master at Dartmouth College, who was designated Adviser on Education, a post which he held until 1936. He was succeeded by Instructor-Captain A E Hall, who was designated Director, Education Department. This officer had the distinction of being the first Naval Instructor to be advanced to the rank of Instructor Rear-Admiral. In 1951 the title of the post was changed to Director, Naval Education Service (DNES). The control of the Dockyard Schools later passed from the Civil Lord to the Second Sea Lord to whom DNES was responsible.

For a period after the conclusion of the First World War (1919/23), a number of ex-apprentices who had completed four years in the Upper School entered the Navy as RN Schoolmasters. Some of them returned as teachers in the Dockyard Technical Colleges, as the Schools were later known, after retirement from the Navy. Instructor Lt Cdr L A Kew was the first to be appointed at Chatham.

The Upper School was used for a number of purposes outside teaching of apprentices. During the vacations the Dockyard residents played badminton inside the building, whilst their hard tennis court was just outside. The rooms were used as a concert hall for the Police and Apprentices, as examination centres for all ranks between apprentices and foremen and for the shoaling of shipwright gangs. The sliding partition between the rooms made possible the use of the school for prize giving's and such functions. The Dockyard Library was housed in the Upper School. This was controlled by a Committee comprising the Superintendent, Principal and Superior Officers and established employees, with the Headmaster acting as Secretary. The Library had been in existence since 1851 and was started with books given by Admiralty. Grants were made by Admiralty in 1861 (£50) and 1865 (£20) and subscriptions were paid by borrowers.

The Library was inspected by Dr Woolley in 1858 when he reported:

*Number of volumes 935. Subscribers: Officers 20; Men 46; Boys 54. Annual income £19.*

At the time of closing, 1927, there were about 2,000 books, mostly fiction. By 1929 the bookcases were removed and the books distributed to foreign Yards and Naval Hospitals.

In the retrenchment period following the First World War, entries of apprentices were progressively reduced especially after 1925 when Rosyth Yard closed and the labour force moved to other Dockyards. Again in the slump period round about 1925, a considerable number of ex-apprentices were discharged as redundant; the most hard hit were the shipwrights. The grade of shipwright as constituted in the Royal Yards did not exist in private shipyards, so that discharged shipwrights had great difficulty in finding new employment. The memory of this in the Towns caused a serious setback to the recruitment of shipwrights since entrants to apprenticeship were reluctant to accept this trade.

In the rearmament period preceding and during the Second World War there was, as a consequence, an acute shortage of ex-apprentices suitable for filling the more responsible posts, especially in the Constructive Department. Recruits from the Dockyards to the Royal Corps of Naval Constructors were obtained almost exclusively from those apprentices, who, finding themselves near the top of their class at the end of their second year, and feeling that their prospects of winning a Royal Construction appointment were reasonably sure, elected to change to the trade of shipwright. This, however, did not help to produce men of the required standard suitable for supplying the expanding demand for subordinate officers in the Constructive Department.

During the First World War, whilst Mr Fiske was on military service, his duties were taken over by Mr Davies. In 1924 Mr Fiske left Chatham to take up his appointment as

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Senior Master at Portsmouth Dockyard School; his post at Chatham was filled by Mr Crabbe, who resigned owing to ill health in 1932 and Mr Bess was appointed in his place.

From 1936 onwards the number of apprentices entering the Yard rapidly increased owing to the rearmament programme; 65 entered in 1934, 157 in 1937 and 169 in 1938.<sup>1</sup> The Upper School teaching staff was increased in 1936 to five, the Headmaster, Mr Wildman; a Senior Assistant, Mr Norrie, and three Assistants, Messrs Bess, Young and Crawshaw. In the following year Mr Ferguson joined the staff, followed by Mr Lisgarten who joined in 1941.

The Lower School staff changed more frequently. Three men, who had long association with the Lower School were Mr Lowdell, who assisted from 1919 to 1937 and Messrs Balcomb and Smith who joined in 1937 and 1938 respectively.

### Apprentices in Wartime

An extension to the School of five classrooms had been built in 1938; the lower three of these served as the School air raid shelter. Considering the frequency of the raids, remarkably little disturbance of classes occurred during the Second World War and no damage was suffered apart from the breaking of windows by blast.

To obtain the inflated number of apprenticeships required during this period, of the order of 200, Yard Boys were allowed to take up apprenticeships after passing a simple test set by the Headmaster of the Dockyard School. (A similar reduction in the standard of entry had occurred in 1917 when candidates were entered who failed to qualify at the examination, in addition to those who did not attend the examination, provided they passed a simple test set by the Dockyard Headmaster.)

After 1944, the written entry examination for apprentices was modified by the deletion of History, Geography, Drawing and one Mathematical paper from the test; the examination was then conducted in Mathematics, English and Science.

By the conclusion of the First World War changes had been made in the conditions of apprenticeship. The period of apprenticeship had been reduced from six years to five years,<sup>2</sup> and the age of entry raised to the limits 15 to 16 years. The weekly scale of pay before the war ranged from 4s for First Year Apprentices to 15s for Sixth Year ones. In 1918 the revised scale ranged from 6s for First Year to 20s for Fifth Year apprentices per week. On completion of five years apprenticeship the apprentice would be entered on probation on the probationary rate of 30s per week and the subsequent advancement to mechanic rating was at the discretion of local officers. After the Second world War the rates rose very rapidly: 1952, 42s 8d to 95s 6d; 1965: £3 17s 8d to £9 1s 4d (£10 7s 2d if over 20). The apprentices gained additional money by participating in incentive schemes whilst working with his tools.

The salaries of the Schoolmasters were inflated by War Bonus Payments and by 1918 the salary scale for the Headmaster was £550 x 20 to £650 together with a War Bonus of £60 year and 20% of ordinary remuneration.<sup>3</sup> The salaries of the teaching staff at Chatham were finally consolidated in 1937 at: Headmaster £625 x £25 to £735; Assistant Master £240 x £12 to £348 x £18 to £530, and the allowance for the Senior Assistant was £100 per year. In 1949 the salary of the Headmaster of Chatham Dockyard School was £900 x £25 to £1050, together with graduate and training additions.

1 See Appendix 4 showing the intake of apprentices to the Yard

2 R Bourne, Electrical Fitter Apprentice passed the entry examination April 1915, entered in January 1916 and served a 5 1/2 year apprenticeship.

3 The basic scales for the Second Master and Assistants were £280 x £10 to £340 x £15 to £550 and £140 x £10 to £240 x £15 to £450 respectively.

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The wages of the Messenger were in 1918: Established Man, 26s 9d x 2s to 31s 6d per week; Hired Man, 28s per week and War Bonus of 33s 6d + 12% of earnings.

By 1921 the Junior Evening Teacher was paid £80 a year for four nights of two hours per night; the Lecturer in Professional subjects, £50 a year for one night of two hours; the Instructor in Mechanical Drawing, £35 for two nights of 1 1/2 hours each per week.

During the Second World War some of the staff taught part-time at the local Technical Schools which were in disarray owing to the return from evacuation of some boys without their teachers. In the First World War teaching assistance had been given to the Mathematical School, Rochester.

### **Introduction of Group Training of Apprentices**

During the Second World War, a change in the system of training apprentices was introduced in the main Departments; for the first two years, the apprentice received group instruction under specially selected mechanics rated as chargemen. During the third and fourth years, the apprentice worked under an instructor who received an allowance. In the fifth year he was employed as an assistant to a fully qualified mechanic, but some of his time was spent in the Drawing Office.

The shipwright apprentices received group training in the Boathouse; Mr Penfold was their instructor. The engine fitter apprentices started this form of training in 1942 under the supervision of Mr Batty, the Inspector in the Factory. The new scheme was finally adopted for the electrical fitter apprentices who were trained in the Old Sawmills; Mr Shergold was their inspector.

In the earlier days the only place where the apprentices were assembled was the Dockyard School. Lectures on such matters as Safety in the Yard were given at the School, but with the advent of group training, matters other than schooling were dealt with outside the School.

### **Whitworth Awards, etc**

In 1943, to mark the centenary of the Order in Council establishing the Dockyard Schools, an appeal for funds was launched by the Headmaster, Mr Ritchie, to found a Bursary to be awarded to the Chatham apprentice, who in the fourth year of his service in the Dockyard, had just completed four years in the Upper School, and without the aid of a cadetship, was about to enter college to read for a degree. The ultimate aim was to raise £400 and to make an award of £10 a year. The money was banked with the Chatham Co-operative Society. After the war the courses of studies in the Dockyard Schools were altered and the financial assistance given to students pursuing higher studies reduced the need for such a bursary; it is understood that no awards were made from this bursary in later years.

With the extension of secondary education in the early part of the 20th century there was an increasing number of candidates for apprenticeship who had attended Technical or Grammar Schools, principally the former. In 1926 there were 41 apprentices entered from the Elementary Schools and 18 from Technical and Grammar Schools; for 1948 the corresponding numbers were 13 and 75. The majority of the better educated lads had no intention of remaining craftsmen and welcomed the educational opportunities offered by the Dockyard School to secure advancement inside or outside Admiralty service.

For the best educated apprentices there was the prospect of a cadetship in Naval Architecture or Electrical Engineering; for others there was the possibility of securing a Whitworth Scholarship in Mechanical Engineering or a Royal Scholarship tenable at the Imperial College of Science and Technology, London.

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The Whitworth Awards date from 1869. Originally there were examinations in Science subjects and in handicrafts such as smiths work, turning, etc. The number of marks obtainable from the theoretical subjects and those obtainable by the most skilled workman in the handicrafts were to be about equal. Later the form of the examination was changed to a written test in engineering subjects.

Initially scholarships of annual value of £100, tenable for three years were offered for competition each year. From 1890 to 1922 inclusive, there were offered for competition each year four scholarships of the value of £125 a year, tenable for three years, and thirty Exhibitions of the value of £50, tenable for one year. From 1923 onwards the Exhibitions were discontinued and there were offered for competition each year two Whitworth Senior Scholarships of annual value of £250 each tenable for two years and six Whitworth Scholarships of the annual value of £125 each tenable for three years. In addition twenty five Whitworth Prizes of the value of £10 each were awarded to unsuccessful competitors for Whitworth Scholarships whose work deserved recognition.

As an example, details are given of the scholarships offered by the Ministry of Education in 1948 to engineering apprentices. Five Whitworth Scholarships of value £200 per year, tenable for three years, and ten prizes of £20. Candidates for Whitworth Scholarships had to have been engaged for at least 24 calendar months (1926 - 30 months) as an apprentice in a mechanical engineering works performing specified tasks, including lathe and fitting or erecting work. The subjects of the examination included Mathematics, Mechanics, Heat Engines or Electrical Engineering, Naval Architecture or Machine Construction and Design, and Workshop Technology. In addition Royal Scholarships and Studentships were offered. Candidates for these awards took the same papers as those competing for Whitworth Scholarships but had to satisfy the Ministry of their competence in English and Physics or Chemistry.

Dockyard apprentices were very successful in winning such scholarships together with those offered by the Professional Institutions such as the INA and IEE. From 1869 to 1925, 68 Chatham apprentices secured Whitworth Awards and from 1935 to 1953 their successors added one Senior Whitworth Scholarship, 17 Whitworth Scholarships, 41 Whitworth Prizes and five Royal Scholarships. The need to secure such awards diminished after 1947 when Technical State Scholarships were awarded annually by the Ministry of Education to suitable applicants under 20 years of age. In any case, Royal Scholarships terminated in 1949, and in 1955, it was decided by the Ministry of Education, the Trustees for the Sir Joseph Whitworth Foundation, to discontinue the award of Ordinary Whitworth Scholarships. The holders of such academic awards rarely returned to the Dockyard, but the benefit of their training was not lost to the country.

During the period 1918/1939, Dockyard Apprentices from all Yards gained 91 Whitworth Scholarships, nearly half of those awarded, 94 of the 240 Whitworth Exhibitions and nearly 60% of the prizes introduced in 1923.

Comparison of Whitworth Scholars and Exhibitions in the Dockyard Towns:

	1869/1925	1926/35	1936/45	1946/55
Chatham	68	13	12	5
Sheerness	19	1	5	2
Portsmouth	168	13	31	11
Devonport	120	12	4	6

Taken from the Whitworth Register

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Most of the Scholarship winners continued their education at the City & Guilds (Engineering) College at South Kensington, London. The City & Guilds Institute set up Finsbury Technical College in 1883, and the Central Technical College in 1884, later renamed the City and Guilds (Engineering) College, now a part of the Imperial College of Science and Technology. <sup>1</sup>

A report in Engineering commented on the holders of Whitworth Scholarships:

*The system of dockyard training is evidently adapted to produce engineers of the very best type, but we should not have to rely solely on Government establishments for developing them. The native ability of the young men in the great engineering centres of the country must be at least equal to that of the dockyard apprentices, and in the aggregate amount, overwhelmingly greater. Yet the great prizes for young engineers go year after year to the dockyards. The severe weed-out of students whose lack of ability or energy would handicap the progress of the others, which is one of the wisest features of the dockyard training, the traditions of study which have grown up in the yards, and the excellence of the teaching provided, are all factors in the case. The result is certainly good.*

One of the secrets of success may be traced back perhaps to one of the first rules laid down in 1844 for the government of the schools:

*The master is strictly responsible to enforce orderly behaviour as well as diligence and attention on the part of the apprentices.*

Sir William White, one of the most famous of the Directors of Naval Construction, declared:

*I have passed through the most thorough system of technical education which, in my opinion, exists, and which is British from beginning to end.*

Another factor which favoured some of the more promising Dockyard apprentices were the facilities given for study both in and out of working hours, an advantage denied to their counterparts in the private shipyards.

After leaving the Dockyard School many Dockyard employees attended evening classes at Gillingham Technical Institute, <sup>2</sup> some for further preparation for the Engineering Scholarships, some to acquire National or Higher National Certificates, or City & Guilds qualifications <sup>3</sup> and a few to secure Engineering degrees. Several lecturers at the Chatham Dockyard Technical College graduated in this manner: Messrs Lancaster, Short and Pankhurst. However, the introduction of chemistry as a compulsory subject in the intermediate examination (chemistry was not then studied as a formal subject in the Dockyard Schools) together with National Service obligations after the Second World War

1 Oxford teaches you to become a gentleman, the Polytechnic teaches you to become an engineer

2 Gillingham Technical Institute was combined with others in the Medway Towns in 1927 to form Medway Technical College. This college was moved to the Rehabilitation Unit at Fort Horsted in 1954, there were 54 full time teaching staff, 226 full time students and 1625 part time students. In 1966 the Medway and Maidstone Technical College was merged into one unit, the Medway and Maidstone College of Technology.

3 In 1880 the City Guilds and Livery Companies of the City of London set up the City and Guilds of London Institute for the Advancement of Technical Education. The Institute awarded certificates mainly for craftsman

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made the External Engineering Degree course an almost impossible one for Dockyard personnel attending evening classes only.

In 1921 the Board of Education approached the Institution of Mechanical Engineers with the idea of creating a qualification for technicians, the National Certificate in Mechanical Engineering. In 1923 National Certificates in Electrical Engineering were introduced and in 1927, National Certificates in Naval Architecture.

One of the problems faced by an ex-apprentice seeking employment outside Admiralty Service was the lack of formal recognition of the standard of his education at the Dockyard School. The Professional Institutions were prepared to grant exemption from parts of their examination to apprentices who had attended the Dockyard School for four years. The Institution of Marine Engineers would exempt such apprentices from Parts A & B of their examination: the Institution of Mechanical Engineers from part A, and the Institution of Electrical Engineers from the Common Preliminary examination only.

The practice of giving to each apprentice a School Certificate ceased in 1947 and no tangible evidence was provided of his School work. Some recognition was provided after the Second world War, when a series of Reconstruction Examinations were held. The Civil Service Commissioners decided to accept, as possessing the equivalent to a Third Class Honours Degree, a candidate who had completed four years at the Dockyard School, and obtained confirmation from his Headmaster; similarly the Commissioners also accepted as possessing the equivalent of a Higher School Certificate a candidate who had completed three years at the Dockyard School and obtained confirmation from his Headmaster.

The Dockyard School played a very vital part in the life of many of the apprentices and retention for a further year at the School was something to be worked for. Promotion was still based on the results of the Midsummer Examination and roughly one half of the apprentices of any year proceeded to the next higher class; the others were transferred to the Lower School or were discharged from School. There was a limited movement from class to class as a result of the Christmas examination. The selection of apprentices for promotion was made by the Headmaster subject to the approval of the Director of Naval Education Service.

Many were proud of attending the Dockyard School and in the earlier years of this century wore a silver lapel badge bearing the name of the School. Those who reached the Fourth Year Upper School regarded themselves as the elite and up to the time of the conclusion of the old courses sported enamel badges bearing the Roman numeral IV.

### **Outside Activities of Apprentices**

In the 1920s the apprentices produced Bell-O a journal of the Chatham Dockyard ex-apprentices and apprentices association.

The need to give great attention to school work inhibited their social life. An Apprentices Social Club was formed in the early days of the Second World War in premises (209 Luton Road, Chatham) leased from a brewery, later occupied by the Royal Naval Association. The formation of this club was supported by the Admiral Superintendent of the Yard and local politicians, such as Alderman Stearne. Membership of the club was restricted to apprentices.

The first Chairman was Mr Ron Foster, who later became Mayor of Chatham. The club had facilities for snooker, billiards and table tennis and had a workshop and a kitchen. A Chairman who worked hard for the club was Mr Stanley Brown, a patternmaker apprentice, who died in 1981. Among the active members mention must be made of Messrs Mitchell and Lancaster.



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Rowing on the Medway was encouraged by the Admiral Superintendent and members of the club were allowed the use of two whalers and a cutter.

Some finance for the club was provided by the proceeds of a Christmas turkey raffle, one of the biggest in the Medway Towns. It was estimated that in one year 7,000 tickets of 3d each were sold.

In December 1946 the club had to surrender the premises to the brewers and then took over a wartime AFS station at Luton (now demolished). these premises were unsuitable and the club closed early in 1947. Many of the apprentices found that club attendance clashed with their studies.

The promotion of out-of-school activities by members of the school teaching staff was made difficult as the apprentices attended only on a part-time basis but after the Second World War great efforts were made by two lecturers, Messrs Ferguson and Lisgarten. A football team was formed which competed in the local Minor League and sporting contests were arranged between Chatham and Sheerness and Portsmouth Dockyard Schools. Mr Goss, Headmaster and Principal from 1947 to 1952, was an ex-Portsmouth apprentice and he inspired and gave enthusiastic support for this inter-Yard competition. The sporting contests were really the only contacts between the apprentices of different Yards apart from the competition at the annual examination.

Through the history of the School a number of Old Boys Associations had been formed, but they have all petered out, mainly because ex-apprentices have usually secured employment in districts away from their old Dockyards. Ex-apprentices of a particular year of entry have organised reunions among themselves over the years.

The Departments themselves have organised social and sporting activities for their members and as Civil Servants, those interested have availed themselves of the facilities offered since the 1930 by the Civil Service Sports Association. The Instructors of the apprentices in the Training Centres also organised sporting activities, particularly swimming, for their trainees.

Apprentices for many years have celebrated the completion of their apprenticeship by dinners and convivial evenings. The Fourth Year classes of the Dockyard School also organised dinners at the completion of their course to which the schoolmasters were invited.

The apprentices gave little trouble to the authorities. There was one minor incident during the Second World War when on Monday, 15th December 1941, some of them attempted to strike. The strike, which lasted five hours, arose from dissatisfaction over bad canteen facilities. A 19/2 year old, fifth year apprentice, Ivor Felton of Walderslade, addressed an assembly in the canteen about its failings. The Superintendent threatened the apprentice with prosecution under DORA and sparked off the strike. Felton was suspended for a week.

### **Post-War Changes in the Dockyard School**

From the earliest times the aim of the authorities had been to recruit a number of apprentices of high attainment who would be suitable after training to fill responsible posts in the Service. The passing of the 1944 Education Act gave greater educational opportunities in the post-war period for promising students in secondary schools. Sixth form studies were vastly expanded in the Grammar School and this expansion was followed by the Technical Schools. Grants were available for those could gain admission to the Universities and Colleges of Advanced Technology. This caused the loss of a number of well educated boys who might have entered the Dockyard to take advantage of the training facilities offered by Admiralty.

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In October 1945 a Committee was set up:

*. . . to consider the recruitment and training of civilian trade apprentices and boys in HM Dockyards and Shore Establishment, with special reference to recent legislation affecting the education of boys and the necessity for maintaining the quality and numbers of officers and workmen who are given their initial technical training in the Establishments mentioned.*

The Committee's recommendations, published in 1948, advocated the maintenance of selection by the annual Civil Service examination with age limits of between 15 and 17. The curriculum of the Schools was to be widened and endeavour was to be made to secure recognition of the courses by the Ministry of Education and the Scottish Education Department as being a suitable basis on which to confer National and Higher National Certificates. This would facilitate the admission of apprentices to the membership of the Professional Institutions. Upper School apprentices were to attend school for two days and two evenings a week, Lower School apprentices for one day and two evenings a week. All apprentices were to remain at school for the first two years and ultimately for the first three years of their apprenticeship. Clerical and typing assistance was to be provided for the first time in the Dockyard Schools.

As a result of the work of this Committee, new syllabuses were drawn up for both Upper and Lower Schools; the main alterations being the inclusion of French and Current Affairs and the extension of laboratory work.

With a view to securing recognition for the granting of National Certificates the Schools were investigated by a team of HM Inspectors who rendered their first report on 28th March 1949. There was criticism of the standards achieved in the professional subjects which were inappropriate for HNC courses, and of the laboratory and school equipment.

However the Inspectors considered that, with slight modification, the 1st and 2nd years of the Upper School course would meet the requirements of the Ordinary National Certificate, and the 3rd and 4th years of the Upper School course would be acceptable for the Higher National Certificate.

Further progress was delayed until 1952 largely due to opposition from within the Admiralty, where the view was widely held that tying the Upper School courses to the requirements of the Ministry of Education and the Professional Institutions would put unacceptable restrictions on the Dockyard College courses; and further that the award of civilian qualifications on Admiralty courses would tend to accelerate the drift away from the Dockyards.

For a short time at Chatham, from 1946 to 1950, evening class attendance was abolished save for Professional and Lower School classes following a precedent at Portsmouth where their school was destroyed in 1940 by enemy action, necessitating a removal to premises outside the Dockyard. With the introduction of the new syllabuses, however, a reversion to the old system of evening school for all was made, the attendance being that recommended by the Apprentices and Boys Committee.

Miss Griffiths, Clerical Officer-Secretary, was appointed to the Chatham School in 1951. Prior to this all clerical work was done by the teaching staff aided by the School Messenger. Although little formal homework was set and marked, every Upper School class was provided lavishly with example sheets. These were prepared by writing with hectograph ink on a sheet of paper which the Messenger placed on trays of jelly and then took off copies. In hot weather the jellies would not set and the process was very tricky. It used to be said that the characteristics of the Dockyard School were the stink of melting jelly in the Messengers office and the blue fingers of the teaching staff.

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### **Equal Opportunity Scheme for Maltese and Gibraltarian Apprentices**

To give selected Maltese and Gibraltarian Dockyard Apprentices opportunities equal to those of the Home Yards Apprentices, a scheme of transfer was put into operation in 1947. Three or four from each of the major trades were selected from Third Year Gibraltarian and Maltese apprentices to complete apprenticeship in this country. Shipwright apprentices were trained at Portsmouth, Engine Fitters at Devonport and Electrical Fitters at Chatham.

These apprentices were placed in either the First or Second Year Upper School and took the usual Midsummer examination for promotion to the higher classes. They were allowed to compete for appointments as Draughtsmen or Inspectors in Admiralty service.

### **Changes in the Method of Entry of Apprentices**

To meet the loss of Dockyard labour consequent upon the policy of full employment, which operated from the end of the Second World War, several changes in the method of entry of apprentices took place. An extract from the Eighth Report from the Select Committee on Estimates, HM Dockyards, 1950/51, is given to illustrate the appalling loss of Dockyard-trained apprentices.

*In the years 1928 to 1942, 7,000 apprentices were entered in the Constructive, Engineering and Electrical Departments. By 1948, less than a year after the last of these had completed their apprenticeship, 40% had left the Service, 21% had been promoted to supervisory or subordinate officer grades, and only 39% remained in the Yards as craftsmen working at their tools.*

To encourage boys of lower academic ability to compete for apprenticeships, supplementary examinations were held in 1949 and 1950. The papers for these examinations were set by Admiralty examiners, and generally speaking, boys who were successful in the supplementary examinations were entered in the Lower School. However, the number of candidates presenting themselves for these examinations was far from that required to make good the loss of mechanics to outside industry and the Forces.

In 1950 a drastic revision of the method of entry was made: written examinations, the papers for which were set by Admiralty examiners, were held three times a year. The successful candidates entered the Upper School and joined the appropriate First Year Class in the September following their entry; the pass mark for the written examination was 30%. Apprentices were accommodated in preliminary classes if they entered the School at times other than September. In addition limited numbers of apprentices were admitted to the Dockyard without written examination provided that they could pass a simple intelligence test, termed an Aptitude Test, and marked by the teaching staff of the College, and satisfy an Interview Board of their suitability for training as apprentices. The Interview Board was held three times a year, about a month after the written examination. About 15% of the vacancies in each trade, together with any remaining unfilled from the written examination after those candidates had their choice, were filled by successful candidates who satisfied the Interview Board. These apprentices were entered into the Lower School but those who showed signs of being able to profit from Upper School instruction were given the opportunity of promotion.

Partly as a result of the efforts to provide a sufficient labour force in the Yard despite the loss due to more attractive conditions outside the Service, and National Service obligations, and further as the result of the raising of the school leaving age, the number of apprentices attending the Dockyard School grew rapidly between the 1930s and 1950s:

1932 - 215; 1942 - 345; 1952 - 595; 1953 - 770.

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### Loss of Labour from the Yards

The loss of apprentice-trained labour from the Yards continued. For the period 1951/1955 the figures are given below:

Year	No of apprentices entered in the year	31.12.61 - still serving as industrials inc Chargemen, Recorders etc		Promoted to non-industrial grades by 31.12.61		Left Service by 31.12.61 including deaths and discharges	
1951	283	82	29.0%	21	7.4%	180	63.6%
1952	278	89	32.0%	11	4.0%	178	64.0%
1953	256	71	27.8%	20	7.8%	165	64.4%
1954	322	110	34.2%	20	6.2%	192	59.6%
1955	292	91	31.1%	25	8.6%	176	60.3%

The problem of the loss of trained labour is as old as the Yard itself. Consider the remarks made by Dr Woolley in the 1857 Report.

*In conclusion I would beg to observe that the Schoolmaster would do well to impress frequently upon the apprentices under their charge that the work of the school is strictly subordinate to the work of Dockyard. It is a great and an important work, but, so far as the Public Service is concerned, only valuable insofar as it tends to render the apprentices intelligent and conscientious workmen. There is undoubtedly a tendency in mental culture, if unchecked, to chafe at mere manual labour. It is the province of the Schoolmaster to warn his most promising scholars against yielding to a disinclination to hard labour which will probably creep over them. A wide field is open in the Dockyard Service to all who combine intelligence and mental culture with skill and readiness in the exercise of their craft; and it is an abuse of the School, and alien to the purposes for which it was established, for youths to neglect their profession in order to cultivate their mind. This caution is perhaps not often needed but it is sometimes; and too much pains cannot be taken to inculcate on the apprentice generally the duty of doing their duty by their employers, in performing to the best of their skill and ability the work they are set to, in the first place and above all things. A Dockyard School is not doing its work properly when it is sending its best scholars out of the Service to which they belong to seek a new profession.*

The Dockyard Schools were noted for the almost ruthless pursuit of learning by the more ambitious apprentices. These had overcome the obstacle which separated tradesmen from labourers and were anxious to get over the next which separated officers from workmen. There is an apocryphal story about this:

*When a master entered a grammar school class saying, Good morning, boys, the latter responded, Good morning, sir. When he entered a Dockyard School class and said, Good morning, boys, the latter wrote it down in their notebooks*

Great efforts were made to provide the apprentice with a good craft training to match the theoretical instruction given in the School. Group instruction in their trades was given to the apprentices in the first two years of their apprenticeship.

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From 1953 the apprentices had been granted two weeks paid leave and a day at Christmas in addition to the general holidays. Fourth Year apprentices attending school were allowed an additional week in the Summer. The punishment of apprentices for absence from school by diminishing the annual leave was no longer practised <sup>1</sup>. Upper School apprentices were at School for 16 hours a week including two full days; Lower School apprentices 10 hours a week including one full day. <sup>2</sup>

### **Prizes (including the Bath Memorial Prize)**

Prizes were awarded to the most deserving of the apprentices; the distribution ceremony, held originally in the two first classrooms of the old school, was later held on the upper floor of the 1938 extension. When the numbers grew larger this function was held outside the yard, first at Chatham Town hall and later at the Central Hall, Chatham. The traditional custom was the granting of the remainder of the day as a holiday by the Admiral Superintendent.

In 1946, the Admiralty Technical Association (later known as the Society of Technical Civil Servants) promised to award annually, for the purchase of a school prize, the sum of two and a half guineas. This prize, given in memory of an old friend of the School, Mr S Bath of the Constructive Department, was named the Bath Memorial Prize.

Apprentices in the Fourth year Upper School course and the Third Year Lower School course were allowed to retain their textbooks if they secured over two-third of the total marks in the Midsummer Examination.

Many Upper School apprentices secured admission to the Universities, etc, to read Engineering after obtaining grants from the Kent Education committee. Opportunities were given to these apprentices to study and sit for the November General Certificate of Education Examination so that they could satisfy individual college educational requirements for entry in the following year.

Scholarships tenable at the Military College of Science, Shrivenham, were available for suitably qualified Civil Servants to take courses for the London External Degree in Science or Engineering.

Fourth Year apprentices with a sufficiently high mark in the final examination were eligible to enter the Civil Service Technical competition for the grade of Assistant Experimental Officer in the Scientific Civil Service. Some of these officers were given the opportunity of further study at a university of their own choice.

### **Welfare of Apprentices**

Efforts were made by the Departments in the Dockyard to give the apprentices a corporate interest in the Dockyard organisations. Department Apprentices Committees were established which were empowered to discuss matters affecting the welfare and behaviour of the apprentices and to bring to the notice of the Management any practical suggestions for improvement. Each committee consisted of six apprentices, two group instructors and an Inspector who acted as chairman. Whilst National Service lasted, the Dockyard News Letter containing articles about the Yard and its activities was sent to lads away from the Yard.

From 1953 Admiralty allowed selected apprentices to attend Schools of the Outward Bound Trust; Sea School, Aberdovey; Mountain School, Eskdale; Moray Sea School,

1 It ceased, of course, when the remainder of the Yard employees were granted a week's paid leave in 1929.

2 The five day week for Dockyard employees started in 1947

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Burghead; Mountain School, Ullswater. Those chosen had their fees and travelling expenses paid for them for the four weeks course. Later Dockyard apprentices were sponsored for Sail Training Association courses. In the Yard itself there were sporting facilities including sailing.

More emphasis was placed on the general and cultural education of the apprentices. Weekly lectures on general subjects were given to the classes by civilian lecturers selected from the pool of Lecturers of London Services Education Committee by the Nore Command Instructor Officer. The annual Carol Service, introduced by Mr Goss (Head 1947/52) and attended by all apprentices, formed a pleasant ending to the Winter Term.

One effect of the increased recruitment of apprentices after 1951 was the lowering of the standard of the behaviour of many of these lads in the workshops, in the classroom and outside the Dockyard. During the years 1953/4, twelve apprentices appeared before the courts: four for thefts of private property from the Yard; the other cases involved assault, housebreaking and theft. The Admiral Superintendent, Vice-Admiral Sir Albert Poland, made several references to the indiscipline of apprentices in his public utterances and the local press publicised these disconcerting admissions. The solicitor defending two apprentices accused of theft told the Bench that there was a lack of control of apprentices in the Dockyard. This bad publicity resulted in a request to the Civil Lord of the Admiralty<sup>1</sup> being made by Mr Bottomley, MP for Rochester & Chatham, for an enquiry into the statements made about the conduct of Dockyard apprentices of Chatham. The other Yards, particularly Portsmouth, encountered similar problems.

Working conditions for the younger apprentices were improved by allowing First and Second Year apprentices to start work at 8 am instead of 7 am from October 1960. However from October 1965, the 40 hour week was introduced for workmen in the Yard; they started work at 7.30 am instead of 7 am and worked an eight hour day. The First and Second Year apprentices then started work at 7.45 am and finished at 4.15 pm except on Fridays when they finished at 3.45 pm (37 hour week in place of 40 hours).

The apprentice had 15 days annual paid leave in addition to the 8 1/2 days for public holidays, etc. Those attending the college on paydays were paid by Recorders who came up from the Yard for that purpose.

All young persons in the Dockyard under 17 were issued with free vouchers for lunches; those over 17 and under 19 had half-price vouchers. In 1967 the value of the vouchers was raised from 2s 6d to 2s 10d. Those attending evening classes at the Dockyard College were provided with tea in No 3 Canteen. A Canteen attached to the College was opened in 1961 and an allowance of 2s 6d was made for the cost of a meal during the break between official duty and compulsory classes in the evening. For the first year of these schemes a money payment was made, but later meal vouchers were issued which were accepted at the Canteen.

### **Changes in the Selection and Training of Apprentices**

For many years there had been a preponderance of Electrical Fitter Apprentices in the top classes of the Dockyard Schools. To provide a better balance an Admiralty Letter, dated 29th August 1950, ordered that the number of apprentices attending the Dockyard Upper School for a Third or Fourth year course was to be regulated, so that vacancies were allotted in proportion to Department needs. Apprentices were allowed to change their trade at the end of the Second Year if this would enable them to continue at School. This adjustment of the composition of the Upper School classes was first applied to

<sup>1</sup> The Civil Lord amongst other duties, had the charge of the Dockyard Technical College. The course of study was controlled by DN ES answerable to the Second Sea Lord

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apprentices of the 1951 entry. Many protested against this ruling but Admiralty turned a deaf ear; some elected to go to the Third Year Lower School rather than change their trade.

The Admiralty Letter stated that the Dockyard School was regarded as the training ground of potential Dockyard Officers and of Draughtsmen and Technical Officers elsewhere in Admiralty service, and its aim was to provide a flow of ex-apprentices balanced to meet the requirements of all the Departments of the Dockyard.

All the changes which had been proposed and implemented in the method of entry and training did not satisfy the Select Committee on Estimates 1950/51. In the Eighth Report they commented:

*Your Committee are of the opinion that the method of selection and the type of training are not properly designed to produce the craftsmen which the Admiralty want. It is not that the standards are too high, but that they are of the wrong sort. Different methods of selection are required for craftsmen and for those destined for professional careers, though it should always remain possible for an apprentice craftsman to proceed to a professional training if he shows that he possesses the necessary ability. . . However, your Committee note with satisfaction that the Admiralty are conducting a comprehensive enquiry to find out what changes are necessary in methods of selection and training of apprentices*

A Committee on Apprentice Entry and Training was appointed on 5th October 1950:

*. . . to consider the possibility of a dual scheme for the entry of apprentices, and, assuming such a scheme is found to be both feasible and desirable, to make detailed proposals.*

This Committee endorsed the recommendations of the Apprentices and Boys Committee that the Schools should be recognised for Ordinary and Higher National Certificate work. They recommended that the title of the Dockyard School be changed to Dockyard Technical College as reflecting more accurately its status. They also recommended the introduction of a dual entry scheme which is outlined below.

In the Session 1953/4 Second Year Upper School apprentices were prepared for the first time for the National Certificate examination in Mechanical and Electrical Engineering. The National Certificate content was grafted onto the ordinary Second Year course, a most unsatisfactory arrangement. The subjects in the 1954 Midsummer examination were Mathematics, Mechanics, Engineering Graphics, Physics, Electricity and Technical Drawing. In addition, the Second Year apprentices were examined in English and French. The pass mark in any subject for the ONC was 40%. In 1954, Chatham apprentices gained seven ONC's in Electrical Engineering and 15 in Mechanical Engineering. This two year course was repeated until 1956 when Upper School craft apprentices took the normal three years over the ONC course provided in Mechanical and Electrical Engineering and Naval Architecture.

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### **Change of title of Dockyard School to Dockyard College**

After 1946 the salaries of the Upper School teaching staff were based on the Burnham Scale<sup>1</sup>. Changes of the titles of the Staff were made in 1951; the Senior Assistant Master was designated Head of Department, Grade II, and the post of Lecturer was created. Finally in August 1952, the title of the School was changed to the Dockyard Technical College, and the designation Headmaster was changed to Principal. The numbers of full-time staff increased steadily: 1953 - 15; 1964 - 24; this increase was mainly due to the additional number of courses which developed in the post-war years.

In 1957 the leave of the teaching staff of the College was altered to seven weeks at Midsummer, two weeks at Christmas and two weeks at Easter. From 1958 onwards the leave at Christmas was increased to three weeks.

### **Dual Entry System: Student and Craft Apprentices**

In 1956 the Dual entry system was introduced in the Royal Dockyards of Portsmouth, Devonport, Chatham and Rosyth. Student apprentices were recruited by Annual Civil Service Examination and by selection from the First Year Upper School Apprentices. The age limits for entry were 16 to 18 on the 1st of September of the year of the examination. Craft apprentices continued to be recruited by written entry examinations set three times a year by Admiralty and by Aptitude Tests and Interviews.

The Student Apprentice was bound by deed to serve for five years and was trained as a prospective draughtsman and Technical Class Officer; he was allocated to his department at the end of his first year. He was guaranteed employment as a confirmed draughtsman on the satisfactory completion of his training. 75% of the annual vacancies for draughtsmen and Technical Grade Officers in Vote 8 trades and 50% of those for Technical Grade Officers in Vote 9 trades, were to be filled with ex-students. Cadetships in Naval Architecture and Electrical Engineering were to be awarded at the end of the fourth Year to Students who qualified in the Fourth Year Examination.

In the years 1956, 1957 and 1958 interim Students were to be appointed from Fourth Year Apprentices who secured 50% of the total marks in their final examination.

The Student Apprenticeship Entry Examination details are given below:

Mathematics	400 marks
Physics and Chemistry	300 marks
English	200 marks
Interview	300 marks

#### 1 Burnham Salary Scale 1954\*

Head of department Grade II	£1065 x 25 to £1215
Lecturer	£ 965 x 25 to £1065
Assistant Grade B	£ 525 x 25 x 20 to £820
Assistant Grade A	£ 450 x 18 x 23 to £725

\* There were additional payments for graduates and for training. The training was an addition of one increment of £18 for three years training or study to the maximum or minimum of the scale and an extra £18 for each additional year (maximum 3 increment of £18). The graduate addition was an addition of £60 for a university degree and the addition of £30 extra for a First Class Honours Degree.



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In 1956 10 Student Apprentices were recruited by the Civil Service Examination and four others were to be selected from the First Year Upper School Apprentices. As a result of recruiting difficulties at Rosyth, a class of 19 Student Apprentices was ultimately formed at Chatham.

The Student Apprentice followed a course of study which aimed at his passing the General Certificate of Education at Advanced Level in Pure & Applied Mathematics, Physics and Drawing, and at Ordinary Level in Chemistry, at the end of his second year. The remainder of the course was similar, but rather wider in content, to the old Third and Fourth Year Upper School courses.

The tuition of Craft Apprentices was also reviewed. As we have seen Upper School apprentices had been able to qualify for the ONC in Mechanical and Electrical Engineering at the end of their Second Year. The arrangement of the course was not satisfactory for the Colleges or for the Ministry of Education; many apprentices simply could not assimilate the work for both Certificates in two years. Only seven secured their ONC in Electrical Engineering in 1956. Again there was no provision for Higher National Certificate work in the third and Fourth Year classes. After 1956 the Upper School Craft apprentices took the normal three years over the ONC courses (S1, S2 & S3) provided in Mechanical and Electrical Engineering and Naval Architecture. Lower School apprentices were encouraged to take courses leading to the City & Guilds Certificates associated with their trades.

An effect of the change of the courses followed at the College was the alteration in the payment of lecturers in professional subjects and evening teachers. After July 1959 these were paid on rates based on those paid by Local Authorities for the same type of course, and varied from 17s 6d to 26s per hour.

Mr T C D Galbraith, Civil Lord of the Admiralty, commented on the trend of the Dockyard Technical Colleges, in the Commons debate on the Navy Estimates (reported in the Times Educational Supplement of 1959):

*The Dockyard Technical Colleges are designed to meet the needs of the dockyards; they are not part of the public education system. Yet within half a mile of the local technical colleges, the Dockyard Colleges run National Certificate and City & Guilds courses. Whether Higher National Certificate courses should also be run is now being considered by regional advisory councils and Student Apprentices are being trained to take the GCE A level examinations. The colleges are certainly conforming much more closely to the public education system than they used to.*

Although the recognition of HNC courses in the Dockyard Technical Colleges was opposed by local authorities, further steps were taken. The Ministry of Education ordered an inspection of Dockyard Colleges in 1959: the laboratory accommodation at Chatham was very limited and recognition of the courses involving Mechanical Engineering was withheld. As will be seen later this was one of the main reasons for a move of the Dockyard Technical college to Collingwood Block when work was started to provide adequate mechanical engineering laboratories in the north wing. A second inspection in early 1960 led to a belated recognition and a HNC course in Mechanical Engineering was available in addition to those in Electrical Engineering and Naval Architecture (A1 and A2). After this the Dockyard Technical College was functioning as a normal Technical College with Student apprentice courses, ONC and HNC courses, and City & Guilds Technician and Craft courses. Final City & Guilds examinations were held for the first time in 1960.

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To placate the outside Technical Colleges, attendance at the Dockyard College was restricted to apprentices only. An Admiralty Letter dated 2nd January 1959 restricted the education of apprentices in the Dockyard Technical Colleges to the period of their apprenticeship. The attendance of craftsmen was not approved. Only in the cases when an apprentice required a fraction of a year, after the termination of his apprenticeship, to complete his ONC or HNC course would his day attendance as a craftsman at the Dockyard Technical college be approved. Such cases arose mainly owing to the apprentice entries in January and April.

An exception was made in the case of the HNC course in Naval Architecture since there was no provision for such a course outside the Dockyard College at Chatham within a reasonable distance of the Yard.

Day release was usually granted for the ex-apprentice to resume his studies at an outside Technical College.

In 1960 the Dockyard College took over from the Electrical Department the Radio and Radar course of instruction for senior apprentices and fitters. Members of the course attended the College for five days a week and their training was designed to fit them for the post of TG III officers, diagnosticians, etc, in the Electrical Department; a chageman was appointed to supervise the members of this course.

At this time the number of apprentices attending the College on part-time day release was of the order of 800 and the full-time teaching staff numbered 22.

The Student Apprentice scheme was reviewed by the Student Apprentice Working Party appointed in April 1960. There had been difficulties in administering the scheme caused by the academic ability of the students in many cases not measuring up to the high standards of the course designed for them. After the scheme had run for three years, it was realised that a number of student apprentices had no chance of satisfactorily completing the course. These apprentices were warned; the majority left the service and others, who were originally craft apprentices, were allowed by their trade unions, for this one occasion only, to revert to their original apprenticeships. The rejection of the weaker boys upset the parents and the headmasters of schools from which recruits were drawn for the Dockyard.

An interim report of the Working Party issued in July 1961, recommended that student apprentices should be indentured in the same way as craft apprentices, the trade nominated, shipwright, fitter and turner, or electrical fitter, being allocated on the completion of the first year of apprenticeship. This was applied to the 1960 student apprentices entry.

The first entry of student apprentices completed their apprenticeship in 1961. Out of the original class of 19, four successfully passed the Fourth Year Midsummer Examination 1960. G F Hamilton was awarded a cadetship in Naval Construction and the other three successful apprentices attended the Dockyard College to sit for Part II of the Institution of Mechanical or the Institution of Electrical Engineers. These apprentices were granted exemption from Part I of the Institution Examination by their passing of the Fourth Year Midsummer Examination.

1959 was the last year in which Fourth Year Craft apprentices attending school spent the whole or part of their fourth year in the Departmental Drawing Office producing a trial drawing. In 1960 Fourth Year Students and Interim Students only carried out Drawing Office training. Craft apprentices attended the Drawing Office in their fifth year provided that they attended the Dockyard Technical College. Fourth Year students were examined in 1960 by an examination paper in Drawing.

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### General Course

In 1961, the Ministry of Education produced the scheme for the General Course in Engineering designed in accordance with the White Paper Better Opportunities in Technical Education. It was intended for school leavers who showed promise of being able to proceed in due course either to the National Courses in Mechanical or Electrical Engineering or to Technicians Courses, such as the Electrical Technicians course which was already functioning or to the Mechanical Technicians and Shipbuilding Technicians courses which commenced in 1961 and 1962 respectively. Admiralty Letter of 19 December 1961 approved the introduction of the General Course for craft apprentices in HM Dockyards.

Under this scheme, those boys who had completed a five years secondary course were admitted to the second year of the General Course; those who had completed only a four year secondary course had to start at the first year of this course.<sup>1</sup> The General Course lasted two years and concluded with an examination set by the City & Guilds of the London Institute. Those apprentices who secured at least credits (55%) in Mathematics and Science and a pass in Mechanical Drawing<sup>2</sup> were admitted to a two year Ordinary National Certificate course. Those who secured a pass in those three subjects were admitted to the second year of the Technicians course and took the Ordinary or Intermediate examination at the end of this second year. Those who failed were admitted to the first year of the Technicians course.<sup>3</sup>

The first G2 examination, replacing S1 took place in 1963. The first new style ONC examination was held in 1965 and two years later followed the first of the new style HNC examinations.

### Royal Naval Engineering Service

The Ninth Report by the Estimates Committee, session 1961/2, recommended that the Royal Navy Engineering Service should be set up with Mechanical and Electrical specialisations. Up to 1963 Marine Engineering duties afloat and ashore were wholly carried out by officers of the Engineer branch of the Royal Navy. Similarly until the Second World War electrical engineering duties ashore were exclusively carried out by civilian Admiralty Electrical Engineers. The Electrical branch of the Royal Navy was formed in 1946 and officers of the branch then served in some of the posts ashore filled by civilian electrical engineers. This recommendation was implemented and for the first time since 1904 prospects of promotion to the higher posts in the Engineering Branch were offered to Admiralty civilian employees with suitable qualifications in Mechanical Engineering.

In 1963 approval was given to a scheme whereby a small number of candidates drawn from ex-Admiralty apprentices of the engineering specialisation serving in the Drawing Office and Technical grades were sent on a course at Portsmouth College of Technology to obtain the requisite degree equivalent qualifications for entry to the RNES. In 1964 when the scheme started, four candidates were selected for this course. In addition to those from the Dockyards there was a small number of cadets of high quality and potential trained for the RNES after passing through Manadon and Greenwich in a similar manner to the Schools entry in operation for the Royal Corps of Naval Constructors.

1 Actually the apprentices were selected for the courses from the results of the entry examination.

2 Amended in 1965 to Mechanical Drawing or Workshop Processes and Materials.

3The courses such as Machine Shop Engineering (Subject No 63) for Engine Fitters were phased out in place of the Mechanical Engineering Technicians course (Subject no 293)

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The scheme was confined to the mechanical engineering specialisation as there were no professional officer cadetships for mechanical engineers at RN College, Greenwich, prior to the introduction of the RNES in 1963. An Order dated 18 April 1966 stated:

Nominees required from amongst established and temporary ex-Admiralty apprentices of the engineering specialisation now serving in Technical and Drawing Office grades.

### Qualifications

- (1) Candidates have obtained Grad I Mech E or exemption from Parts I & II of the Institution's examinations
- (2) Less than 25 years of age
- (3) Recommended by their parent department as possessing potential personal qualities of a Professional Engineer
- (4) Be willing to undertake 3 years Sandwich Course at Portsmouth College of Technology

During the period of study at Portsmouth College of Technology candidates will be given special leave without pay. During these periods the Navy Department will pay:

- (a) Taxable maintenance grants equal to officer's normal salary
- (b) Fees for course
- (c) Half the cost of the necessary books

Periods of study are not reckonable for superannuation purposes.

Recruitment to RNES for Dockyard apprentices was limited to the best Student apprentices who on completion of the Fourth Year course were selected by interview for appointments as Probationary Assistant Mechanical Engineers or Probationary Assistant Electrical Engineers (as well as Probationary Assistant Constructors). Those selected had to have the 'OA' level qualifications required for entry to the London University Engineering Course. Those appointed pursued courses at Manadon and the Royal Naval College, Greenwich and on completing the latter course were appointed Assistant Engineers and progressed through the grades: Senior Assistant Engineer, Superintending Engineer, after which they were eligible for the Directorate grade.

### Technician Apprenticeship Scheme

In 1963 it was proposed to replace the Student Apprentice Scheme by the Technician Apprentice Scheme (not to be confused with the C & G Technician courses mentioned previously) and in 1965 the last of the Student Apprentice Entry Examinations was held.

After June 1965 the aptitude tests and written examinations for craft apprentice entry which were held initially three times and after 1963 twice a year, ceased. In 1966 there was introduced an entry examination in Mathematics and English (DAMET = Dockyard Apprentice Mathematics and English Test). There was one entry of craft apprentices a year after 1969. Those who qualified were admitted as craft apprentices. The teaching staff of the Dockyard College was paid to mark the DAMET papers. Selected candidates

1 In 1975 the royal Corps of Naval Constructors and the Royal Naval Engineering Service were combined. Trainees were termed constructor midshipmen and remained at Manadon for a year.

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with four GCE O levels, or CSE Grade 1 subjects, including mathematics and a physical science, were interviewed by a Board which included a representative of the C S Commission, and if found satisfactory were offered Four year Technician Apprenticeships. They entered 01, the first year of the Two year ONC course. In addition, selected craft apprentices from G2 classes were offered Technician Apprenticeships. Such apprentices were eligible for cadetships in the RCNC and the RNES and for posts as Draughtsmen and Technical Officers.

In 1968, the last year of the Student Apprentice course, A Croucher was appointed Engineer Sub-Lieutenant, and J H Kent, Probationary Assistant Constructor. In the same year, the first of the Technician Apprentices, R S Fox was appointed to the Royal Naval Engineering College, Manadon as Electrical Midshipman for a degree course, after completing the ONC course at the Dockyard Technical College. There were similar appointments for Technician Apprentices, two in 1969 and one in 1970.

### **Move of the Dockyard Technical College to Collingwood**

The old Dockyard School situated a few hundred yards from Main Gate and built in 1847, had been extended a number of times: a Headmaster's office added on the north side in the time of Mr Henry, additional classrooms and a laboratory built in 1906 by the noted Chatham builder, C E Skinner, and a further extension built just before the Second World War. The Lower School building had been vacated in 1938 and all the apprentices were taught in the Main School. After the building of a Science laboratory to the north of the School, efforts were made in the 1950s to find more suitable accommodation for the Dockyard School.

The Royal Marine Barracks, Chatham, had been made redundant after the Second World War and strenuous efforts were made by Chatham Council and by Mr Bottomley, MP, to secure their reoccupation by the Service so that the income derived from the rates on the Barracks should not be lost to Chatham. It was proposed that the Barracks building should be demolished and buildings for the Dockyard Technical College and Apprentices Training Centre erected on their site. However, the Royal Marine Barracks and Gun Wharf were sold in January 1959 to William Palfrey, the packaging manufacturer. Another site, considered, but rejected, was that of Melville Hospital.

In 1958 Admiralty commenced the policy of reduction of the number of its Establishments. Among those scheduled for closure were Sheerness Dockyard and the Royal Naval Barracks, Chatham. In 1960 it was announced that the Government had reconsidered the closure of Chatham Naval Barracks and had decided not to transfer it to the War Office. The office of Commander-in-Chief of the Nore was to be left unfilled, but the new post of Flag Officer of the Medway was to be assumed additionally by the Admiral Superintendent, Chatham.

Sheerness Dockyard closed in March 1960, but its Technical College ceased its activities at the end of the Summer Term 1958, and many of the Sheerness apprentices were transferred to Chatham Dockyard. To accommodate the extra pupils, five classrooms in the north wing, the original Fisgard Block of Collingwood Barracks were used; this part of the Barracks was then empty. Mr Ferguson,<sup>1</sup> ex-Principal Sheerness Dockyard Technical College, was appointed Head of Department at Chatham and was put in charge of the Collingwood section of the Chatham Dockyard Technical College.

The proposal to move the Technical College to more suitable premises had been repeatedly deferred until 1958 when the Admiral Superintendent proposed that space for

<sup>1</sup> Mr Ferguson was appointed PDTC Rosyth in 1965

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the College might be found as a consequence of the Admiralty closures. He was instructed  
: *to reconsider with a view to utilising some of the premises vacated by the Nore Command and to submit a new preliminary proposal so framed as to incur the least possible expense.*

As a result of this, a scheme was prepared by SCE using the West Wing of Collingwood Barracks, based on the original proposals for Medway Barracks.

The withholding of recognition of the HNC courses led to appeals from the Trade Unions in the Yard asking for the provision of adequate educational facilities for apprentices. Probably as one consequence of this pressure, approval was given in 1959 for an expenditure of £35,000 to convert the West Wing and parts of the North Wing of Collingwood Barracks into the Dockyard Technical college, and to convert the East Wing, known as Rodney Block, at that time a Dental Centre, into a First and Second Year Fitter Apprentices Training Centre.

Collingwood Barracks, built in 1932, was originally the Mechanical Training Establishment for Artificer Apprentices who had been transferred from HMS Fisgard, Portsmouth. The Block was built on the Old Ravelin of Chatham Line of fortifications which became the site of the Royal Naval Detention Quarters in the period 1910/12. In October 1909, Fisher had advocated that detention quarters should be built at the three main naval ports. The practice of sending naval offenders to civilian prisons was to cease; such offenders were to wear naval uniform and do PT and service drill in place of shot-drill and picking oakum. Older naval men (in the 1960's) remembered the name of Commander Le Fan, in charge of the Detention Quarters, and CPO Judges hated by all. After sentence in the Barracks, the prisoner was marched up the steps to the Detention Quarters; during the building the Contractor suggested the provision of a lift from the Barracks to the Prison, but this was rejected by the Commodore.

Wallis of Maidstone built the Mechanical Training Establishment for Artificer Apprentices in 1932 for £750,000. At the outbreak of the Second World War the apprentices were evacuated to Torpoint and the buildings, renamed Collingwood Barracks, were then used as an overflow for the Naval Barracks. A figurehead of Collingwood stood outside the establishment.

In September 1960, the whole of the Dockyard Technical College was accommodated in the West and North Wings of the former Collingwood Barracks. Later in the year the College was joined by the First and Second Year Fitter Apprentices of all Trades occupying the East Wing, a Group Training Centre. The Fitter Apprentices were given instruction in their craft work by former tradesmen of the Yard who were given the Civil Service grading of Civilian Training Instructor. Their training was supervised by Inspectors known as Apprentice Training Officers.

The official opening of the Apprentices Training Centre, including the Dockyard Technical College, took place on the 30th May 1961 when a plaque commemorating the event was unveiled by Rear-Admiral Dolphin, a former Admiral Superintendent, who during his term of office, had pressed hard for the provision of more suitable accommodation for the College. For the remainder of that week the Centre remained open to the public as part of the Dockyard participation in Commonwealth Training Week.

The gates of the Centre carried the badges of Chatham Dockyard and of the Dockyard Technical College. The pattern of the latter was approved and distributed to the various Dockyard Colleges in 1957. The heraldic description is: Blue, an ancient ship proper the sail furled white and pennon flying, also white in chief an open book proper bound and edged gold. The motto on the scroll beneath the badge was *Palma non sine labore*.<sup>1</sup>

<sup>1</sup> The palm of victory is not (gained) without work.

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A close association between the College and the Craft Training Centre developed. From 1960 onwards prizes were presented on the College Prize Day to those who had distinguished themselves in their craft training: The Personnel Manager was associated with the Principal on the platform on that day.

A part of the Nore Command Reference Library was transferred to the College on the closure of the Nore Command in 1961. This library had nearly 10,000 volumes and was kept up-to-date by monthly additions to the Reference and Fiction sections.

Recreational facilities were available in the gymnasium of the old Fisgard Block where apprentices could play table tennis, darts and indoor football. A billiard table was acquired through the Dockyard Welfare Amenities Committee. Apprentices used the swimming baths of HMS **Pembroke** under the supervision of their instructors of the training centre; some were given training in life saving.

The old school buildings in the Upper Yard were taken over by the Management Training Centre who vacated their premises in the former Officers Quarters of the Royal Marines, one of several government properties to be disposed of by sale in 1961.

### **Changes in the Yard affecting the Apprenticeship System**

During 1958 a new system of management was instituted in Chatham Dockyard; the existing Departmental system was gradually replaced by a management structure comprising a General Manager, assisted by officers responsible for Planning, Production and Personnel, etc. The Dockyard Technical College was affected by these changes, the Principal being directly responsible to the Admiral superintendent. These changes affected the apprenticeship system. All apprentices became the responsibility of the Personnel Manager and were supervised in the craft training by a team of Technical Officers under the Chief Training Officer, a Senior Foreman. The apprentices in the Training Centre were instructed by Instructors who were graded as Technical Supervisors, the modern title for chargemen. After an examination of the grade by the Civil Service Pay Research Unit the Instructors were upgraded to Grade III Civilian Instructors, a classification for their type of work used in other branches of the Civil Service.

Under the old system the indentures were signed by the Head of the Department; with the new system they were signed by the Personnel Manager on behalf of the Secretary of State, to whom each apprentice was bound. The first Personnel Manager was Captain W A Haynes, RN. <sup>1</sup>

In 1959 the titular trades of Welder and Riveter/Iron Caulker were awarded full craft status and from October 1959, apprentices of these trades were admitted to the Dockyard Technical College. Junior apprenticeships for Machinists were still offered to Yard Boys between the ages of 15 and 18. Amongst other changes was the closure of the Dockyard Power Station in 1961 and Electrical Station Fitters were no longer entered. The ceremony confirming the complete dependence of the Dockyard electrical power supplies on the South Eastern Electricity Board was held in November 1961. The 200 foot chimney built in 1906 was knocked down in 1963. Wiremen employed by the Electrical Department were upgraded to the status of Electrical Fitter, subject to trade union agreement and the passing of a trade test.

In 1961 notice was given that the current style (written examination <sup>2</sup>) Limited Competition for Draughtsmen in the Professional Departments Pool would be replaced

<sup>1</sup> He was appointed Director of Naval Ship Production in 1963 and promoted to Rear Admiral from 7th July 1966. He was Director General Dockyards and Maintenance 1967 to 1969. He died 30 June 1985 aged 71.

<sup>2</sup> The competition was continued until 1965

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by the Open & Limited Competition for Architectural and Engineering Draughtsmen conducted by the Civil Service Commission. The principal features of the new type of competition were that candidates had to satisfy the Civil Service Commissioners that their standard of technical knowledge was that of the Ordinary National Certificate and that they had practical training and at least one years Drawing Office experience. Candidates were interviewed by a selection board.

In 1963 the Civil Service Commissioners confirmed that the final certificates (T4) of the City & Guilds Technicians course in Shipbuilding, Mechanical Engineering or Electrical Engineering were acceptable in place of the ONC for appointment as confirmed draughtsmen.

Candidates for Technical Grade III posts were expected to have either the ONC or the T4 qualification. Written examinations for Inspector posts (TG II) were not held after 1966; it was the end of a system which had lasted over 120 years.

In 1964 the Industrial Training Act was passed, which laid down the amounts and standards of training for each industry. The amount of training was measured in terms of a financial levy on the industry, according to its total emoluments. The shipbuilding industry had a levy of .55%, whilst engineering industries had a levy of 2.5%. Worked on the same basis the amount of money spent on training at Chatham amounted to about 5 1/2%. The Act, however, did not apply to the Royal Dockyards.

An analysis of the annual cost of training an apprentice at Chatham was made in 1961/2:

### *Earnings*<sup>1</sup>

Proportion of wages, allowances, etc attributable to time under	academic instruction	£106
Instruction		
I. Dockyard costs		
Instructors salaries, wages, tools & materials	£163	
Depreciation of machinery used in training	2	£165
II. Technical College costs		
Teaching staff	£ 45	
Maintenance costs	7	
Headquarters costs	2	
	£ 54	
Less proportion of costs attributable to the training of apprentices from other departments	3	£ 51
Administration		
Share of cost of accounting and personnel department surgery, fire service, etc £	10	
Miscellaneous expenses, e.g. canteen, roads, etc	5	£ 15
		Total: £337

The cost of five years apprenticeship was reckoned to be approximately £1700.

A Memorandum of Agreement between the Engineering Employers Federation and the Confederation of Shipbuilding and Engineering Unions dated 31 October 1963 stated, that while apprenticeship should normally commence at 16 years of age and terminate at 21 years of age, where a boy remained at school for full-time education after his 16th birthday, his apprenticeship should start at any time up to his 17th birthday, and the time

<sup>1</sup> The total average wage of an apprentice was £340. Of this he would receive £234 whilst in ships or shops where he spent an increasing proportion of his time after completing the second year of his apprenticeship. The remaining £16 was as shown ascribed to time under academic training.



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so spent at school should be counted as an equivalent period towards his apprenticeship. The period of apprenticeship should not be less than four years. The agreement came into effect from Monday 4 November 1963. This measure had already been applied to apprentices in the Building Industry.

From May 1967 the apprenticeship period was reduced to four years and four months, and from September 1967 to four years.

The pay of apprentices continued to rise with inflation. Two changes should be mentioned: Thursday payment of wages started in April 1963, and from 1 January 1966 the pay of an apprentice was changed from one relating to the period of servitude to an age-based scale relating to percentage of the craftsmen's pay ranging from 25% at 15 years of age to 90% for apprentices of 21 years or over. This was a convenient method of fixing wage scales during the time of escalating craftsmen's wages. The apprentices pay policy was then similar to that of the 18th century.

A table of pay for 1971 is given:

Age	Rate of pay	Productivity Bonus (3rd & 4th year apprentices only)	Total
15	£ 6.55	-	£ 6.55
16	7.60	-	7.60
17	9.80	-	9.80
		£2 (for 3rd year apprentices only)	11.80
18	11.95	£3	14.95
19	15.25	£3	18.25
20	18.50	£3	21.50
21 +	20.65	£3	23.65

A craftsman's rate at 20 years (having entered at 15) £21.75 + £3 productivity bonus.

### Girl Apprentices

The entry of girls as apprentices in the Royal Dockyards commenced in 1969. In April 1969 was held the first DAMET examination in which girls participated. At Chatham Yard apprenticeship for girls was restricted to the trade of sailmaker. There was one candidate who came 15th on the list but the trade union in Chatham opposed her entry. Although there was opposition to this at Chatham, in that year girls were entered at Portsmouth as Electrical Fitter Apprentices and at Rosyth both as Craft and Technician Apprentices. In 1971 Miss Zandra Bradley was entered as an Electrical Fitter Apprentice, the first girl entered at Chatham.

In the advertisement for apprenticeships at Chatham in 1974 Technician apprenticeships were offered to girls and boys aged 16/20 with the opportunities of promotion to the Professional and Technical grades and of entering a University; craft apprenticeships for both girls and boys between the ages of 16 to 17 1/2 in the trades of Electrical Fitter, Mechanical Fitter, Sailmaker and Hosemaker; apprenticeships in other trades were for boys only.

Some resentment was shown by the Boilermakers Society when a 16 year old girl at Devonport Dockyard successfully sought apprenticeship as an iron caulker/riveter apprentice.

In the Times of 5 April 1974 a photograph appeared of Dame Joan Vickers presenting a cup bearing her name to the best female apprentice in the Royal Dockyards; this was won by Mrs Hickish, a Technician apprentice from Rosyth Yard.

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Finally, the Times of 11 September 1974 carried a photograph of an attractive girl in Navy uniform with the caption:

*The first female student officer of the Royal Corps of Naval Constructors, Miss Claire Brereton, aged 18, has joined the frigate Apollo at Portsmouth as a midshipman for training. She will study design features before beginning an engineering course.*

### **Closure of the Dockyard Technical College**

In the last years of Mr Bess's tenure of office as Principal (1953/1968) rumours began to circulate about the closure of the Dockyard Technical College. This was not entirely unexpected since the change from Admiralty courses to nationally recognised courses in the 1950s meant that the Local Authority Technical Colleges and the Dockyard Colleges were covering the same field of study. The closure of the Dockyard Colleges and the transfer of the students to the Local Authority Institutions meant a financial saving to the MOD (N). The cost of running the Dockyard Colleges was ever increasing. The expenditure on laboratory equipment and its maintenance for the National Certificate courses was high. Before the War, the teaching staff and the Messenger handled the correspondence, the issue and return of textbooks, prizes and stationery, etc, but by the late 1950s there was an Executive Officer, Clerical Officer and typing assistance provided for this purpose at the Colleges.

The transfer of instruction work to Local Authority Technical colleges had occurred before: the School associated with the Royal Aircraft Establishment at Farnborough and the Bristol Aircraft Company School both experienced such changes. The Naval Architecture course at RN College, Greenwich, was transferred to University College, London in 1970 and students read Electrical Engineering at the Universities, whereas in earlier years they would have pursued their studies at Greenwich.

Possibly the decision to question the worth of the Dockyard Colleges to the Navy was sparked off by a proposal to build a new college at Portsmouth.

In 1968 a Working Party was set up to examine future policy for the Dockyard Technical Colleges. Membership of this party included Sir Lionel Russell, CBE, MA, as Chairman, together with representatives from the Department of Education and Science and DGD & M. The party visited Chatham in 1968, had discussion with the Principal and the teaching staff, and presented their Report, after visiting all the Colleges, in November. There was an overwhelming majority among members of the Working Party for integrating the work of the Dockyard Technical Colleges with the facilities provided by the Local Education Authorities.

From September 1970 the education of Portsmouth Dockyard apprentices became the responsibility of the Hampshire County Council and the Portsmouth City Council. The Principal and one of the Heads of Department remained in the Yard for liaison between the Yard and the outside Technical College. The remainder of the lecturing staff had to find posts elsewhere.

On 1st January 1971 it was announced that the Local Education Authorities would assume responsibility for the theoretical training of the Royal Dockyard apprentices at Chatham, Devonport and Rosyth. The College at Chatham closed on 31 July 1971. (Ten years later it was announced that Chatham Dockyard would close by 1984.) The Principal, Mr Morris, was transferred to Devonport as Education Officer. The rest of the teaching staff were awarded abolition of office terms; some were appointed to the staff of the Medway College of Technology, others sought posts elsewhere.

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Some of the accommodation at the Collingwood Centre was rented from MOD (N) by the Medway College of Technology to provide classrooms etc, as there was insufficient space at the latter establishment for all the apprentices. Assistance with the liaison between the Dockyard and the outside educational establishments was given by an Education Officer and his Assistant, the former of Principal and the latter of Head of Department status. Finally the Medway College of Technology vacated these premises at Easter 1975 and they were then partly occupied as the Civil Pay and Records Office.

Thus the Working Party of 1968 reversed the decision of the 1894 Committee and gave the same advice as Sir Edward Reed 80 years earlier.

### Roll of Honour

At the distribution of prizes at the Chatham Dockyard School in November 1910, Dr Macnamara, the Parliamentary Secretary of the Admiralty, read out a list of distinguished men who had passed through the Dockyard School, saying:

*It was one of the most remarkable lists that he had ever seen, and was a remarkable testimony to steady progress, grim determination, and tireless energy.*

He brought the list to the notice of the Admiralty and as a result a Roll of Honour Board or Merit Board was erected in the School in 1913 - it was ordered that the cost was not to exceed £50. On this Board was placed the names of those who had once attended the School and had achieved distinction in the Admiralty Service, in the Professions, or in Industry and Commerce. On a brass plate at the bottom of the Board was the quotation:

*If what shone afar so grand,  
Turn to nothing in the hand,  
On again - the virtue lies  
In the struggle, not the prize.*  
(Monckton-Milnes)

(In the original Order it was specifically stated that this should be correctly quoted and the author's name appended - in the Order the author's name was misspelt!)

The Board was taken down when the two classrooms in the old School were turned into laboratories. When the move to Collingwood was completed a less substantial Honours Board was made in two parts and fastened to the wall just below and on either side of the coat of arms.

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### CHATHAM DOCKYARD TECHNICAL COLLEGE Roll of Honour

<i>Name</i>	<i>Year of entry</i>	<i>Rank</i>
G T Glenn	1842	Chief Constructor, Chatham Dockyard
W Owen	1844	Chief of Constructor, Portsmouth Dockyard
Sir William Pearce, Bart.	1847	Managing Director, The Fairfield Engineering & Shipbuilding Co Ltd
J Newnham	1847	Chief Constructor, Malta Dockyard
J Dunn	1851	Senior Chief Constructor, Admiralty and Director of Messrs Vickers Ltd
J C Wildish	1856	Civil Technical Assistant of Admiral Superintendent, Chatham Dockyard
H E Deadman, CB	1857	Assistant Director of Naval Construction, Admiralty
Sir Thomas Mitchell, MVO	1858	Manager, Constructive Department, Portsmouth Dockyard
H R Champness, MVO	1866	Assistant Director of Naval Construction, Admiralty
W H Gard, MVO, CB	1869	Assistant Director of Naval Construction, Admiralty
J H Cardwell	1869	Chief Constructor, Admiralty
J Fielder	1872	Engineer Rear-Admiral
J Ryan, OBE	1872	Director of Expense Accounts, Admiralty
J E Johnson	1873	Engineer Rear-Admiral
W F Pamphlett, CB	1873	Engineer Rear-Admiral
C W Gregory	1873	Engineer Rear-Admiral
J J Welch	1876	Professor of Naval Architecture, Durham University
W W Juniper, CB	1876	Engineer Rear-Admiral
E W Colvill, ISO	1876	Principal Ship Surveyor, Board of Trade
W J Elvy, ISO	1878	Principal Ship Surveyor, Board of Trade
F Darlington, MBE	1878	Headmaster, HM Dockyard School, Devonport
T E Elvy, OBE	1880	Chief Engineer, HM Dockyards
H L J Masson	1881	Headmaster, HM Dockyard School, Chatham
N J McDermaid OBE	1889	Chief Constructor, Admiralty
J T Ottewill, MBE	1890	Shipyard Manager, Fairfield Engineering and Shipbuilding Co Ltd
E F Coast, MBE	1894	Chief Constructor, Admiralty
Sir Robert Beeman, KBE, CB,	1895	Engineer Rear-Admiral, Deputy Engineer-in-Chief of the Fleet
G A Bassett, CB, RCNC	1899	Deputy Director of Dockyards, Admiralty

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### Roll of Honour

<i>Name</i>	<i>Year of entry</i>	<i>Rank</i>
F R Bloor, CBE, MC	1900	Brigadier-General, REMC. Wh Ex
C J W Hopkins, CBE	1902	Deputy Director of Naval Construction
J C Carr, CBE	1903	Principal Clerk, Treasury. Wh Ex
G B Kellagher	1903	Magistrate, Singapore. Wh Ex
F E Rowett	1903	Principal, NW Polytechnic. Wh Sch
H Collins	1904	Headmaster, Maidstone Technical School. Wh Ex
W C F Campaign	1905	Principal, Southall Technical School
H H Treacher	1906	Head of Church Army from 1942- 1949
P F Harrop	1907	Principal, Sheerness Technical College
S F Dorey, CBE, FRS	1907	Chief Engineer Surveyor, Lloyds Register of Shipping. Wh Ex
W C M Couch, CB, OBE	1909	Deputy Director of Electrical Engineering. Wh Ex
R J Monk, RCNC	1909	Manager, Constructive Department, Malta
A E Jeffrey	1910	Principal, Willesden Technical College
S I Hill, CBE, RCNC	1911	Manager, Constructive Department, Malta
W G Green	1912	Professor of Mechanical Engineering Heriot-Watt College, Edinburgh
H V Field	1912	Principal, Coventry Technical College. Wh Sch
A W French, RCNC	1913	Chief Constructor, Admiralty
W G A Perring, CB	1913	Director, Royal Aircraft Establishment 1946-1951
A E Bate	1913	Professor of Physics, Fourah Bay College, Sierra Leone
W E Watts, OBE	1913	Superintending Examiner, Patents Office. Wh Ex
W T Gemmell, OBE*	1915	Director of Midland Region of the Post Office
J Shackleton, OBE	1919	Superintendent of Design (Engineering) Atomic Energy Research. Wh Prize
A W Morley	1921	Professor of Applied Mechanics, RN College, Greenwich. Wh Sch
Sir Rowland Baker, KB, OBE,	1923	Director of Naval Construction RCNC
J A Bess	1923	Principal, Chatham Dockyard Technical College. Wh Sch

\* Perring Scholarship Value £100 pa tenable at College of Aeronautics for a 2 year course

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### Roll of Honour

<i>Name</i>	<i>Year of entry</i>	<i>Rank</i>
W G Onslow *	1924	Assistant Secretary, Board of Trade. Wh Sch
F G S Whitehouse	1925	Assistant Director of Accounts, Admiralty
D C Blair	1925	Deputy Director of Engineering, Post Office
J Diamond	1928	Professor of Mechanical Engineering, Manchester University. 23/10/70 Pro-Vice-Chancellor, Manchester University. Wh Sch
H R Mason, RCNC	1929	Assistant Director Naval Construction (Cadetship 1933)
H Summers	1929	Deputy Production Manager Portsmouth
W H Dann MBE	1932	Executive Director Saro (Anglesey) Wh Sch
D C Spanner	1932	Professor of Plant Biophysics, Bedford College
H Conway	1934	Professor of Mechanical Engineering Cornell University USA Wh Sch
P J Howard	1935	Professor of Nuclear Science and Technology, RN College Greenwich Wh Sch
R J Daniel	1935	Director General (Ships) MOD
N G Watson	1936	P & T Director Bath
H Eltham	1938	Director General of British Nuclear Export Executive Wh Prize
R G Barden	1939	Professor of Mechanical Engineering Monash University Melbourne Australia
P J Usher	1942	Managing Director Vosper Shipbuilding Co
I A Harpum	1949	Captain Superintendent Gosport Aircraft Repair Yard
B North	1951	Personnel Manager Chatham

\* Obituary Notice W G Onslow died 9th September 1983

Under Secretary Department of the Environment Chairman of the Yorkshire & Humberside Economic Planning Board 1965/71

Wh Sch	Whitworth Scholar
Wh Ex	Whitworth Exhibitor
Wh Prize	Whitworth Prize winner

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### **Particulars concerning Officers whose names are on the Merit Board**

Information provided for the original compilation of list of names for the Roll of Honour or Merit Board - Date c 1912

#### *Constructive Officers*

- Mr C T Glenn                      Was born at Gillingham, entered Chatham Yard as an Apprentice 27th June 1842; became an Inspector, Foreman of the Yard and was for many years employed as an Overseer; then attached to the Admiralty in the Dockyard Branch and finally came to Chatham as Chief Constructor, from which position he retired 28 February 1893.
- Mr W Owen                         Was born at Gillingham, entered Chatham Yard 5th February 1844; gained a Scholarship at Portsmouth College; became Foreman of the Yard, Devonport, in 1863; 2nd Assistant to the Master Shipwright, Portsmouth and 1st Assistant also at that Yard. Transferred to Admiralty as Assistant to the Surveyor of Dockyards. Was Chief Constructor at Portsmouth Yard for 8 years, and retired on the introduction of Civil Assistants. His father was a Shipwright in Chatham Yard.
- Sir William Pearce, Bart.        Was born at Gillingham, entered the Yard as an Apprentice 28 February 1847 and afterwards became a Draughtsman. On the abolition of Inspectors he resigned his position and became attached to the staff of Messrs Napiers of Glasgow; was one of the prime movers in the Port of Glasgow of the rapid transition from slow to quick ocean going steamboats; eventually became Managing Director of the Fairfield Ship-building & Engineering Co Ltd.
- Mr J Newnham                      Was the son of the last Parish Clerk of Gillingham. His father entered the Yard as an Apprentice 4th December, 1807, and there has been continuous run of Newnhams in the service ever since. He started as an Apprentice with Mr W Pitcher of Northfleet. After staying there twelve months, he passed the examination for entry as a Dockyard Apprentice 28 February 1847. On completion of his apprenticeship he was transferred to Portsmouth Yard where he became a Leading Man, and afterwards an Inspector and Foreman of the Yard. He was employed for very many years as an Overseer and eventually became Constructor at Keyham, Devonport; then promoted to Chief Constructor, Malta from which Yard he retired.
- Mr J Dunn                         Was born at Gillingham; entered the Yard 21 February 1851; became a Draughtsman in Chatham Yard and was transferred to the Admiralty as a Draughtsman. He was in charge, for many years, of Transport Ships and similar work at the Admiralty, also as Assistant to the Director of Naval Construction, which position he occupied when he retired.

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### Particulars concerning Officers whose names are on the Merit Board

- Mr J G Wildish  
Was born at Gillingham; entered the Yard 24 July 1856. After completing his apprenticeship he became an Admiralty Draughtsman; went through various grades of promotion; became a Constructor at the Admiralty, Chief Constructor at Devonport Yard and was Civil Assistant of Chatham Yard when he retired.
- Mr H D Deadman, CB  
Commenced his career in Deptford Yard 21 July 1857, was transferred to Chatham Yard on gaining a Scholarship, then known as the Superior Course. Was Foreman of the Yard, Constructor at Bombay (having been lent to the Indian Government), Constructor at Chatham, Chief Constructor at Portsmouth Yard, then became Assistant to the Director of Naval Construction, which position he held when he retired.
- Sir Thomas Mitchell, CVO  
Reared in Gillingham, entered the Yard 26 January 1858. Gained a Scholarship of the Superior Course which he followed at Chatham; subsequently went to sea in one of HM ships. He returned to Chatham, became a Draughtsman, had charge of the Drawing Office, and was transferred to Admiralty as a Draughtsman, where he was employed under Mr J Dunn. Afterwards he became Foreman of the Yard at Portsmouth where he earned great commendation for the building of HMS **Trafalgar**; became an Assistant Constructor, Constructor at Hong Kong and Devonport; promoted to Chief Constructor at Bermuda, returned to Sheerness as Chief Constructor and subsequently to Chatham. Afterwards he held the position of Manager, Constructive Department at Portsmouth Yard up to the date of his retirement. He was knighted by King Edward VII on 16 February 1906 for the rapid construction of the HMS **Dreadnought**.
- Mr H R Champness, MVO  
Was born at Gillingham, entered the Yard 25 July 1866. Gained a Scholarship and was a Student of Naval Construction; became attached to the Admiralty on the Director of Naval Constructions Staff; was attached to Portsmouth Yard as Constructor, became Chief Constructor of Devonport Yard, was granted the MVO on 14 March 1902, and was then Assistant to the Director of Naval Construction, Admiralty.
- Mr W H Gard, MVO  
Was born at Gillingham, entered the Yard 23 January 1869, his father being a Leading Man of Painters and finally Foreman of Painters at Portsmouth Yard. He gained a Studentship of Naval Construction and was attached to the Admiralty, became a Constructor of this Yard, Chief Constructor of Bermuda, Malta and Portsmouth Yards, was granted the MVO on 9 November 1903 and was then Assistant to the Director of Naval Construction at the Admiralty.



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### Particulars concerning Officers whose names are on the Merit Board

Mr J H Cardwell Was born at Chatham, his father being a Shipwright. He entered the Yard 23 January 1869 and gained a Scholarship in Naval Construction. He has been generally employed at the Admiralty as Assistant Constructor, Constructor and was then Chief Constructor in the Director of Naval Construction Department.

Mr J J Welch, MSc Was born at Chatham, entered the Yard 14 August 1876. Gained a Studentship of Naval Construction, became an Assistant Constructor attached to the Admiralty and afterwards left the service; was appointed Manager of Messrs Cammell Lairds at Birkenhead. Later he held the position of Professor of Naval Architecture at Durham University.

### Engineer Officers

J Fielder Entered Chatham Yard as an Engineer Student 27 January 1872, and the Royal Navy as Assistant Engineer 1 July 1877. He was promoted to Engineer Rear-Admiral 21 February 1911.

J E Johnson Entered Chatham Yard as an Engineer Student 18 August 1873 and was appointed Assistant Engineer, RN 1 January 1880. He was promoted Engineer Captain 1 January 1910.

W F Pamphlett Entered Chatham Yard as an Engineer Student 18 August 1873 and was appointed Assistant Engineer, RN 1 January 1880. He was promoted to Engineer Rear-Admiral 7 February 1912.

C W Gregory Entered Chatham Yard as an Engineer Student 23 July 1874; he was transferred to Portsmouth in 1876 and was appointed Assistant Engineer, RN 1 July 1880. He was promoted to Engineer Rear-Admiral 9 October 1912.

W V Juniper Entered Chatham Yard as an Engineer Student, 9 September 1876 and the Royal Navy as Assistant Engineer 1 January 1883. He was promoted to Engineer Captain 1 January 1912.

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### **Information concerning two distinguished ex-apprentices**

This information on the following distinguished ex-apprentices of Chatham has been taken mainly from A Century of Naval Construction. The History of the Royal Corps of Naval Constructors, 1883.1983. by D K Brown

#### **Sir Rowland Baker, K B.**

Baker was born in 1908, the son of a Medway bargeman. He entered Chatham Yard as an apprentice in 1923 and became a Cadet at Greenwich in 1927. After his sea time Baker was appointed Assistant Constructor at Portsmouth. He became prominent in the development of landing craft during the Second World War and for his co-operation with the Americans he was awarded the US Medal of Freedom with Silver Palm. In 1948 Baker was loaned to the Canadian Navy and served in their Construction Branch until 1956. When he returned to the UK he was recommended by the First Sea Lord, Lord Mountbatten, to run the Nuclear Submarine Programme. The first nuclear submarine built here was the **Dreadnought**, fitted with American machinery and launched in 1962; this was followed by the **Valiant**. The **Polaris** programme headed by Baker with the title Director, Polaris Technical, later Director, Project Team (Submarines) was started in 1962. The first Polaris Submarine, HMS **Repulse** was launched in 1967.

Baker was awarded the KB on the personal recommendation of the First Sea Lord in the New Years Honours List, 1968. He retired shortly after. He attended the Prize Giving of his old Dockyard School in 1968. After his retirement, Sir Rowland was asked to help in dealing with problems arising from the development of a new torpedo, Tigerfish.

Obituary Notice "Chatham News"2 December 1983

Sir Rowland Baker, CBE, MINA, RCMC Suddenly at his home in Bath, 25 November 1983.

#### **R J Daniel, OBE, F Eng**

Daniel started his career as an electrical fitter apprentice at Chatham, transferring to shipwright at the end of his second year. He started his Corps training in 1939 at Greenwich but the bombing of London caused the transfer of the long courses from Greenwich to Bristol.

Daniel, then Constructor Lt Commander, was the first Englishman to reach Hiroshima after the dropping of the atomic bomb and was flown home to report to the Cabinet. He worked with Sir William Penney on the effect of nuclear explosions and went as his assistant to witness the Bikini tests in 1946 on behalf of the British Government.

In January 1947 Daniel became professional secretary to the Director of Naval Construction, Sir Charles Lillicrap, and a visiting lecturer at Greenwich. After work on aircraft carriers, cruisers and nuclear submarines under Baker, Daniel was appointed Director General Ships in 1974. Prior to this as Director Project Team he had from 1972 to 1974 taken charge of work on nuclear submarines. Daniel resigned in 1979 to take up a post with the Board of British Shipbuilders with responsibility for warships.

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### Whitworth Scholarships gained by ex-Apprentices of Chatham Yard

<i>Year</i>	<i>Name</i>	<i>Year</i>	<i>Name</i>
1907	C S Hudson	1932	J Diamond
1910	W F Sparey	1933	J C Bissett
1911	F E Rowett	1934	R W Reader
1911	L F G Simmons	1936	J M Chandler
1913	W C Lloyd	1936	W H Dann
1915	A E Foreman	1938	R B Godfree
1916	E T Vincent	1938	A A Hudson
1917	H V Field	1939	S P Hawes
1917	H F Gill	1940	J Edwards
1918	E G Holley	1941	H D Conway
1919	W H Brown	1941	T H W Gibbons
1919	C Harvey	1943	R G Barden
1919	W E Hudson	1943	A J Beare
1921	D A N Sandifer	1943	E H Hutchins
1922	V H Brown	1944	L L Martin
1924	E F Powell	1944	C A Morgan
1924	A R Staines	1945	A R Pearson
1925	A W Morley	1947	T R Foord
1928	J A Bess	1948	G Tanner
1928	W G Onslow	1949	T J O'Neill
1930	G W Mullet	1950	R Akhurst
1931	E G Dann		
1931	R O Fletcher		

### Whitworth Exhibitions gained by ex-Apprentices of Chatham Yard

<i>Year</i>	<i>Name</i>	<i>Year</i>	<i>Name</i>
1904	T A Colvill	1916	P R G Silk
1905	C L Cransden	1916	W G Simmonds
1905	C E G House	1917	C W Ellard
1906	F R Bloor	1917	W E Watts*
1906	A C H Connor	1918	G C Bristow
1908	H R Allison	1918	A R Hill
1909	H Collins	1918	W Hosie*
1909	A F Grieveson	1918	R F W Hunter*
1909	G B Kellagher	1918	C McQuillan*
1910	A R Dewar	1918	P F Thompson
1911	J Blair	1919	W E W Adsley
1911	J C Carr	1919	P L Edmunds*
1911	F G Smith	1919	J E Taylor
1912	S F Dorey	1919	A L Timmins
1912	J A Woodward	1919	W R Wickham
1913	R D Wallace	1920	E A Lockett
1914	W C M Couch*	1921	E W Dixon
1914	C H Griffiths	1922	S T Beavon
1915	C J M Flood	1922	R H Dixon
1915	A E Jeffery*	1922	E A Doust
1916	A P Oliver	1922	W E J Smith
1916	J F Peck		

\* = Electrical Fitter Apprentices

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### Headmasters of HM Dockyard School, Chatham

J McGarahan	Schoolmaster	1845 - 19. 4.1859
J J Robinson	Schoolmaster	20. 4.1859 - 14.10.1863
J J Robinson	Headmaster	15.10.1863 - 8. 4.1857
J Henry	Headmaster	11. 4.1876 - 31.12.1891
T Dawe	Headmaster	8. 3.1892 - 25. 7.1898
G H Austen	Headmaster	26. 7.1898 - 26. 6.1911
F Darlington, MBE	Headmaster	27. 6.1911 - 23. 1.1914
H L J Mason	Headmaster	24. 1.1914 - 23.10.1926
S G Horsley	Headmaster	24.10.1926 - 30. 8.1936
J C Wildman, MBE	Headmaster	31. 8.1936 - 21. 8.1938
A S Ritchie, MBE	Headmaster	2. 8.1938 - 24. 8.1946
W G Burrell, OBE	Headmaster	25. 8.1946 - 7. 1.1947
J Goss, OBE	Headmaster	8. 1.1947 - 8. 8.1952
J Goss, OBE	Principal	8. 8.1952 - 1. 9.1953
J A Bess	Principal	1. 9.1953 - 2. 9.1968
J H Morris	Principal	3. 9.1968 - 31. 7.1971

Dockyard Technical College closed officially on 31 August 1971

## APPRENTICES

### Appendix 1 (see page 28)

#### **Rules and Regulation for the Government of the School in Her Majesty's Dockyard at Devonport**

1st The Master is strictly to enforce orderly and respectful behaviour, as well as diligence and attention on the part of the Apprentices, and report to the Admiral Superintendent, in writing, the name of any apprentice who shall fail to comply with the following Regulations or who shall not exert himself to the best of his abilities while under his tuition.

2nd With the exception of Saturday, the Apprentices are to assemble One Hour and a Half before Bell-ringing, from the 1st of February to the 10th November; and during the remainder of the year at Thirty Minutes before Bell-ringing; Half an Hour will be allowed them for washing and changing their clothes, at the end of that time, they will take their places at their respective desks in the School-room, and write copies for Thirty Minutes, when class teaching will commence and continue Two Hours. The Master, however, may make an exception to the above rules for such Boys as he may think proper to attend lectures or to study by themselves, during the thirty Minutes before mentioned.

3rd The School will assemble on Saturday, from the 1st of February to the 10th November, at the same time as pointed out in the preceding rule, and during the remainder of the year, One Hour before Bell ringing, for the purpose of receiving Religious Instruction from the Chaplain only, and on those days, from the 1st of February to 10th of November, provided their conduct is such as to merit such an indulgence, they will be allowed to leave School Half an Hour before Bell-ringing.

4th They are (except when addressing the Master or Monitors) to observe the strictest silence, and on no account to interfere with or interrupt each other.

5th They are to go and return from their classes by single files.

6th They are not to absent themselves from School, without leave first obtained through the proper channel, observing that leave will never be granted to any Boy, who shall not have a good Character from the Master and his Instructor.

7th Not more than two Apprentices are to leave the School-room at the same time (excepting on urgent occasions) and not to be absent more than Five Minutes.

8th They are to be held responsible collectively or individually as the case may be, for any books or School Stores that may be lost or wantonly destroyed; and in order to guard as much as possible against such occurrences the Monitors are to examine carefully the several stores committed to their charge, and to report weekly any deficiency to the Master.

## APPRENTICES

### Appendix 1 (see page 28)

#### **Rules and Regulation for the Government of the School in Her Majesty's Dockyard at Devonport**

9th They are to be obedient, and pay strict attention during the School hours to their Monitors, and all other persons who may be appointed to assist the Master.

10th The Monitors are to use every proper means to induce the Boys in their classes to apply themselves diligently to their studies, observing that if they neglect to do so, or to report any improper conduct on the part of those under their tuition, they will themselves be punished.

11th The Monitors are to be chosen from the best Qualified Apprentices, and therefore, in the event of their not making adequate progress in their own studies, and in teaching other Boys in their classes, they will be disqualified, and others selected in their stead.

12th No Boy, who after Five years' instruction, or when he shall have attained his Twentieth year, shall have acquired a competent knowledge of Geography, plane, solid and practical Geometry, simple and quadratic equations in Algebra, and some knowledge of their rules to Mechanics, shall be required to continue his attendance at School; but he shall be allowed to do so, if he wishes it, for one year longer.

13th A Quarterly Examination will take place in the School-room, before the Committee, and such other Persons as they may think proper to admit, and an Annual Examination in January of each year.

14th Bad conduct or non-attendance is to be punished by Mulct, by loss of time towards the annual increase of pay, and in extreme cases, by cancelling the indentures, and expulsion; and the amount of Mulcts from the Apprentices' pay, is to be applied to purchase Books, to be distributed as prizes to the deserving Boys at the Annual Examination.

APPRENTICES

Appendix 2 (see page 28)

A Digest of the Daily Instruction submitted for the Apprentices in Devonport Dockyard School

<i>Time</i>	<i>Classes</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
During 1/2 hour	All	Prayer Writing	Prayer Dictation	Prayer Writing	Prayer Dictation	Prayer Writing	Prayer and Catechism
During one and a half hours	1st & 2nd 3rd & 4th	Preparing Arithmetic and in classes	Preparing Arithmetic and in classes	Preparing History and in classes	Preparing Geography	Preparing Arithmetic and in classes	Religious Exercises & Addresses or
During 3/4 of an hour	1st & 2nd 3rd & 4th	Preparing Grammar, Reading & in classes	Scripture at Desk and in classes	Preparing Grammar, Reading & in classes	Scripture at Desk and in classes	Geography in classes	Examination by the Chaplain
Devonport Dockyard				Signed:	SAMUEL	PYM	
June 1844					Admiral Superintendent		

W Colman Printer to Her Majesty, Fore Street, Devonport

APPRENTICES

Appendix 3 (see page 37)

Results of Apprenticeship Entry Examination 22 February 1862

No in list	Candidate's name	Arith metric (Elementary)	Comp ound Addition	Ortho graphy	Hand writing	Reading	Euclid	Higher Arith metric	Gram mar	English Compo sition	Geo graphy	Algebra	Total	Medical Marks	Total
		<b>100</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>150</b>	<b>200</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>150</b>	<b>1250</b>	<b>200</b>	<b>1450</b>
1	Hudson	75	4	90	90	90	8	164	58	90	60	58	787	135	922
2	Jones	87	24	96	80	70	31	145	75	70	56	53	787	90	877
3	Cheese man	88	29	100	65	80	4	112	58	62	49	-	647	95	742
4	McHattie	95	6	60	62	90	5	113	45	56	43	8	583	120	703
5	Harris	75	12	70	63	90	31	91	34	33	23	29	551	110	661
6	Lines	70	0	70	65	80	3	72	68	64	36	11	539	80	619
7	Sands	58	6	65	70	70	12	100	40	55	37	-	513	80	593
8	Brenchley	69	6	65	63	80	-	78	30	27	45	16	479	95	574
9	Wingent	78	15	52	60	55	-	110	27	36	19	-	452	100	552
10	Webb	78	6	70	63	40	-	64	45	48	31	-	445	100	545
11	Penney	80	6	55	65	70	2	73	30	48	30	4	463	75	538
12	Orwin	72	6	75	62	35	-	60	15	60	57	-	442	75	517



APPRENTICES

**Appendix 4** (referred to on pages 52 and 68)  
 A table showing the number of apprentices entered annually in the various trades from the 1870's to the beginning of the second World War.

year	1877	1881	1882	1883	1884	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1902	1905	1906	1908	1909	1912	
<b>apprentices entered</b>	20	12	15	24	24	24	24	16	12	12	12	16	18	24	24	17	24	25	20	40	34	40	15	12	15	31
shipwright														6	6	6	4	10	5	9	5	4	2	2	4	5
ship fitter	2							2	2	3	6	3	6	2	6	4	4	2	2	9	5	2	1	1	1	2
smith	2							2	2	3	4	3	4	4	2	2	2	2	2	3	2	2	1	1	1	1
joiner														1	2	2	1	1	1	1						1
painter CM								2	1	1				1	1	1			2	1						1
plumber CM																				2	1					1
patternmaker CM																										
coppersmith CM																										
caulker															1				1							
engine fitter		12	12	7	2	6	4	4	4	8	10	12	12	12	12	10	12	12	12	14	12	15	8	15	18	20
patternmaker EM										1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
coppersmith EM										1	2	2	1	1	1	1	1	1	1	4	4	2	1	8	2	4
founder										2	2	3	2	1	1	1	1	1	2	2	2	1	1	2	2	2
boilermaker										2	2	4	4	4	4	4	3	4	4	7	20	15	6	8	11	12
ropemaker												2	2		2	2	1	1	1	1	2	2	1			1
sailmaker												2	1		1		2			1	4					1
electrical fitter																										
el. sta. fitter																						4	2	4	4	10
torpedo fitter																										
armament fitter																										
plumber WD																										
carpenter WD																										
painter WD																										
bricklayer WD																										
smith WD																										
fitter WD																										
naval shipwright																										
minor trades						17	21	5																		6

APPRENTICES

**Appendix 4 (continued)**  
 A table showing the number of apprentices entered annually in the various trades from the 1870's to the beginning of the second World War.

year	1913	1914	1915	1916	1917	1919	1920	1921	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	
<b>apprentices entered</b>	50	65	65	88	90	70	30	25	5	20	20	5	5	4	5	7	7	8	10	10	13	30	35	35	30	
shipwright	8	10	10	10	15	5	4	4		5	5	4	4	3	3	4	4	4	5	5	5	7	8	8	8	8
ship fitter	3	5	5	5	5	2	2	2		2	2	1	1	1	1	1	1	2	2	2	2	3	4	4	4	2
smith	1	1	1	2	2	3	2	2		2	2	2	2	1	2	3	3	2	2	3	3	3	3	10	6	4
joiner	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
painter CM																										
plumber CM																										
patternmaker CM																										
coppersmith CM																										
caulker																										
engine fitter	21	21	30	30	33	31	15	13		17	18	12	10	10	10	10	10	12	12	12	18	30	40	40	40	40
patternmaker EM	1	1	1	2	4	4	1	1		1	1	1	1	2	2	2	2	1	1	1	3	3	3	3	3	3
coppersmith EM	6	5	8	16	10	8				4	4	1	1	2	2	3	4	4	3	3	3	3	3	3	4	4
founder	3	3	4	4	6	4	1	1		2	2	2	1	2	3	3	3	3	1	1	1	1	1	3	4	4
boilermaker	12	14	18	16	12	12	8	5		4	6	4	4	2	6	6	6	5	2	4	4	6	10	15	15	15
ropemaker	1	1	1	2	2	2	2	1		2	2	2	2	2	2	3	3	3				2	3	4	4	4
sailmaker	1	1	1	2	2	1	1	1		1	1	1	1	1	2	2	1	2	1	1	1	1	2	3	3	4
electrical fitter	10	12	12	18	20	20	15	12		10	10	10	12	10	10	12	9	9	8	10	12	15	24	27	28	28
el. sta. fitter															2	2	2	1	1	1	1	1	2	3	2	2
torpedo fitter																										
armament fitter	1	3	3	3	3	3	1	1		1	1	1	1	1	1	1	1	1	1	1	1	3	3	6	6	6
plumber WD					1							1	1	1	1	1	1	1								
carpenter WD					1	1								2	2	1	1	1	1	1	1	1	1			
painter WD						1	1	1						1	1	1	1	1	1	1	1	1	1	1	1	1
bricklayer WD						1	1	1				1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
smith WD						1	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	1
fitter WD						1	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	2
naval shipwright	33	22	16	16	20	11				13	10		10	10	10	10	10	10	10	10	10	10	16	16	15	18
minor trades																										

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CHAPTER 5  
THE CONSTRUCTIVE DEPARTMENT OF CHATHAM YARD  
(THE MASTER SHIPWRIGHTS)

**The Master Shipwrights including the Resident Commissioners  
Phineas & Peter Pett**

Henry VIII instituted the practice of granting by letters patent an annuity to certain shipwrights for performing the duties of the office known as the Master Shipwright.<sup>1</sup> These officers were ship designers and supervised the construction, rebuilding and repairing of the Royal Ships. In addition they supervised the construction of Dockyard facilities, such as dry docks and wharves.

For this purpose the Master Shipwright, or Master Builder, as he was sometimes known, superintended men, not only of his own trade, but those of the kindred trades of caulking, mast making, boat building and joinery. He also supervised the activities of the Master House Carpenter, who corresponded to the modern Civil Engineer, the Master Bricklayer, Sawyers and a large number of labourers. He did not, however, superintend ropemaking and sailmaking.

This spread of activities was common until the 19th century. Then in 1796, Samuel Bentham was appointed Inspector General of HM Naval Works<sup>2</sup> and the Master Shipwright concentrated on the building and repair of ships only. It must be remembered that Marc Isambard Brunel and his son, Isambard Kingdom Brunel, were engaged in civil, mechanical and shipbuilding activities in the early 19th century. The Institution of Civil Engineers founded in 1818 catered for all types of engineers. The formation of the various Institutions, which catered for the specialisation which took place in engineering, occurred mainly in the middle of the 19th century.

The Master Shipwright was the first Dockyard Officer to be given formal training in his profession. During his apprenticeship he learned shipbuilding and design. After 1672, the Surveyor of the Navy was chosen from the Master Shipwrights and the design of ships, after that date, tended to pass into the hands of the Surveyor of the Navy, but until late in the 19th century Master Shipwrights were asked occasionally to design ships, as well as to build them to the Surveyor's design. Monson defined the duty of the Master Shipwright:

*. . . to attend in turns the building and repairing of all the King's ships and pinnaces, and to oversee ships built by contract by persons.*

The early Master Shipwrights supervised work in any of the Royal Yards. In the directions of the Commissioners of 1618, it was stated that the Master Shipwrights, when not employed in building or repairing ships in dry dock or employed outside in the purveyance of timber, should attend Chatham continuously.

1 This was paid in addition to their pay as a shipwright. In the early days of the Yard there was no permanent work force

2 See section on Civil Engineering in chapter 8.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Among the early Master Shipwrights who supervised work at Chatham Yard were:

	<i>Date of Patent</i>	<i>Annuity per day</i>	<i>Remarks</i>
Peter Pett	1544	6d	Associated chiefly with Deptford
	1558	12d	Died 1589
Matthew Baker	1572	12d	Died 1613. Built the first ship at Chatham, the Sunne, 1586
Richard Chapman	1587	20d	Died 1592
Joseph Pett (son of Peter)	1590	12d	Died 1605
William Bright	1592	20d	
Phineas Pett (son of Peter)	1604	12d	Appointed Master Shipwright 1605. Appointed Assistant to Principal Officers 1629
Edward Stevens	1603		Appointed vice Baker 1613
Henry Goddard	1620	20d	Appointed vice Stevens 1626. Died 1647
Edward Boate			Appointed vice Pett 1629. 1638 Boate was appointed first Master Shipwright at Portsmouth
John Bright		20d	Appointed vice Goddard 1647
John Taylor		20d	Appointed vice Bright 1651

Peter Pett had been engaged in the naval service for some years before the ships were ordered to Gillingham Water in 1550. The exact date at which he entered Henry VIII's employment is not recorded, but on 20 January 1544 he was granted a fee of 6d a day, to start from the previous Michaelmas Day, and this was increased to 12d a day in 1558. Although his patent as a Master Shipwright was not issued until 1584, he was engaged in supervising the work on the ships in the Medway from the date of their arrival there. It is highly probable that he was at Chatham in 1547 when the work of preparation was taken in hand.

In the Declared Accounts there are records of payments of wages and board wages to Richard Chapman and Joseph Pett in the last decade of the 16th century.

There were two Master Shipwrights at Chatham until 1638, when Edward Boate was appointed first Master Shipwright at Portsmouth. A third Master Shipwright was in charge of both Deptford and Woolwich Yards. There were no docks at Chatham until 1620 and facilities for building were very limited; all new constructions and rebuilds were carried out at the two Thames Yards. It was the custom in those early days for a Master Shipwright to superintend the building or rebuilding of one warship at a time, and it followed in the event of two or more being in hand at Deptford or Woolwich, the Master

Shipwright had to reside at the Yard concerned until the work committed to his charge was completed. Each had one Assistant Master Shipwright under him<sup>1</sup> and in the absence of their Masters, these took charge at Chatham.

At this time (c 1600) little work was carried out at Portsmouth, but if it were decided to take a large repair in hand there, the three Master Shipwrights in turn annually visited the Yard, remaining there until the work was finished, being paid a subsistence allowance of 6s 8d a day.

1 The Master Shipwright was also assisted by the Master Tradesman, the Master Caulker, Master Boatbuilder and Master Mastmaker.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Much of the work of construction of Ships and Yard Facilities was undertaken by the Master Shipwright on a contract basis, and he provided his men with victuals and lodgings, or allowances in lieu.

In 1605, when Phineas Pett became Master Shipwright, joining Matthew Baker, the ordinary wages of the post paid by the Treasurer of the Navy was 2s a day; to this was added the Exchequer Fee or annuity of 12d a day, later increased to 20d a day. This was paid by the Exchequer and appears in the Exchequer Rolls. Besides these emoluments, Matthew Baker had received a pension of £40 per year granted by writ of privy seal, a concession which in 1614 was granted to Phineas Pett. Phineas's son, Peter, later received this pension. In 1606 the gross salaries were: Matthew Baker £94 15s;<sup>1</sup> Phineas Pett, £54 15s. Lodging and victualling allowances were also paid to the Master Shipwright; in addition building of ships by contract augmented their income. By contrast, William Burrell, the shipbuilder of the East India Company, earned £200 a year. There were, however, additional allowances paid to the Master Shipwrights:

*February 23 1633 Lord Admiral to the Officers of the Navy. To continue to the Master Shipwrights an extraordinary payment of 2s per day ordered by the late Commissioners of the Navy to be paid to them quarterly by way of reward; and also, to the Assistants a similar extraordinary payment of £20 per year.*

In February 1637, the Master Shipwrights later complained that the 6s 8d per day allowance for attendance at Portsmouth had not been received since 1632 . . . saving in time of travel on horseback; a year later the Treasurer refused to pay it at all.

These were inadequate salaries for such posts of responsibility and it is not surprising that many Master Shipwrights kept private shipyards. Chapman who owned a private yard at Deptford, was paid a bounty of 5s a ton for building the **Dainty** of London of 200 tons and Phineas Pett was paid a like bounty for building the **Resistance**.

The Master Shipwright of the 16th and 17th centuries, though in a sense, a permanent official, was not a whole-time employee. The change to full-time employment occurred about 1660; a few years earlier they had been forbidden to indulge in private business; this was strictly enforced in the 17th century. In compensation for this loss of income the salaries were raised in Charles II's reign to the uniform rate of £113 per year. For a further three decades they were paid partly as salaried officers and partly as wage earners. It was not until 1801 that Dockyard officers were given inclusive salaries.

The duties of the Master Shipwright were defined in 1628 as:

1. To take charge of all the carpentry work (every quarter successively one of them to attend at Chatham) belonging to his Majesty's ships, whether it be new building or repairing, ransacking, caulking, etc, and that according to such warrants as the Lord Admiral by the Principal Officers shall direct unto them, and to see the said works substantially and thriftily performed and that His Majesty's ships be always in good repair and fit for service in so much as belongs to them.
2. To take care with the said Officers that the Navy be not pestered with useless and unserviceable vessels, but the numbers established be maintained in good estate according to their business and best frame of buildings, to which purpose every Master Shipwright appointed to new build, must bring his plott to be considered of and the form debated by the Principal Officers, Masters Attendant and Master Ship-wrights, which being approved must be presented to the Lord Admiral for his further directions herein.

$$1 \frac{£365 \times 2}{20} = £36 \text{ 10s d} \qquad \frac{£365 \times 20}{12 \times 2} = £3 \text{ 8s 4d}$$

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

3. To examine and search the particular defects of every ship that is to be repaired and accordingly make true estimates of the charge hereof to the end the Privy Seal may be granted hereupon and materials provided for the work beforehand.
4. To see that no refuse stuff be re-used or employed upon His Majesty's ships, but to assist the Storekeeper<sup>1</sup> in the choice of good and serviceable provisions of all kinds, and there happen to be any want during the works to give timely notice thereof in writing that supply may be made accordingly.
5. To see the workmen keep their due hours at work before six in the morning and not to leave till after six at night, according to the season; to be allowed but half an hour for breakfast and half an hour for dinner and sleeping time.
6. To govern the workmen and so to dispose of their companies that the diligence of the skilful may appear to be rewarded, but loiterers, unskilful and mutinous persons routed out, to see them begin and end work in due time according to the season of the year, to allow no more boys nor youngsters among them than are necessary, and to rate every mans wages according to his deserts, but in the presence and with the approbation of the Principal Officers.
7. To take charge under their hands in the Storekeeper's books of all such tools and implements of the King's as are employed in the works, not to suffer any chips or other stuff to be carried out of the Yards, themselves or their foremen to see the choice and disposing of all timber, planks and other materials and see that no other artificer do meddle therewith but by appointment, that account be yielded of all small masts, spars, deals, boards, ropes, etc, delivered but for charging (sic cheginge) and such like uses, and generally that accounts be kept of all materials expended in every work, to this purpose their hands must be delivered to the storekeeper's books to inscribe the same.
8. To direct and limit the carpenters in their proportion for sea stores so that nothing which is necessary may be wanting for the service and at the return of ships to judge of the reasonableness of the expenses.
9. To assist the Principal Officers at the taking of all surveys of the ships, hulls and other carpentry work, both at their going forth and return home.
10. At every general survey to examine and certify the Principal Officers under their hands what old and decayed materials proper to their elements are found past use and service for His Majesty's ships, to the end the stores may no longer be pestered with them, but the Lord Admiral moved for a warrant to sell them and the proceeds thereof delivered to the Treasurer of the Navy to be accountable for it.
11. To survey and measure the tonnage of all ships and other vessels made or hired for His Majesty's service according to the old rule of tonnage again established by the Lords and to certify the true contents and measured to the Principal Officers under their hands.
12. To give their advice as often as they are required, in all contracts or works to be done by the great,<sup>2</sup> belonging to their art and to assist in all things for the husbandry of the service and restraint of disorder among husbandmen.

(S.P. Dom. Chas I 119/69 1628)

1 in 1875 the Foreman and Inspector of Stores in the Storekeeper's Department were all shipwright officers (Periscope January 1975)

2 By contract

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Early in 1705 a Committee was set up consisting of the Master Shipwrights of the Royal Yards and representatives of the principal shipbuilders, under the Surveyor of the Navy as Chairman, to consider new standard designs for ships of each rate from the 2nd to the 5th. An amended establishment was brought into force by an Order of 18 April 1706.

Captains were disinclined to regard as sacrosanct the establishment of mast and sail plans and had no hesitation in making alterations to improve the sailing qualities of their ships; a practice which upset the Navy Board and led to further friction between the officers of HM Ships and the civil administration of the Navy.

There were later establishments in 1719, 1733, 1741 and 1745.

### Phineas Pett

Members of the Pett family exercised a big influence over Chatham Yard during the greater part of the 17th century. Phineas Pett, one of the best known of the Petts, wrote an autobiography which gives us an insight into life in the early days of Chatham Yard.

Phineas , the son of Peter Pett of Deptford, was born in 1570.

*I was brought up in my fathers house at Deptford Strand until I was almost nine years of age, and then put out to a free school at Rochester in Kent to one Mr Webb, with whom I boarded about one year, and after lay at Chatham Hill in my fathers lodgings in the Queens House (Hill House) from whence I went every day to school to Rochester (Kings School), and came home at night for three years apace.*

Phineas Pett entered Emmanuel College, Cambridge in 1586. His father died in 1589 and Phineas had to leave the university. (He received the degree of BA in 1592 and that of MA in 1595.) He was apprenticed to a Master Shipwright, Richard Chapman of Deptford, who had, as a young man, been himself apprenticed to Phineas's father. Phineas was allowed 48s 6d per year for tools and apparel.

After serving at Chatham for two years, his master died, and Phineas was discharged from the Yard. He then served as a Carpenters Mate on a ship sailing to the Levant, but the voyage was financially unsuccessful and on his return Phineas was employed as a shipwright at Woolwich under his brother, Joseph Pett and at Deptford under Matthew Baker. Phineas managed to attract the attention of the Lord Admiral, Lord Howard of Effingham, and in 1599 Phineas secured the post of purveyor of timber in Norfolk and Suffolk. In the following year, Phineas succeeded John Holding as Keeper of the Plank Yard timber at Chatham at the wage of 18d a day, together with an annual fee of £6 and an allowance of 16d a day for one apprentice.

Phineas Pett took over the manor house <sup>1</sup> at Chatham in 1600, vacated by Mr Barker, Lord of the Manor, who had moved to a house on Boley Hill, Rochester. The lease was for 21 years and the income, the fine or fee paid in entering on the lease, was £25.

In 1602 Phineas took over the post of Assistant Master Shipwright at Chatham from Thomas Bodman. Phineas, with a Mr Pickas, undertook the victualling of shipwrights and caulkers at Chatham for two months. There was some dissatisfaction with this and Pett, after a threat of action for assault brought by one George Collins, Carpenter of the **Foresight** for . . . striking him with a small rod upon the shoulder; was forced to pay him 20 nobles (6s 8d). This Collins had acted as an informer against Pett in 1602 and among other accusations he stated that Pett had taken timber, etc, and had used Dockyard

1 On the site of the Manor House was built the Mitre Inn, the meeting place of the Court Leet British Home Stores is now built on the site in Chatham High Street.



## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

labour to make a bridge into his meadow, to construct a sluice and to make posts for clothes lines.

Pett rebuilt the **Moon** and the **Answer** at Chatham, and in 1604 he built a small ship, the **Disdain**, for Prince Henry, the son of James I. She was a miniature ship built on the lines of the **Ark Royal** and was painted and gilded by Thomas Rocke and John de Crete.

In 1604 Pett obtained a grant by letters patent of the reversion of Matthew Bakers or his brothers (Joseph Pett) place as Master Shipwright. In 1605 Joseph Pett died and Phineas was given the warrant of Master Shipwright and the annuity which had been in the hands of the Petts since 1544.

In 1607 Phineas was elected Master of the Company of Shipwrights; he held this office again in 1612 and in 1616. In the same year, 1607, he received instructions from the Navy Board to prepare for the dry docking of the **Ark Royal** and **Victory** at Woolwich. He moved his household to Woolwich.

A Commission of Enquiry headed by the Earl of Northampton, Warden of the Cinque Ports and the Earl of Nottingham, Lord Admiral, was set up in 1608 to investigate abuses in the Navy. The activities of Phineas Pett were examined closely. The gravest indictment against him concerned a small ship, the **Resistance** of about 160 tons, which he had built four years earlier in David Ducks private yard at Gillingham. Pett was accused of building this ship largely with the Kings timber and with articles . . . borrowed out of the store under the warrant of the Principal Officers, two of whom, Mansell, the Treasurer and Trevor, the Surveyor, each had one-third share in her. It was claimed that she was rigged with . . . the rigging of the **Foresight**, which for . . . bare £12 only he bought of her at much less than the true value . . . by the favour of Mansell and Trevor.

In 1605 the **Resistance** had sailed to Spain as a transport of the Lord Admiral when Nottingham went there as Ambassador. It was alleged that the owners of **Resistance** were paid wages and tonnage on a false rating of 300 tons, about twice her capacity, while she was entered in the customs house book as a merchantman carrying a freight of 60 tons of lead for a London merchant.

Another complaint lodged against Pett was that whilst he was keeper of the Timber Store at Chatham, he failed to reject bad timber and planks brought in by one of the purveyors. His answer to this was . . . Sir Henry Palmer, the Comptroller, had been so quick with him for some of these exceptions as he would complain no more though the purveyors brought in faggot sticks.

Master Shipwrights in general, were accused at this enquiry of repairing for private gain ships which were not . . . worth the labour nor the charges bestowed on them. Pett's repair of the **Victory** at Woolwich was quoted as an instance of such waste.

The most serious accusation that Phineas Pett had to answer in the Enquiry of 1608 were those of faulty design and construction of the **Prince Royal**, a large warship he was building at Woolwich. James I, himself, conducted the final enquiry into this set of charges and cleared Phineas of them.

The **Prince Royal** was launched in 1610, the workmen discharged and paid off, and the ship brought round to her mooring within the chain at Upnor by Captain King, the Master Attendant. Phineas then brought his family back to Chatham.

In 1613 Pett had charge of the rebuilding of the **Defiance** at Woolwich. Matthew Baker died whilst undertaking similar work on the **Merhonour** and the rebuilding of this ship was completed by Pett. Pett's family followed him to Woolwich, returning to Chatham in 1616, when Pett bought land in The Brook, Chatham, of Christopher Collier for £35.

Edward Stevens was appointed Master Shipwright vice Baker and was associated with Phineas Pett at Chatham from 1613 to 1626.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

A Second Commission of Enquiry took place in 1618 and the reforms it initiated affected Phineas Pett<sup>1</sup>. Phineas was employed at Chatham in the work of improving and enlarging the Yard under the supervision of Captain Norreys, an Assistant Commissioner of the Navy acting as Surveyor and residing in Chatham, whilst William Burrell, another newly appointed Commissioner and chief shipbuilder of the East India Company until 1626, was responsible for the shipbuilding programme which was concentrated at Deptford. Two ships a year were built for a period of five years, all the ships being built under contract made between Burrell and the Commissioners.<sup>2</sup>

In 1628 the Commissioners, originally appointed in 1618, were removed from office and the administration of the Navy restored to the Principal Officers. In the following year, Pett and Burrell were made assistants to the Principal Officers of the Navy. A survey of the ships at Chatham, was conducted and the work of repairing them was put out by contract to Henry Goddard, Master Shipwright, appointed vice Stevens in 1626.

In December 1630 Pett received his letters patent for the place of Commissioner of His Majesty's Navy and he became the first Resident Commissioner at Chatham. His salary was £200 a year with 8d a day for his clerk, Charles Bowles, and £6 for paper money. In addition he received his £40 per year by writ of privy seal granted in 1614. In 1631, Pett and his family moved into his new lodgings at New Dock, formerly occupied by Captain Downing, acting as Surveyor of the Navy until 1628 and residing in Chatham Dockyard. After this date the Surveyor of the Navy lived in London. Phineas sold the lease of his house, the Manor House, to Richard Isaackson, the ship painter.

Two years later in 1633, Pett was involved in the Brown Paper scandal with Palmer, the Comptroller, Fleming, the Clerk of the Acts, Terne, Clerk of the Survey at Chatham, acting as deputy to Aylesbury, the Surveyor and Lawrence, the Storekeeper at Chatham. All were concerned in the sale of old cordage used for the manufacture of brown paper. The charge, which resulted from information laid by Kendrick Edisbury, Paymaster of the Navy, before Sir John Coke, Secretary of State, was investigated before the Judge of Admiralty. It was alleged that those accused had sold cordage without the consent of the other Principal Officers. Some of the money received, £252 6s 9d had been applied to legitimate purposes, but part had been kept back in the hope that no questions would be asked, and that after a time the holders might appropriate it for themselves. The defendants were sequestered from their posts in February 1633/4, but Charles I pardoned Pett and later allowed the others to continue in their posts, conditional on their repaying the money to the Treasurer of the Navy.

Charles I approved the idea of building a royal ship more ornate and larger than any of her predecessors. Pett was asked to prepare a model; it should be remembered that he had designed the **Prince Royal**, launched in 1610. Eventually it was decided to build the great ship of the Ship Money Fleet, the **Sovereign of the Seas**, a three-decker of 90 guns, altered by Charles I to 102 guns. In 1635 Phineas Pett and his son Peter went to the woods in the neighbourhood of Durham and Newcastle to select timber for this new ship.

Peter Pett was born in 1610, the fifth son of Phineas, who eventually followed his father as Resident Commissioner at Chatham. Phineas secured the appointment of his son Peter to the post of Assistant Master Shipwright at Woolwich in 1629. The **Sovereign of the Seas**, designed by Phineas Pett, was built at Woolwich Yard by Peter Pett under his father's supervision. She was launched in 1637 and after her completion was brought

1 The Surveyor and the Comptroller were sequestered from their posts on the Navy Board and their duties entrusted to a Board of Commissioners constituted from the members of the Commission itself.

2 In his autobiography Pett wrote "All employments & priveledges taken from me, Captain Norreys being brought over me and I forced to live as a slave among them the whole time of their commission. Mr Burrell and Norreys being my greatest enemies.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

round to moorings at Gillingham just above the mouth of St Mary's Creek, now the Bull Nose. This ship was rebuilt at Chatham in 1659, and again in 1685 and was finally destroyed by fire at Chatham in 1696. After the first rebuild she was renamed **Royal Sovereign**.

When the Civil War broke out in 1642, Parliament took control of the Navy and the Earl of Warwick was appointed Lord High Admiral. The functions of the Principal Officers except the Treasurer were taken over by a body known as the Commissioners of the Navy. In August 1642, Parliamentary forces were sent into Kent to suppress a possible Royalist uprising. Colonel Edwyn Sandys, acting on instructions from the Committee of Public Safety, went to Chatham Yard which was surrendered to him, together with 300 pieces of ordnance about to be conveyed to the King, by Captain Phineas Pett, when he saw their warrant.

Phineas Pett was rewarded for his ready obedience by being included among the Commissioners of the Navy. His salary and allowances were unchanged. Phineas died in 1647 and was buried in Chatham Church. By order of the Committee of the Navy dated 8 April 1648, Jane Pett, widow, and Phineas Pett, executors to Captain Phineas Pett, were paid £100 . . in full satisfaction of a fee formerly paid out of the Exchequer being in arrears for many years last past .

### **Peter Pett**

Peter Pett was appointed Resident Commissioner at Chatham on the death of his father. His salary was £250 a year with an allowance of £8 for boat hire, £6 paper money and 8d each per day for his two clerks. There were also additional payments for extra care and Pains. For the year ending 31 December 1657 he received in all £324.

Peter Pett was a loyal supporter of Parliament and was a member of the Committee of Kent which was responsible to Parliament for the government of the County from 1642/1648. He was a JP and there are records in the Gillingham Parish Register of Peter Pett solemnising marriages in this capacity during the Commonwealth at his house at Chatham. <sup>1</sup>

About the middle of the 17th century the Pett family controlled many sections of Chatham Yard. Peter was the Commissioner; his brother Phineas was the Clerk of the Checque; his cousin Joseph Pett was AMS; another cousin, Richard Holborn, was the Master Mast-maker; and other members of the family held positions in the Yard. Their nepotism and their somewhat corrupt practices caused hatred amongst their rivals and subordinates.

A leader to challenge the Petts came to hand when William Adderley was appointed Chaplain of the Ordinary after the dismissal of his predecessor for taking part in the Kentish rising after the execution of the King. Chaplains appointed during the Commonwealth were apt to take the responsibility of rooting out corruption in establishments in which they were serving.

The new Minister disapproved of many of the practices he saw in the Yard; he was prepared to listen to complaints and to persuade some of the more public spirited men to take some action. In November 1651 two shipwrights, Robert Ea son and Hugh Frewing, wrote a letter to the Commissioners of the Navy disclosing some corrupt practices in the Yard. In particular they made charges against Thomas Whitton, the Storekeeper at Chatham, that there was a conspiracy in regard to the iron work between Whitton and certain smiths at the expense of the State. Thomas Symons, a house carpenter, under

<sup>1</sup> In 1653 an Act of Parliament directed that a new form of solemnisation of marriages. Public notice of the intending marriage had to be given to the parish church or market place on 3 successive Sundays and after the couple had made their mutual acceptances as man and wife before a JP his worship declared the marriage valid

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Whitton, confessed to the writers that Whitton had asked him whether he had been pumped by anyone and that Whitton had asked Robert Bell, a smith at Chatham, and Robert Moore, a smith at Gillingham,<sup>1</sup> the same questions:

*since there have been some whisperings between honest men of grand abuses in that dock.*

On being accused by the writers of being an accessory to Whitton's dishonesty, Symons declared that he dare not tell for fear of being undone by the kindred (the Petts). On being asked if he knew what went on in the smith's forge at the dock, he said:

*The black forge made a white purse for some of them which Robert Preston, clerk and foreman to Mr Downing, the Master Smith, must needs know, for he compared the books: and further, they were all knit together that the devil could not discover them, except one impeached the other, and that he would be hanged before he would do so.*

Adderley, the Minister, William Thompson, the Master Caulker, and Thomas Colpott, the Boatswain, wrote to the Commissioners:

*We have observed much corruption and have spoke to the Commissioner upon the place but he takes the part of the offenders and is greatly enraged with us . . . a generation of brother, cousins and kindred, packed together in one place of public trust is not in the States's interest.*

Pett, the Commissioner, wrote in December 1651 to the Committee of Merchants complaining about Thompson and Colpott appointed by this Committee. This Committee, appointed in 1649 and dissolved in 1654, had to implement an Act passed 16 January 1648/9 that rendered all officers of the Navy and the Dockyards, who had aided the King or embezzled stores, incapable of office. Pett declared that Thompson and Colpott, who had replaced two others on account of this Act, were worse than those dismissed. The Master Caulker had frequently gone to London without leave, and he had failed to caulk the **Sovereign** for two years, in defiance of orders, and that he had regularly stolen Yard timber for firewood in his own house. The Boatswain did not know his job and that timber, masts and boats were ruined; he too went to London without leave whilst his men idled their time in the Taphouse. Pett declared:

*And because these men pretended to religion you were willing to encourage them . . . but I have not found any men in the whole Navy more negligent of their duty and breaking rules as to perquisites than them . . .*

Inevitably a Commission of Enquiry into the abuses at Chatham Yard was ordered when charges and countercharges were made. There were charges that Richard Holborn, the Master Mastmaker, had joined the Kentish Rebellion, had purloined stores and had made bedsteads at the expense of the state. Further, that he had made two coffins for himself and his wife,<sup>2</sup> which coffins were seen in his house by those conducting the enquiry. Holborn denied most of the charges, but confessed that he had made the two coffins 14 years ago and the bedsteads six or seven years ago but thought he paid for the workmanship. The wood for these articles would be provided by chips.

1 The Navy Commissioners examined Steven Clark, Jeremy Giles and John Thompson servants and apprentices to Robert Moore of Gillingham Kent as to their master's purchasing of ships stores of the carpenters and other officers reselling to the State.

2 In the case of Dockyard fatal accidents it was the custom to provide a coffin for the victim. By 1875 it was usual to provide a coffin and £10 gratuity for an officer. a coffin and a £6 gratuity for a workman.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

John Brown, the Clerk of the Ropeyard was charged with taking coils of rope from the Dockyard for his own use and borrowing and failing to return some booms and spars. He denied the charges saying, . . . *he abhores anie such cheate*

Joseph Pett, AMS, was accused of embezzling stores and Phineas Pett, Clerk of the Checque was charged with neglecting to muster the workmen and dismissing them without call and that he had entered more than appeared, set down higher wages than were paid and pocketed the difference, employed unsuitable labour and used his power . . . to revenge private discontent and reward personal courtesies.

There were charges against Peter Pett, the Commissioner,

*Hugh Frewin, sworne and examined, deposeth that he was present when five firkins of nayles and some deale boards were entered into ye Store, but were taken for Commissioner Pett who hath not payd for ye same.*

Robert Eason's statement told how he reported irregularities to Pett, and Pett then told him to mind his own business and be careful of what he said, adding as a reminder, he had power.

Pett attacked Adderley producing a number of signatures to a charge that Adderley had neglected his duty of . . . professing to us Christ aboard ship on Sundays, so that:

*. . . the poor shipkeepers have been many weeks without hearing a sermon, whereby they remain without means of salvation.*

In defence Adderley said that he had preached on shore (in the Sail Loft) by order of the Commissioner who had posted up a notice for shipkeepers to attend or be punished. He also preached on Sundays in the Parish Church of Chatham for that was convenient and central and there were pews for the officers. There were not enough boats to take the men and their families to the ships and it was unlawful to row on Sundays.

It was decided that Adderley should preach both in Parish Church of Chatham and on board all naval ships before they went to sea.

Whitton was discharged in 1652 but the orders for the discharge of Phineas Pett, Joseph Pett, Holborn and others were not carried out; for with a war on the times were too critical for the displacing of experienced officers. Joseph Pett who was sixty ceased duty in September and died in the following year; Richard Holborn resigned.

Peter Pett remained in office after the Enquiry; he had been a loyal supporter of Parliament. In 1648 the Royalists had rebelled in Kent and occupied Upnor Castle and certain ships. Pett sent the **Fellowship**, lying off Gillingham further down the river, but the insurgents captured her and brought her to Upnor, and there emptied her of her powder and provisions. The **Sovereign** and the **Prince** were also seized, but Pett refused to allow the royalists in the yard. The main body of the Kentish rebels were defeated at Maidstone and attempts were made by others to escape in the **Fellowship**, but Pett got a small force together and seized this vessel. Next day he recovered the **Sovereign** and the **Prince**. The ships in the Downs mutinied and, with the Prince of Wales at their head, began to blockade the Thames. Chatham remained loyal to Parliament and the Cavalier fleet had to go abroad for their base.

Before its loan to the Royal United Services Institute, the standard of the Generals at Sea was preserved in the Admiral Superintendents house at Chatham. The flag, which tradition connects with Blake himself, dates from c 1650, was red bearing two escutcheons carrying the red ensign and the harp of Ireland surrounded by green branches of laurel and bay.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

On the eve of the Restoration Peter Pett hastened to Scheveningen and being admitted to kiss His Majesty's hand, became at once his most loyal and devoted servant. On his way from Dover to London in May 1660, Charles II:

*. . . went to Chatham to see the Royal Sovereign, and the rest of the ships, where he gave Commissioner Pett so much honour as to receive the entertainment of a banquet from him.*

In the August of the year of the Restoration, Charles again came to Chatham and was sumptuously entertained by the Commissioner.

Pett's assistance to Parliament appears to have been forgotten and he was appointed Commissioner of the Navy, resident at Chatham at £350 per year. Pett was to be . . . obliged to continue personal attendance with the other officers but that his chief care was to be employed at Chatham, the place of his ordinary residence. The other two Commissioners appointed with him were paid £500 per year. He was the last Commissioner at Chatham to hold the appointment in such a form; his successors were really deputies of the Navy Board at Chatham. He was MP for Rochester in 1660.<sup>1</sup>

He suffered the loss of one source of income, for by the Duke of York's Instructions issued in January 1662, the members of the Navy Board were forbidden, for the first time under pain of dismissal from the service, to trade in any commodities that were used by the Navy. Prior to this, Peter Pett, although a Commissioner, had contracted to build frigates for the Navy, apparently with the sanction of the Admiralty Committee and the Council of State. Thus in 1650, he agreed to build the two frigates, Advice and Reserve at his yard at Woodbridge, Suffolk for £6 10s a ton. These frigates were of the order of 500 tons each.

Pepys wrote in his diary for 1 August 1665:

*Mr Coventry and I to Chatham . . . pressed upon the Commissioner (Pett) to take upon him a power to correct and suspend officers that do not their duty, and other things, which he unwillingly answered he would if we would own him in it.*

Pepys repeatedly refers in his diary to the lack of discipline in Chatham Yard and in the ships in the port.

In his diary, Evelyn wrote of 10 August 1663:

*Passing by Chatham we saw His Majesties Royal Navy, and din'd at Commissioner Pett's, master builder t here, who shewed me his study and models with other curiosities belonging to his art. He is esteemed for the most skilful shipbuilder in the world. He hath a pretty garden and banqueting-house, pots, statues cypresses, resembling some villas about Rome.*

These models mentioned by Evelyn contributed to his downfall. In June 1667 the Dutch Fleet came up the Medway and attacked the King's ships which were laid up at Chatham. During the Second Dutch War (1664/1667), it was decided in view of the financial situation, to lay up the capital ships at Chatham and to prosecute a campaign of commerce destruction. The **Royal Charles** was captured and three first-rates, the **Royal Oak**, **Loyal**

<sup>1</sup> By the Place Act 1742 15 Geo II c 22. No commissioner of the Navy or Victualling nor any clerks or deputies could sit in Parliament. The Act exempted the Treasurer of the Navy, the Comptroller, the Secretary of the Admiralty and did not include members of the Admiralty Board. The Act took effect after the general election of 1747.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

**London** and **Royal James** were burnt to the water line. Peter Pett, the Commissioner, was arrested at Chatham on the order of the King's Council and conveyed to the Tower on 17 June 1667.

The principal charges against Peter Pett were that he had failed to move the larger ships including the **Royal Charles** up river and that he had used boats needed for the defence preparations to carry out of danger his personal belongings.

A receipt was given by Edward Cresset, Gaoler, into the Tower of London of the person of Commissioner Pett by warrant from Lord Arlington <sup>1</sup> and by the hand of John Bradley, Messenger. Pett was examined with Pepys, Clerk of the Acts, by the Committee of the Council on 19 June 1667. Pepys, quaking with fear about his own fate, saw Pett brought before them . . . in his old clothes and looked most sillily. On 8 July 1667, a warrant from Lord Arlington to the Lieutenant of the Tower allowed Petts sister, Anne, wrongly described as Mrs Pett, to have access to him and to discourse with him in the presence of his keeper.

Pepys wrote in his diary on 4 October 1667:

*Thence all of us to attend the Council, where we were anon called on, and there was a long hearing of Commissioner Pett, who was there, and there were the two Masters Attendant from Chatham called in, who did deny their having any order from Commissioner Pett about bringing up the great ships, which gives the lie to what he says; but in general, I find him to be but a weak, silly man, and that is guilty of horrid neglect in this business all along.*

The Duke of Albemarle's report on the Dutch attack was presented to the House of Commons and read on 31 October 1667. The House then found Commissioner Pett charged with great and high crime, and being informed that he was at liberty walking in the Hall, gave order that Pett should be forthwith apprehended and brought to the Bar of the House of Commons to answer such matters as shall be demanded of him.

Pett had an answer to the charge that he had used the King's boat to move his own valuables to a place of safety. He explained that these boats were not used for shifting property until they were no longer required for defence and even then they were only used to save his collection of ship models. He declared that our ships were the best in the world and that it was essential to prevent the Dutch from learning of the latest improvements. The authorities did not seem impressed by this defence that the protection of models took preference over the safety of ships.

Peter Pett was released from the Tower on 20 December 1667 on £5,000 bail with able and sufficient securities entered in by Rowland Crispe of Chatham, his son in law, and Samuel Hall of London. After the Parliamentary Committee had studied Albemarle's report and examined Pett there was talk of Petts impeachment, but the ultimate penalty was dismissal from office.

In 1668 Peter Petts patent was revoked. In his diary entry for 3 March 1668, Pepys wrote:

. . . and then presently down with Lord Brouncker, W Pen, T Harvey, T Middleton, and Mr Tippet, who first took his place this day at the table as a Commissioner in the room of Commissioner Pett <sup>2</sup>.

1 Principal Secretary of State

2 See section on Resident Commissioners in chapter 2

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Andrew Marvel (1621/1678) wrote:

After this loss, to relish discontent,  
Someone must be accused by Parliament;  
All our miscarriages on Pett must fall:  
His name alone seems fit to answer all.  
Whose Counsel first did this mad war beget?  
Whose all commands sold through the Navy? Pett.  
Who would not follow when the Dutch were beat?  
Who treated out the time at Bergen? Pett.  
Who the Dutch fleets, with storms disabled, met  
And (rifling prizes) then neglected? Pett.  
Who with false news prevented the gazette -  
The fleet divided - writ for Rupert? Pett  
Who all the seamen cheated of their debt?  
And all our prizes who did swallow? Pett.  
Who to supply with powder did forget  
Landguard, Sheerness, Gravesend and Upnor? Pett.  
Who all our ships exposed in Chatham net  
Who should it be but the fanatic - Pett.  
Pett, the Sea Architect, in making ships  
Had he not built, none of these faults had been -  
If no CREATION, there had been no SIN.

Pepys read this through with a moist eye and quivering lip and said it . . . made my heart ache to read it, it being too sharp and too true

### **Master Shipwrights at Chatham Yard following the promotion of Phineas Pett**

Boate, AMS at Chatham from 1623, was appointed Master Shipwright in his place. There were two Master Shipwrights at this time: Henry Goddard and Edward Boate. In 1638, the Lord High Admiral ordered that one Master Shipwright was to remain constantly at Portsmouth, without changing by turn as was done previously. Edward Boate was appointed to this post from Chatham in 1639.

Boate soon asked for an assistant, and his son, Augustine, was sent to Portsmouth. The Admiralty refused to fill the vacant post of Master Shipwright at Chatham and in 1645, Henry Goddard was petitioning the Committee of the Admiralty for an extra allowance of £40 a year, in view of the additional work incurred by the transfer of the two Boates to Portsmouth.

Goddard died in 1647 and was succeeded by John Bright. His salary was 2s a day and a fee of 20d a day formerly paid out of the Exchequer, and an additional 2s a day (paid quarterly by way of reward), a total of £103 8s 4d per year. In July 1650 John Bright and Edward Hayward, Clerk of the Survey, were ordered to be discharged for encouraging Mr Rosewell, Minister at Chatham, a seditious preacher, but after some explanation, this order was cancelled. In October 1651, Bright was again in trouble for carrying out expensive alterations to ships without warrant from the Navy Commissioners and he was discharged.



## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

In his place Captain John Taylor was appointed Master Shipwright at Chatham. He was one of the few private shipbuilders to enter the service of the Navy; he had a private yard at Wapping. Taylor was a zealous Parliamentarian, and it may have been thought wise to watch the activities of the Petts of Chatham. The Petts had received many favours from the Stuarts and were suspected of Royalist sympathies. Joseph Pett, AMS, had in fact signed the Kentish Petition in May 1648, but by the good offices of Peter Pett, the Commissioner, had been forgiven, although a more distant relative, John Short, Clerk of the Checque, had been outed as the order stated for the same offence.

On the whole Taylor's relations with the Petts were friendly. Commissioner Pett did write to the Admiralty that he wished Taylor would attend to his duties as he had not seen him for some time. Taylor was a very busy man, for his duties at Chatham were heavy and his yard at Wapping was engaged in warship construction. In addition, he was a timber merchant supplying Chatham and the two Thames Yards with masts and timber.

John Hollond, the Surveyor of the Navy (1649/1652) prepared a Report for the Council of State in which he outlined the disadvantages to the State of allowing a Master Shipwright to engage in any duties outside the Yard to which he was attached. He pointed out that a Master Shipwright with a private yard could defraud the State in connection with timber, etc. The Master Shipwright with his Assistant, controlled 300 or 400 men whose wages were about £40 a year each and strict supervision was essential. The Taphouse in the Yard was abused in the absence of the Master Shipwright, since he was the one who controlled it. The Master Shipwright, with the Storekeeper, should view and certify the quality of masts, timber, deals, etc. In the opinion of some it cost the State twice as much to build a ship in a Royal Yard as in a private yard. The remuneration of the Master Shipwright was too low. The Master Shipwright should be limited to the States service and it would pay the State to give him a salary of £1,000 a year. Some of this advice was followed by the Duke of York after the Restoration.

Actually, Taylor received pay which was considerably greater than was usual, and he was provided with a house. In the Declared Accounts 1658:

*John Taylor, MS at Chatham to be paid £200 for his extra service from 30 June 1657 to 30 June 1658, less salary he had received on the ordinary or otherwise.*

In the Accounts, 1 January 1657/8 to July 1660:

*John Taylor, MS at Chatham for salary £40 per year and Exchequer fee and other extraordinary expenses for 11/2 years ending 30 December 1659, £263 14s 10d*

Taylor must have been a favoured man to be associated with so many activities outside his post at Chatham, without incurring displeasure. He was responsible for the rebuilding of the **Sovereign** in 1659. In August 1660 he was replaced by Phineas (later Sir Phineas) Pett.

When war was declared on Holland in 1664 it was decided to appoint Resident Commissioners at Harwich and Portsmouth. Middleton, later Commissioner at Chatham, was appointed to Portsmouth and John Taylor to Harwich. It is a striking tribute to the impartiality of the Duke of York, who recommended Taylor's appointment to the King despite his Parliamentary associations before the Restoration, and the opposition of Sir William Batten, the Surveyor. Harwich was closed in 1668 and his commission was revoked; he died in 1670.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### Phineas (later Sir Phineas) Pett

At the Restoration, and by the influence of the Duchess of Albemarle, Phineas, son of Peter Pett of Deptford, Master Shipwright from 1630 to 1652,<sup>1</sup> was appointed Master Shipwright at Chatham vice John Taylor. Phineas had been appointed AMS at Deptford in August 1652, and completed two frigates: **Drake** and **Hampshire**, which his father had laid down. He resigned in the following May and returned to the family yard at Ratcliffe in partnership with Thomas Read.

Pett entered his duties at Chatham in July 1660. His pay was then 2s a day, an extraordinary allowance of 2s a day, and the Exchequer fee of 20d a day. From 1660 to 1674 Pett was paid roughly £104 per year, but hearing that Deane at Portsmouth received £150, he petitioned for the same and this was granted. An Admiralty letter dated 22 July 1674 stated:

*In pursuance of an order from the Lords Commissioners of the Admiralty dated 16th inst you are to pay Mr Phineas Pett, Master Shipwright, Chatham in consideration of his Extraordinary service for the time past without any increase in salary the sum of £500.*

In 1679 he asked for a further increase in salary as being the ancientist Master Shipwright and that he could not maintain himself on his salary. In 1662, Phineas Pett had been granted £100 for a house built by him near Chatham.

The duties of the officers of the Yard were given in The Duke of York's Instructions for the Commissioners and Subordinate Officers of the Royal Navy of 1662. They were similar to those given earlier and dated 1628. Those for the Master Shipwright stated that apart from the oversight and direction of the building of ships and docks, he had to sign for all issues from the stores, to send vouchers to the Accountant of the Yard, to check the carpenter's gear out of the ship, to assist professionally in the survey of stores, to check the workmen's wages, report their numbers to the Head of the Yard and help the Porter in preventing embezzlement.

In July 1668, an enquiry into the activities of the Master Shipwright was carried out by Sir John Mennes, Comptroller, at Hill House, Chatham, and by the Comptroller and the Surveyor, Thomas Middleton, at the Navy Office.

John Bowyer, Foreman of Shipwrights, admitted that he had entered into a partnership with Phineas Pett for the management of a shipyard at Gillingham, and for the buying and selling of timber. Bowyer confessed that timber was bought by them and sold through an intermediary to Chatham Yard at a good profit. Bowyer also admitted taking timber from Chatham Yard for building a ketch in their own shipyard. In this yard was found an anchor stock and a crabb (windlass), the Kings property. Pett maintained that he had broken the partnership with Bowyer just before the theft of the mast which had been delivered to the sawyers in Bowyer's yard for conversion into 1 1/2 inch boards for the deck of the ketch. Pett admitted that the windlass had been taken from one of the floating stages of the Great Chain and that he intended to return it to the Dockyard. The anchor stock had come from one of the Dutch wrecks brought into the Dockyard for firewood, and again he had intended to return it.

The first part of this charge, viz, the breach of the rules by which His Majesty's officers were prohibited in their own or other names to sell any naval goods to the Crown, was a serious one to answer. It was proved that 90 loads of timber were contracted for at 38s a load<sup>2</sup> by Pett and Bowyer, and that 60 loads of it were sold to Chatham Dock at 48s a

1 Phineas Pett's father died in June 1652

2 A load of timber = 50 cubic feet, a ton of timber = 43 cubic feet.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

load by one John Morecock. Pett paid the transportation charge of 12s a load and Morecock received 20s in money and as much in timber for his efforts.

Pett's defence was that he had bought the said timber for building a galliot at Gillingham for the Master Attendant at Chatham and that the negotiations had failed. As the Dockyard was in want of timber, Pett had arranged to sell the timber to His Majesty at what he considered a reasonable price. Pett maintained that the land and water carriage was 3s a load and that expenses amounted to 5s a load, so that his profit was but 2s a load. The Comptroller pointed out, however, that Pett had contracted for about 100 loads more at the same price and for selling it to Morecock, who in turn sold it to Chatham Yard at 58s a load. Commissioner Middleton, the Surveyor, affirmed to the Board that he was led to advising them to buy the two parcels of timber by Mr Petts assurance to him of the quality and the need for this timber and of the reasonableness of the price he asked. Middleton explained to Pepys:

*Mr Moorcock pretended it is fittest he knows for building great ships but the Chathamites are kind people and willing to help one another on all occasions, be it right or wrong.*

The result was:

*Whereas upon examination it appears that Phineas Pett, Master Shipwright of His Majesty's Yard at Chatham hath misbehaved himself in that employment and hath not performed his duty with that trust and care as was required . . . to be forthwith discharged from the said employment of Master Builder of HM Dockyard at Chatham.*

Phineas Pett was dismissed in September 1668 but was restored to office in December of the same year.

In the following March he was once more in trouble, being charged with the sale of a boat and other naval stores and pocketing the money received. Pepys and Middleton, who were attending Chatham for a court martial, were directed to investigate the charge, and although evidence was generally against Phineas Pett, he was given the benefit of the doubt. Pepys termed Pett, a very knave.

Captain John Cox, Master Attendant at Deptford, was appointed Commissioner at Chatham after the dismissal of Peter Pett in 1667. It is possible that Phineas Pett might have succeeded Peter Pett but for the unfortunate timber transactions. Resentment against Cox's appointment is one explanation of the continued quarrels between the Commission and the Master Shipwright.

Phineas Pett was a thorn in the side of the energetic seaman, Commissioner Cox, who accused him of exercising no adequate supervision of the workmen, and of general incompetence which resulted in higher costs at Chatham than at the other Yards. Cox informed the Navy Board in one report that Pett was a great liar and a perjurer, and in another that he was . . . too much the gentleman to perform his duty and his Assistant (John Lawrence) was as idle as himself.

1 In his diary Pepys wrote that he was given the commission...to be captain of the Jerzy in order to my being of a court martial for examining the loss of Defiance (burnt at Chatham in December 1668). An entry dated 25 March 1669.read and so presently by boat to the Charles which lies over against Upnor Castle and there did manage the business, the Duke of York having by special order directed them to take assistance from of Commissioner Middleton (Surveyor of the Navy) and me...and so I did lay the law open to them and rattle the Master Attendants out of their wits almost..

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Pett made countercharges against Cox:

*He (Cox) complains against me because I will not receive coarse rubbish timber purchased by himself and have discharged his cousin, Brunsdon, the Caulker.*

On another occasion Phineas complained:

*A rude multitude of women being wives and friends of workmen of the Yard, it being chip day, I tooke severall carrying away good plank; if countenanced, they would carry a ship out of the Yard in their laps. When Phineas tells them they can't, they retort that Commissioner Cox says they can.*

Cox was killed at the Battle of Sole Bay in May 1672 and was followed by Colonel Thomas Middleton who held the office for only six months dying in December 1672. Middleton was followed by Rear-Admiral Sir Richard Beach and once again dispute arose between the Commissioner and Phineas Pett. Beach, an old Royalist Privateer Captain of the Commonwealth period, constantly found fault with the Master Shipwright and indeed with most of the civilian officers of the Yard. Some of the complaints seem trivial. In 1676, Pepys had written to Pett:

*His Majesty having some thoughts of building a new yacht, he is to attend with That draught or model of one which he hast prepared for him.*

In 1677, Commissioner Beach reported that the Master Shipwright had appointed his own son foreman of the first new ship for which he was not fit, and that the Master Shipwright kept three or four workmen making models in his house. In addition, Beach complained that the son of Lawrence, the AMS, was making a model allegedly for the Kings use. Pepys replied:

*Thanks for his of the 13th, and the care he therein shows to the preservation of discipline in the Navy, and particularly in the business of the liberty taken by the Master Shipwright to employ men at his own pleasure and his Majesty's extraordinary charge, in the building of models. Will take his Majesty's pleasure touching the model, which you also tell me Mr Lawrence's son is going about for the King's use.*

Beach complained that the Master Shipwright, Phineas Pett, was away ill most of the winter and absent making holiday most of the summer; later, he wrote that since Pett had married . . . this last woman, he had become puffed up with pride and seldom appeared in the Yard.

There was a reference to Phineas in the Admiralty Minutes dated 4 January 1678/79.

*Backwardness of works at Chatham reported by Pepys and for some time past by reason of some public disagreement and misunderstanding between Richard Beach and Phineas Pett. Officers of Navy to make impartial enquiry.*

Complaints of Pett's conduct ceased after he had been ordered to apologise.

Despite the criticisms, Phineas, whilst Master Shipwright, was responsible for two first-rates and five third-rates. He built for the King the famous yacht, which his Majesty christened **Fubbs**, the fastest vessel afloat.

In October 1679, Phineas petitioned to the Lords of the Admiralty that he should be appointed Commissioner at Chatham, in succession to Sir John Kempthorne, who after being selected to succeed Beach as Commissioner, died before taking up the position.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Pett was not given the post, but despite the many awkward incidents in his career, was appointed to the Navy Board as Comptroller of Victualling Accounts, and knighted in 1680.<sup>1</sup>

### **Pay, Allowances and Perquisites of Master Shipwrights**

By the last quarter of the 17th century the salary of the Master Shipwright was of the order of £113 per year in addition to an Exchequer Fee of £18 5s. He was also paid overtime allowances and received the wages of his apprentices. These items were appreciable as shown in the Account of the Quarter ending Lady Day 1685 when the Master Shipwright at Portsmouth was paid £3 15s 9d for 21 nights and 54 tides, and a further £30 14s 4d in wages for five apprentices. By the Regulations of 1680, the Master Shipwright was allowed one clerk at £30 a year; he also received an allowance for paper of £4.

Mention has been made of the irregularities practised by the officers in the Dockyards. The Navy Board suggested to Admiralty that the temptation to defraud might be lessened by raising the pay of such officers. In March 1695, the Navy Board was asked to report on the pay, allowances and perquisites of these officers. Replying in June, the Navy Board stated that despite increase in the cost of living and the payment of higher wages in private yards, the salaries and allowances of Yard officers differed little from those existing at the restoration of Charles II. They reported that the officers enjoyed perquisites of considerable value until 1674, about which time they were retracted without compensation, although it was said they were promised it. The officers had been forbidden to undertake any commercial activities and were expected to be full-time employees.

In some Yards the officers had been allowed fuel, candles and stationery, in others they were not. It was found that allowances such as house rent and travelling allowances, etc were not uniform in the Yards and this, coupled with unequal salaries, revealed a complex pay system.

Authorised by Order in Council dated 19 December 1695, the Navy Board promulgated the increase of the salaries of superior officers and the wages of inferior officers of the Dockyards from Christmas Day 1695 to prevent as it was stated in the minutes, the recurrence of the many Embezzlements and Frauds that are now practised.

The salaries of the Principal Officers at Chatham, Deptford and Portsmouth were raised to £200 per year; at the other Yards the salaries were £150 per year. The Master Shipwright continued to receive the emoluments such as the wages of apprentices, etc, but the Order stated:

*It is intended that the day wages of the Master Shipwright with their Exchequer fees, Nights and Tides, the extra allowances for surveys, and all other allowances, whatsoever to them and the other superior officers of the Yards, (excepting the clerks, servants and paper money established for them, and the Clerk of the Checques allowance for receiving and paying contingency moneys) should be cut off, and that they should not have any travelling charge, or other extra allowances for any service performed within the bounds of the said port or district of the Masters to which they respectively belong . . . which retrenchment will very lessen the increase of their salaries with respect to the charge thereof.<sup>2</sup>*

1 See section on Resident Commissioners in chapter 2

2 The actual income of the Master Shipwright was much higher than this figure. Thus in 1784 the incomes of the Master Shipwrights at Chatham and Sheerness were £508 and £341 per year respectively.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

*And lastly, none of the servants belonging to the said officers were to be employed on any extra work for the future unless there shall not be able men sufficient to carry on the service without them .*

The basic salary of the Master Shipwright at Chatham remained at this figure of £200 a year until the Pay Revision of 1801: the salary of this officer at the beginning of the 19th century was raised to £650 per year, but the benefit of apprentices was taken away. By 1787, the Master Shipwright had two clerks, one paid at £45 and the other at £40 per year.

### Master Shipwrights at Chatham Yard continued

1680/1698 ROBERT LEE

On the appointment of Phineas Pett to the Navy Board in 1680, Robert Lee filled the post of Master Shipwright until 1698. He had been the Master Caulker and had taken in 1677, John Lawrence's place as AMS on the promotion of the latter to Master Shipwright, Sheerness. He married Elizabeth Pett (nee Houghton) the widow of William Pett (see Family Tree). He died 1 April 1698 and was buried in St Mary's Church, Chatham under a monument with his arms:

*Gules, a cross gold between four unicorns heads razed gold for Lee, impaled with sable, three bars silver for Houghton.*

Lee's wife died 1711, aged 75.

In 1686, Pepys had written a report to the King on the qualities of the Master Shipwrights. He noted that Mr Lee had never:

*. . . built a ship in his life . . . he is full of gout, and by comparison as little capable as the former (Sir John Tippetts and Sir Phineas Pett) of the fatigue before mentioned.*

Lee was in charge of the rebuilding of the **Sovereign** in 1685 and requested a piece of plate as reward.<sup>1</sup> It was customary to make a presentation to the Master Shipwright when the building of a ship was completed but rebuilding posed a problem of interpretation of the rules of the Navy for Pepys, who, as mentioned above, had little opinion of Lee's ability.

1698/1699 DANIEL FURZER

Lee was followed by Daniel Furzer who had been First AMS at Chatham from 1680/1685. He was then appointed Master Shipwright, Sheerness, 1685/1691, vice John Lawrence who was promoted Master Shipwright at Woolwich. After acting as Assistant Surveyor and a year in office at Chatham, Furzer was promoted to the highest post, Surveyor of the Navy. He was appointed in 1699 to act pending the grant of his patent in October 1706. From 1706, Furzer acted co-jointly in this office with William Lee, son of Robert Lee, the earlier Master Shipwright at Chatham. The extraordinary thing is that

<sup>1</sup> The custom of presentation existed through the 19th century. In 1801 the officers were given increased salaries and their perquisites abolished. Among these a valuable piece of plate worth about £100 was given to the Master Shipwright at the launching of a new ship. The privilege was restored in 1814 when the value of the plate was £50 for a three decker and £40 for a two decker. The Master Shipwright known after 1875 as the Chief Constructor could expect a gratuity usually of £50 after the launching. There are instances where the Foreman in charge of the construction received a gratuity on such occasions.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

Furzer obtained this much sought after appointment despite Pepys adverse report on him whilst Master Shipwright at Sheerness. (See list of Surveyors of the Navy)

1699/1705 ROBERT SHORTIS

The next Master Shipwright at Chatham followed a traditional career in the service. He was Master Carpenter of the **St Andrew** and was appointed First AMS at Chatham in 1694. He then held the office of Master Shipwright, first at Harwich and then at Sheerness, 1695/1699, finishing his career as Master Shipwright at Chatham.<sup>1</sup> He died at the age of 69 and was buried in St Mary's Church, Chatham.

1705/1732 BENJAMIN ROSEWELL

Rosewell originally held the office of Purveyor at Chatham and was appointed 2nd AMS in 1695 and in 1699, 1st AMS at Chatham. He successively held the posts of Master Shipwright at Harwich and Plymouth, finishing his career at Chatham. He was superannuated in 1732 with a pension of £100 a year; he died in 1737. His daughter, Sarah, married George Musgrave, Storekeeper of Ordnance.<sup>2</sup>

1732/1752 JOHN WARD

Master Shipwright Sheerness 1717/1732. Died in office.

1752/1753 THOMAS SLADE

1742 Naval overseer to contract-built ships.

1750 AMS Woolwich.

1750 Master Shipwright Plymouth.

1752 Master Shipwright Woolwich.

Slade held the post of Master Shipwright at Chatham for a year before moving to Deptford Yard. In 1755 he was appointed, jointly with W Bateley, Surveyor of the Navy. Bateley was pensioned in 1765 and was followed by John Williams as Junior Surveyor who was promoted to the post from Sheerness.<sup>3</sup> From 1756 to 1763 Slade was Colonel of the Deptford Regiment of the Dockyard Local Defence companies. He was knighted in 1768; he held the post of Senior Surveyor until 1771. During his term of office as Surveyor he was responsible for the design of the famous **Victory** launched at Chatham Yard in 1765. He was regarded as the great ship designer of the 18th century.

Slade married Hannah Moore, the daughter of Captain John Moore, in 1747. She died in 1763 and was buried in her parents tomb in St Clements Churchyard, Ipswich. Slade died in Bath in 1771 and his body was brought back to Ipswich to be buried near his wife. He is commemorated by Slade Street, Ipswich. He presumably met his wife when he visited Ipswich to oversee ships built in St Clements Shipyard by John Barnard the Younger.

1753/1755 ADAM HAYES

His career may be summarised as follows:

1748 Adam Hayes, late Carpenter of the **Kent**, appointed Master Mastmaker at Chatham.

<sup>1</sup> See Resident Commissioners at Chatham in chapter 2

<sup>2</sup> see Supply of Ordnance in chapter 22

<sup>3</sup> See Master Caulker at the end of this chapter

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

1749           AMS Plymouth  
1750           AMS Woolwich  
1751           Master Shipwright, Sheerness  
1752           Master Shipwright, Woolwich  
1753           Master Shipwright, Chatham  
1755           Master Shipwright, Deptford.

His warrant as Master Shipwright was renewed 18th of March 1761 on the accession of George III

### 1755/1762 JOHN LOCK

Lock held post as AMS at Portsmouth and Master Shipwright at Plymouth before his appointment at Chatham. During his term of office at Chatham the keel of the Victory was laid in 1759. His warrant as Master Shipwright was renewed 18th of March 1761 after the accession of George III. He died in 1762 and the completion of the Victory devolved on his successor.

### 1762/1767 EDWARD ALLIN

His career may be summarised as follows:

1750           Master Caulker, Chatham  
1751           AMS Woolwich  
1751/2          2nd AMS Chatham  
1752/3          Master Shipwright, Sheerness  
1753/5          Master Shipwright, Woolwich  
1755/62         Master Shipwright, Portsmouth  
1762/67         Master Shipwright, Chatham.

He was superannuated in 1767.

### 1767/1773 JOSEPH HARRIS

Master Shipwright Sheerness 1755/1762, then to Woolwich before his appointment at Chatham from which he was superannuated.

### 1773/1775 WILLIAM GRAY

Master Shipwright Sheerness from 1752/1753, then to Woolwich before his appointment at Chatham. He died in office.<sup>1</sup>

### 1775/1779 ISRAEL POWNOLL

Pownoll served at Chatham from 1752/1753 as 2nd AMS and from 1753/1755 as 1st AMS. After six months at Sheerness as Master Shipwright and service at Plymouth he was promoted Master Shipwright at Chatham. He died in office.<sup>2</sup>

### 1779/1790 NICHOLAS PHILLIPS

Phillips served at Chatham from 1764/65 as 2nd AMS and from 1765/1772 as 1st AMS. He served at Sheerness 1772/3 and at Portsmouth before his appointment at Chatham. He died in office.

<sup>1</sup> See Apprentices in chapter 4

See Apprentices



## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

1790/1793 JOHN NELSON

He was Master Shipwright at Sheerness 1785/1787, then to Woolwich and finally Chatham. He died in office.

1793/1795 THOMAS POLLARD

He served as Master Shipwright Sheerness 1782/4 and then to Plymouth before his appointment to Chatham. He transferred to Deptford as Master Shipwright in 1795.

1795/1801 EDWARD SISON

He served as Master Shipwright Sheerness 1790/3 and then to Plymouth before his appointment at Chatham. He transferred to Woolwich as Master Shipwright in 1801.

1801/1803 DAVID POLHILL

Superannuated.

1801/1813 ROBERT SEPPINGS

Robert Seppings was the son of a cattle salesman at Fakenham, Norfolk. In 1781 his father died and Seppings was sent to Plymouth to be brought up by his uncle, Captain Milligan, RN (Retired). Owing to his uncles influence Seppings was apprenticed to John Henslow, Master Shipwright, Plymouth, in 1782<sup>1</sup>. After his apprenticeship, Seppings rose through the ranks of shipwright, quartermen and foreman to be Assistant to the Master Shipwright, Joseph Tucker in 1797. In 1803 he was appointed Master Shipwright at Chatham.

By the salary revision of the Dockyard Officers at the beginning of the 19th century the salary of the Master Shipwright was raised to £650 per year. He had the services of three clerks, paid £300, £200 and £120 per year respectively.

During his years at Chatham he brought to a successful conclusion his schemes for strengthening ships by the trussed frame, the filling of the opening between the timbers of the frame leaving out the interior planking below the orlop clamps, and the connection of the beams with the sides by means of shelf pieces, thick waterways, etc.

In 1810 diagonal riders were fitted during the repair of the **Tremendous** and in the following year his suggested improvements about the connection of the beams to the sides was applied to the **Ramillies** and **Albion**. Another of Seppings's improvements was the laying of decks diagonally instead of fore and aft which meant that short deals would be used in place of long ones.

After the Battle of Trafalgar, **Victory** was docked at Chatham in March 1806. Seppings was greatly impressed by the damage to **Victory**'s bows. The heavy casualties she suffered at Trafalgar were nearly all on the upper and main decks for the three inch planking of the squarely cut off beakhead (bulkhead) had been penetrated even by grape shot, whereas the rounded and massively built bow proper below the beakhead, though pitted with shot, had suffered little damage. It had been the custom in warships up to frigates to carry the round bow right up to the forecastle level and Seppings suggested that this should be done in ships of the line to prevent casualties from end-on fire through the thin bulkhead over the beakhead. This was applied after 1811 generally and was carried out on the **Victory** when the ship was rebuilt in 1814/1816.

<sup>1</sup> 1784/1806 Surveyor of the Navy Knighted 1793

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

In May 1813 he was appointed Surveyor of the Navy and knighted in 1822. He was superannuated in 1832 with a pension of £750 per year.<sup>1</sup> There is a memorial to him in Taunton church. The Navy Board of which Seppings was the Surveyor was abolished in 1832.

1813/1830 GEORGE PARKIN

In Gillingham Parish Church there is a memorial to George Parkin:

*Sacred to the memory of Mr Thomas Parkin, RN obit 4th October 1815, Aetat 19. Also Geo Parkin, Esq., father of the above, for many years Master Builder at Her Majesty's Dockyard, Sheerness and Chatham died 20th April 1843, in the 86th year of his age. Also Elizabeth Parkin, Relict of the said George Parkin, whom she survived only three weeks, after a happy union of nearly 61 years. Died 12th May 1843. Also Henry Parkin, Esq., MD, son of the above George Parkin and Elizabeth Parkin, died 4th of June 1852, in the 60th year of his age.*

Whilst at Sheerness, 1806-1813, he produced a Scheme of Prices for Task and Job Work for the Commission on the Civil Affairs of the Navy in 1806.

He was a member of the Committee appointed for the purpose of erecting St John's Church, Chatham. He subscribed £3 3s to the Chatham Fire Relief Fund of 1820.

1830/1839 WILLIAM STONE

He was Master Shipwright at Sheerness for a short period in 1813 and was then transferred to Deptford.

1839 JOHN FINCHAM

He was Master Shipwright at Sheerness from 1835/9. He wrote the History of Naval Architecture dated 1851; he was then described as the Master Shipwright of HM Dockyard, Portsmouth. He also wrote A Treatise on Masting Ships and Directions for Laying-off Ships.<sup>2</sup>

1844/1858 FRANCIS J LAIRE

Ex Pembroke.

1858/1864 OLIVER W LANG

Lang was Master Shipwright at Sheerness from 1823/26. He served at Woolwich and in 1853 was the Master Shipwright at Pembroke Dockyard. He died at Blackheath in June 1867.

1864/1872 PHILLIP THORNTON

The office of Master Shipwright was combined with that of the Chief Engineer in 1869, and with that of Storekeeper in 1870.

Thornton was superannuated 20 January 1872 with a pension of £377 7s per year.

<sup>1</sup> In 1803 Seppings had been awarded £1,000 for his invention in 1800 of blocks and wedges for lifting ships in dock for gaining access to the keel. He had a most inventive mind and a list of his achievements is given in the Mariners Mirror Volume 68 1 February 1892

<sup>2</sup> See Apprentices chapter 4

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### **Chief Constructors at Chatham Yard** (formerly titled Master Shipwrights)

1872/31 December 1882 ROBERT SAUNDERS

Ex-Master Shipwright Pembroke 1869/72. Up to March 1875 Saunders held office as Master Shipwright, Engineer and Storekeeper. After that date he was titled Chief Constructor. He was superannuated with a pension of £620 per year.

In 1875 the salary of the Chief Constructor at Chatham was raised to £650 x £25 to £750. This was raised to £700 to £850 after the upgrading of Chatham Yard. By 1914 the Manager, Constructive Department had a salary of £1,000 per year.

1883/1886 E C WARREN

Ex-Chief Constructor Pembroke, 1879/1883. Mr Warren, Chief Constructor, retired at 54 years of age after 36 years service. (Salary on retirement £855, pension £750)

1886/1887 J G WILDISH

In 1887 he was promoted to the post of Assistant to the Director of Dockyards. In 1895 he was appointed Civil Assistant in Chatham Yard. <sup>1</sup>

1887/1893 C T GLENN <sup>2</sup>

1893/1895 J A YATES

During his period of office he built the Magnificent in a year. He was transferred to Portsmouth and returned to Chatham during the period 1902/6 as Civil Assistant. <sup>3</sup>

1895/1897 G CROCKER

In 1897 he was appointed Civil Assistant at Devonport

1897/1904 W JAMES

1904 T MITCHELL

Chief Constructor and Manager Constructive Department, Portsmouth 1904/6

1904/1905 H J WEBB

<sup>1</sup> See Administration of Chatham Dockyard in chapter 2

<sup>2</sup> See Apprentices (Roll of Honour) in chapter 4

<sup>3</sup> See next page for career of J A Yates

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### **Constructive Managers at Chatham Yard**

(formerly titled Chief Constructors)

1906/1907 J BLACK

The title was changed from Chief Constructor to Constructive Manager during his term of office.

1907/1915 F B OLLIS

Chief Constructor Pembroke 1906/7

1915/1918 E MAGGINES, CBE, MVO

Chief Constructor Pembroke 1912/1915

1918/1927 F PALMER, CBE

1927/1928 C E GOODYEAR, OBE

1928/1930 A W CLUETT, OBE

1930/1945 J F WALKER, CBE

1945/1947 G HUDSON, MBE

1947/1953 J E P MOON

1953/1958 A T LEMMON

1958/1961 D W SMITHERS, CB

Appointed Director of Dockyards 1961/67

*Production Department formed 4th September 1961*

1961/1962 F W MATTHEWS. Chief Constructor

1962 C L OLDRIDGE. Chief Constructor.

### **The Career of J A Yates**

The career of a successful shipwright, James A Yates, Chief Constructor at Chatham from 1893/1895, was described in *Mariners Mirror* Vol 48 No 4, November 1962.

Yates was born in 1852 and from 1863/66 he was at the Royal Hospital School, Greenwich. He entered Portsmouth Yard as a shipwright apprentice securing second place on the entry list.

In 1871 Yates was selected as one of three for the Royal School of Naval Architecture and Marine Engineering. He headed the list of those passing out of the Royal Naval College, Greenwich in 1874, (the School was transferred to Greenwich in 1873), and served for about a year as draughtsman and assistant Foreman at Portsmouth Yard.

In 1875 he was appointed a supernumerary draughtsman at Admiralty. He investigated

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

the stability of the **Inflexible** under J G Wildish, and prepared a curve of stability for various conditions of the cork protection at the unarmoured end of this ship.

After a competitive examination in November 1878, he was appointed Foreman at Pembroke Yard. He was in charge of the building of the **Majestic**, one of the earlier ships of mild steel in place of wrought iron. Yates was appointed Assistant Constructor, Pembroke in 1882.

In January 1884 he succeeded J G Wildish as overseer in charge of the building of **Benbow** at the Thames Iron Works. The **Benbow** was launched into the mouth of the River Lea in 1885.

From 1886/1892, Yates was a Constructor at Chatham and Devonport Dockyards. Yates was followed at Chatham in 1888 by H Cock, transferred from Devonport to Chatham. Yates was appointed Chief Constructor, Chatham in 1893 and built the **Magnificent** in one year. He served from 1895 to 1902 at Portsmouth and from 1902 to 1906 was Civil Assistant at Chatham.

By Fisher's 1904 Scheme:

*. . there should be more new construction given out to contract and fewer men in the Dockyards, which should be confined to repairs.*

In 1906, Yates was appointed Senior Constructor Officer in charge of the Glasgow and Barrow District (16 Battleships were launched at private yards in Glasgow, Barrow and Newcastle districts between 1905 and 1912).

Yates retired in 1912, but was recalled in 1916 for special duties in connection with shipbuilding during the Great War. He retired again in 1918.

### **Titles and Duties of the Constructive Department**

Through the history of the Yard up to the reorganisation in the late 1950's the most important officer in the Dockyard, apart from the Superintendent and his Deputy, had always been the Master Shipwright. His title was changed in 1875 from Master Shipwright or Master Builder to Chief Constructor; that of his assistant to Constructor. After 1905 his title was Constructive Manager, later changed to Manager, Constructive Department.

Before the last reorganisation of the Yard about 1958 the responsibilities and duties of the Manager, Constructive Department were:

1. Adviser to the Admiral Superintendent on all Constructive matters.
2. Coordinator of all Dockyard work in connection with the construction, re-construction or repair of ships and vessels.
3. Docking and slipping programmes.
4. Launching of new vessels.
5. Stability of Ships.
6. Anchors and cables.
7. Timber conversions.
8. Control of Boatswain of the Yard.

The Managers and Heads of Department were individually responsible to the Superintendent each carrying out their own section of the work. Apart from the period when the post of Civil Assistant was filled at Chatham, the Constructive Manager was responsible for co-ordinating their efforts and was regarded as their leader.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### Master Shipwrights at Portsmouth, Plymouth and Pembroke Yards

#### ROYAL DOCKYARD, PORTSMOUTH

List of Master Shipwrights, Master Shipwright and Engineer,  
Chief Constructors and Managers of Constructive Department.

#### *Master Shipwrights*

Henry Huttest (not MS) in	1537
Isaac Hatch	
Edward Boate.* First MS stationed at Portsmouth	1638
Thomas Eastwood, Assistant MS only abt	1649
Sir John Tippetts * (reappointed 1660)	1650/1653
Sir Anthony Dean (Deane?)	1668/1672
Daniel Furzer	1685 (?)
Isaac Betts	1683/89
William Stigant (dismissed for building ship contrary to instructions)	1689/92
William Bagwell	1695
Elias Wass	1698
Thomas Podd	1702
Richard Stacey	1709 to Deptford
John Naish	1715
Joseph Allin	1726 to Deptford
Pierson Lock (formerly at Plymouth)	1742 Died
Edward Allin	1755 to Chatham
Thomas Bucknell	1762
Edward Hunt	1772
Nicholas Phillips	1778
George White	1779
Edward Tippet	1793
Henry Peake	1799
Nicholas Diddams	1802
John Nolloth	1823
John Peake	1832
Richard Blake	1835
John Fincham	1844
Richard Abethell	1852
William Moody	(Acting - March) 1861
Henry Cradock	July 1861

#### *Master Shipwright & Engineer*

William B Robinson	1869
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*\*1650 Ed Boate late MS Portsmouth @ 2/- a day & £40 pa for 1½ years ending last March 1650 £114 15s 0d and for exchequer fee 1/- a day £27 7s 6d.*

*Jno Tippetts late AMS Portsmouth last December 1648 to 18 April 1650 £26 0s 11d and MS in place of Ed Boate for 62 days of Midds qr 1650 and Mich qr follow, in all £60 7s 1d. Frank Lucas AMS Ports vice Tippetts for 1/4 year & 40 days end last Sept 1650 £7 3s 10d (extraordinary salary of £25 pa and one to him for one quarter of year and 10 daies ended last of Sept 1650 £7 3s 10d).*

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### ROYAL DOCKYARD, PORTSMOUTH (continued)

#### *Chief Constructor*

William B Robinson	1875
William Owen	1881
Henry Deadman	1886
Lewis G Davies	1892
James A Yates	1895
William H Gard, MVO	1902
Thomas Mitchell	1904

#### *Manager Constructive Department*

Thomas Mitchell, CVO. Knighted 1907	1906
John Apsey, CBE	1907
George E Suter, MVO, OBE	1919
John C Joughin, OBE	1930

### ROYAL DOCKYARD, PLYMOUTH

#### *Master Shipwrights from first appointment to 1800*

Prior to 1691 the Master Shipwright and workmen were borne on board a ship fitted for their reception. In 1693 the Yard was completed.

1690/1698	Elias Wass	From AMS Portsmouth to Portsmouth
1698/1702	Thomas Podd	From Harwich to Portsmouth
1702/1705	Benjamin Rosewell	From Harwich to Chatham
1705/1711	John Lock	From Harwich to dismissal 1711
1711/1720	John Phillips	From Kinsale to Decease 1720
1720/1722	Israel Pownoll	From Asst Chatham to Decease 1722
1722/1726	William Rosewell	From Asst Dept ford to Decease 1726
1726/1726	Jos Allen	From Asst Deptford to Portsmouth
1726/1742	Peirson Lock	From Asst Portsmouth to Portsmouth
1742/1746	Thomas Fellows	From Asst Portsmouth to Woolwich
1746/1750	Benjamin Slade	From Asst Deptford to Decease 1750
1750/1752	Thomas Slade	From Woolwich to Deptford
1752/1755	John Lock	From Asst Portsmouth to Chatham
1755/1762	Thomas Bucknell	From Asst Portsmouth to Portsmouth
1762/1774	Israel Pownoll	From Woolwich to Chatham
1775/1784	John Henslow	From Asst Surveyor to Surveyor
1784/1793	Thomas Pollard	From Sheerness to Chatham
1793/1795	Edward Sison	From Sheerness to Chatham
1795/1802	John Marshall	From Sheerness to Dismissal
1802/1813	Joseph Tucker	From AMS Plymouth
1813/1815	T Roberts	From AMS Plymouth
1844	William Edye	Retired 1859

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### ROYAL DOCKYARD, PEMBROKE

#### *Master Shipwrights*

1814/1830	T Roberts
1830/1833	James Peake
1833/1837	T F Hawkes
1837/1844	W Edye
Feb 1844 to Oct 1844	F J Laire
1844/1852	Richard Abethell
1852/1853/	W M Rice
1853 Apr/Oct	Oliver W Lang
1859/1862	Henry Cradock
1862/1869	John Inman Fincham
1869/1872	Robert P Saunders

#### *Chief Constructors*

1872/1879	Francis Martin
1879/1883	E C Warren
1883/1895	John Charles Froyne, RCNC
1895/1902	Henry Cock, MVO, RCNC
1902/1905	A E Richards, RCNC
1906/1907	F H Ollis, RCNC
1907/1912	Henry Pledge, RCNC
1912	H J Maginness, MVO, RCNC
1912/1915	J D Milton, RCNC
1922	A M McDermaid

### **Assistant Master Shipwrights (AMS)**

Subordinate to the Master Shipwrights were the Assistant Master Shipwrights. Their duties were defined:

*. . . for attending daily at Chatham for the direction of shipwrights and caulkers, etc in the absence and presence of the Master Shipwright.*

Master Shipwrights were promoted from their Assistants who were in turn advanced from the posts of Master Caulker, Master Boatbuilder and Master Mastmaker. These posts in turn were filled by Dockyard shipwrights and Carpenters of HM Ships. The avenue of promotion for the latter appears to have been closed in the 19th century when evidence of academic attainment was needed; promotion was then mainly restricted to the Foreman of Shipwrights. The establishment of the School of Naval Architecture in 1811 was the first step in the blocking of the promotion in the Yards of the Carpenters of HM Ships.

In the period 1579/80, Edward Bright was the only AMS and was paid £20 per year. Then followed Edward Erlinge and Richard Chapman who received £10 per year each, together with their pay as shipwrights. The former served at Chatham until 1595 while the latter was appointed Master Shipwright and attached to Deptford Yard in 1587. From 1595 to 1601 Anthony Clothworthie held the post of AMS at Chatham. According to his autobiography Phineas Pett was appointed AMS in the room of Thomas Bodman in 1602. From 1602 to 1615, the name, William Pickas, appears in the Declared Accounts as AMS with a fee of £10 per year.

By 1615 there were four AMS's in the Royal Yards, Henry Goddard, John May, John Asplin and Peter Pett. In an extract from the directions to the Commissioners of 1618 it was pointed out:

*There are assistants to the Master Shipwright lately added to the other two but chosen out of such as before were ordinarily continued in the works at Chatham by reason that one of the other two, Peter Pett, is mostly employed purveying timber and the other (Asplin) grown old.*



## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

The Commissioners of the Navy (1618/1628) reduced the number of Assistants in all Yards to two. During the latter part of this Commission, Henry Goddard and Edward Boate were AMS's paid £20 per year each and shipwright's pay 2s a day with lodging allowance of 5s 5d a quarter. The former became Master Shipwright at Chatham in 1626 and was succeeded by Nathaniel Apslyn, Carpenter of the Red Lion, who was recommended for the post by Phineas Pett. Apslyn assisted with the rebuilding of the Lyon at Chatham in 1640 but received no further promotion. Boate became Master Shipwright at Chatham in 1629.

In 1626 when John May asked to be restored to his position as AMS, Phineas Pett certified that John May, Mayor of Rochester, was well skilled in the art of shipbuilding having been apprenticed to Matthew Baker, Master Shipwright, in the time of Queen Elizabeth and King James. By warrant from the Duke of Buckingham the petitioner was readmitted to his place of Assistant in 1628 but the officers of the Navy discharged him again. May again appealed to the Duke declaring that he had spent 47 years in the King's service; he was reinstated following the promotion of Edward Boate. In the Declared Accounts of 1630 there is an entry:

*John May for 286 days, £28 12s and for his attendance four tides at 7d a tide, 2s 4d; Nath Apslyn 275 days, £27 10s, and for extraordinary pains, £20.*

From 1643 to 1652 Joseph Pett, an ex-ship's Carpenter, was AMS at Chatham, replacing Nathaniel Apslyn. In the Declared Accounts of 1648 appears:

*Lord Admiral Warwick to the Commissioners of the Navy  
Warrant to assign a bill for £10 on the Treasury of the Navy as a gratuity to Mr Joseph Pett, Assistant at Chatham. Reward for care in part building the Dragon frigate in the summer of 1647 according to our custom.*

Pett left the service in 1652.

Joseph Pett was followed by Phineas Pett and Robert Eason. The Master Shipwright, John Taylor, had asked for an additional Assistant owing to the extra work occasioned by the First Dutch War. This Pett was the posthumous son of Captain John Pett who married Katherine Yardley and was in command of the **Lion Whelp** sloop when she was lost with all hands in 1628. Phineas was first mentioned in September 1647 when he was appointed purser of the **Phoenix** frigate then building at Woolwich Yard. In April 1649 he was transferred to the same position in the **Resolution**, formerly **Prince Royal**, which sailed with Blake's Fleet to the Straits in 1652. He left her in November 1652 when he was selected as Assistant to John Taylor.

Pett seems to have been First Assistant and was paid £70 per year. Robert Eason, probably the shipwright mentioned in the Dockyard Enquiry of 1651, was paid £20 and shipwright's pay. Phineas Pett petitioned to succeed Taylor as Master Shipwright at the Restoration, but another Pett of the same christian name was appointed to this post, who later became the Resident Commissioner at Chatham. Phineas Pett was suspended on 23 August 1660 by the Navy Board for . . . having in his youth spoken disrespectfully of Charles II and his mother. He appealed unsuccessfully for the removal of the suspension and he seems to have been engaged for the next four years in private shipbuilding in one of the Thames Yards in which the Petts had an interest. In August 1665 he was sent to Scotland by the Navy Board to obtain timber suitable for shipbuilding. In 1671 he secured the appointment of Master Caulker at Chatham and a year later was appointed AMS at Woolwich where he finished his career as Master Shipwright.

One Assistant appointed after the Restoration, John Lawrence, is mentioned in the Section of the Development of the Yard, in connection with the lease of land on which

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

two docks were built in the period 1685/6. Lawrence had been Carpenter of the **Royal Charles** and was given the post of Assistant at Chatham in 1664. In 1670 he petitioned the Navy Commissioners:

*I beg your recommendation to His Royal Highness as fit for the post of Master Shipwright at the new Yard about to be built at Greenhithe. I have been Assistant to the MS at Chatham for nearly eight years and all similar Assistants have been preferred except myself.*

The new Yard did not materialise but Lawrence obtained the Master Shipwright's post at Sheerness in 1678 following Thomas Shish, appointed to Woolwich. On the death of the latter in 1685, Lawrence was transferred to Woolwich as Master Shipwright. Whilst he held this post Pepys reported as to his suitability for the post of Commissioner of the Navy:

*He (Lawrence) has never built a ship in his life but the little Victory which he rebuilt at great charge and when done was fit for nothing but a fire ship . . . a low spirited slow and gouty man . . . illiterate and supine to the last degree.*

It has already been pointed out that Pepys was anxious that Anthony Deane should get the post and denigrated all rivals. Lawrence was superannuated from the service at £100 per year from 3 November 1697. Three years earlier he had sold the remainder of the lease of land in Chatham Yard to the Navy. Lawrence was succeeded as Assistant by Robert Lee, the Master Caulker at Chatham.

In the Estimates of 1664 the charge of the AMS at Chatham was £70 per year. The pay of the Assistants in 1684 is shown as £70 for the First and £50 for the Second Assistant. Each Assistant was allowed £10 for house rent. In 1681 the Navy Board had proposed:

*The house of the Clerk of Comptrol be used by the First Assistant on account of night tide work. He lives at present at his Majesty's house near Hill House.*

(The office of the Clerk of Comptrol was abolished from 1679 to 1686.)

From 1695 until the salary revision of 1808 the pay of the two Assistants was £100 each per year. By the Pay revision of 1808 the salary of the Assistants was raised to £400 per year, but perquisites such as apprentices were abolished.

Robert Lee was promoted Master Shipwright at Chatham in 1680 and his post as Assistant was taken by Daniel Furzer. As already mentioned, his career terminated with the holding of the office of Surveyor of the Navy.

In 1683 a second AMS was appointed, Phineas Pett, the son of Sir Phineas Pett. This Pett was apprenticed to his father in the period 1665/1672. He was then borne on the Yard books as a shipwright and given an apprentice, Benjamin Rosewell, who became Master Shipwright in 1705. In 1686 Pepys reported upon Phineas Pett, AMS at Chatham:

*. . . is one who loves his ease, as having been ever used to it, not knowing what it is to work or take pains . . . bred always in the King's service within doors and very debauched.*

It is probable that Phineas had to leave the service when his father, the Resident Commissioner, was dismissed in 1689.

In 1685 Furzer was appointed Master Shipwright at Sheerness and his place at Chatham was taken by Edward Dummer. In 1689 Dummer was appointed Assistant to Sir John Tippetts, Surveyor of the Navy. From 1692 to 1698 Dummer held the office of Surveyor

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

and is regarded as the founder of Plymouth Dockyard. When AMS at Chatham, Dummer was maligned by a report of Pepys:

*An ingenious young man, but rarely to have handled a tool in his life. A mere draughtsman.*

A rather poor assessment of one of the most brilliant Surveyors of the Navy.

Phineas Pett who left in April 1689 was followed as Second AMS by Elias Wass. Wass was promoted AMS at Portsmouth in the September of the same year and in January 1689/90 he was appointed the first Master Shipwright at Plymouth Yard.

Dummer was followed by William Bagwell. Bagwells wife had been one of Pepys paramours and had been rewarded by him in securing her husbands advancement as Carpenter in the Navy. In 1677 Bagwell was appointed overseer of the **Northumberland**, one of the Third-rates of the 1677 programme built at Bristol. Prior to his appointment to Chatham, Bagwell had been Carpenter in the **Royal Prince** and one of Pepys last acts before resigning as Secretary to the Admiralty had been to recommend Bagwell for the post of First Assistant at Chatham. Bagwell ended his career as Master Shipwright at Portsmouth.

Robert Shortis, Carpenter of the **St Andrew**, held the posts of Master Caulker and Assistant Master Shipwright in the period 1690 to 1695. His career has already been given.

A letter dated 3 March 1693/4 to Sir Edward Gregory from the Secretary of the Admiralty concludes with: . .

*three warrants for Mr Bagwell, Mr Shortiss, Mr Kirke . . . I desire you cause them to be delivered . . . after they have taken the oaths and test . . .*

Bagwell was then Master Shipwright at Sheerness under the control of the Chatham Commissioner; Shortis was the First AMS at Chatham and Thomas Kirk, ex-Carpenter of the **Royal Sovereign** had been appointed Second AMS at Chatham in 1692.

In March 1695, Shortis was appointed Master Shipwright at Harwich and was succeeded as First AMS at Chatham by William Lee, the Second Assistant who had come to Chatham from Portsmouth the previous year. John Lock and then Benjamin Rosewell followed Lee. Lee, the son of Robert Lee, the Master Shipwright at Chatham, rose to become Surveyor of the Navy in 1706 co-jointly with Daniel Furzer after holding the appointments of Master Shipwright at Sheerness and Woolwich. Rosewell finished his career as Master Shipwright at Chatham.

The holder of the post of Second Assistant after Rosewell was the famous Jacob Acworth. Before his first Yard appointment as Master Mastmaker at Chatham he had been the Carpenter of the **Swiftsure**. In the Letters from Admiralty appears one dated 10 January 1698/9 which reads:

*Warrant for Jacob Acworth to be Master Mastmaker at Chatham . . . which I desire you cause to be delivered . . . after . . . have taken the Oaths and Tests required by law*

In 1699 he was appointed Second Assistant and served in turn as Master Shipwright at Harwich, Sheerness and Woolwich. In 1714 Acworth was appointed Assistant to the Surveyor of the Navy at a salary of £300 a year. He was Surveyor from 1714 to 1749. He could not walk towards the end of his career and in effect the Joint Surveyor, Joseph Allin, appointed in 1746, did the work of the post. His wife, Dame Elizabeth Acworth,

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

daughter of Robert Sliter, at one time the Master Ropemaker at Chatham Yard, was granted a pension of £300 a year in 1749.

When Acworth was promoted to Harwich in 1705, his place was filled by Paul Stigant, ex-Carpenter of the **Royal Sovereign**. He was buried in St Margaret's Church, Rochester and a tablet on the wall of the north gallery bears the inscription:

*Near this place lies the body of Paul Stigant. He served ye crown in quality of his Mas Carpenter of several ships and Builder's Assistant of his Mas Yard at Chatham and his Mas Builder at Port Mahon, Harwich and Sheerness, in which last he died 15th October 1717 aet 58 . . .*

John Hollond who was Second Assistant at Chatham from 1732 to 1738 and First Assistant from 1738 to 1741 successively held the posts of Master Shipwright at Sheerness, Woolwich and Deptford Yards.

Sir Henry Peake, Surveyor of the Navy from 1806 to 1822, held the post of Second Assistant at Chatham from 1772 to 1773 and as First Assistant from 1773 to 1779. He was then promoted Master Shipwright at Sheerness.

After 1752 the Master Caulker carried an additional title, Third Assistant Master Ship-wright . This officer was later known as the Third Assistant, but the post was lost in the economies effected after the conclusion of the French Wars.

In 1827, the Assistant at Chatham, John Weekes, was awarded the Arts and Commerce Medallion by the Society Insured of London for a method of securing dead eyes.

In the economies made in 1869 the post of Second Assistant at Chatham, worth £400 per year was abolished. One of the Foremen of the Yard, Mr Penny, was made a Senior Foreman with an addition of £50 to his salary and carried out the duties of the post.<sup>1</sup>

In 1875 the Master Shipwright was designated Chief Constructor, and his Assistant, Constructor. The salary of the Constructor was raised from £400 to £450 per year.

In 1880 steps were taken to change the training and promotion of Dockyard officers and as a consequence the Royal Corps of Naval Constructors was established in 1883.<sup>2</sup> The normal condition of entry into the Corps was the successful passing of the three year course in Naval Architecture at the Royal Naval College, Greenwich. If the student obtained a First Class pass, he became a Second Class Assistant Constructor; a Second Class pass, a Third Class AC; and Third Class pass, a Draughtsman without admission to the Corps.

Foremen of the Yard under the age of 50 who had not followed the course of training either at the Royal School of Naval Architecture & Marine Engineering at South Kensington or after 1873 at the Royal Naval College, Greenwich, were required to pass a qualifying test before the Director of Naval Construction before admission to the Corps as Second Class Assistant Constructors. Thus the grade of Assistant Constructor was interposed between that of the Constructor and the Foreman.

1 The South Eastern Gazette of 2nd December 1882 reported, "It is intended in consequence of Chatham being made Dockyard of the first class to appoint a second Constructor there on the retirement of Mr Penny, the Senior Foreman of the Yard" Mr Penny with the rank of Assistant Constructor was superannuated in 1884 and was succeeded by Philip Watts (Sir Philip Watts DNC 1902/12) According to the local directory Mr Penny lived at No 4 Terrace Chatham Dockyard

2 See Apprentices chapter 4

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

By the last two decades of the 19th century there were a large number of officers of the Constructive Department working in Chatham Yard. The Naval Estimates for 1893/4 allowed for two Constructors, 1 First Class, 2 Second Class and 2 Third Class Assistant Constructors and 8 Foremen of the Yard.

Among these Constructors were H Deadman promoted in 1886 to Chief Constructor Portsmouth; J A Yates, in 1893, Chief Constructor Chatham; H Cock, in 1895, Chief Constructor Pembroke; and W H Gard, in 1897, Chief Constructor Malta.

As mentioned in the section on Electrical Engineering in the Yard some of the Assistant Constructors were given training in this branch of Engineering in order to be able to supervise the work which was carried out by ship fitters until the Electrical Department was formed in 1903.

By 1890 the salaries of the Officers of the Corps were:

Chief Constructor	£700 x 25 to £850	and a residence
Constructor	£400 x 20 to £550	and a residence
First Class Assistant Constructor	£250 x 15 to £300	
Second Class Assistant Constructor	£160 x 12 to £240	
Third Class Assistant Constructor	£110 x 10 to £150	

In 1905 the Chief Constructor, formerly the Master Shipwright, was given the title of Manager and the title Chief constructor was given to his Senior Assistant.

By 1913 the salary of the Manager, Constructive Department, was £850 x 50 to £1,000 and residence, a year.

The salaries in 1969 were:

Assistant Director of Naval Construction)	
Manager of Constructive Department )	£4,830 to £5,330
Production Manager )	
Planning Manager )	
Chief Constructor	£4,045 to £4,620
Constructor	£2,717 to £3,891
Assistant Constructor	£1,303 to £1,916

During the period covered by this work a limited number of Senior Foremen in the Constructive Department were, especially during the Second World War, upgraded to Constructor rank.

Up to the reorganisation of the Yard in the late 1950's the division of supervision for the officers of the constructive Department was roughly as follows:

The Chief Constructor was responsible for new construction, Drawing Office and general labour problems.

The Constructors and Assistant Constructors supervised new construction and refitting work and the Drawing Office and Mould Loft.

Assistant Constructors on their first appointment to a Yard carried out duties similar to those of the Foreman of the Yard.

The Senior Foreman dealt with all shop work, for all trades; and one dealt with the personnel of the Department.

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### Assistant Master Shipwrights

1579/80	Edward Bright		
1581/87	Richard Chapman		
1581/95	Edward Erlinge		
1595/01	Anthony Clothworthie		
1602/05	Phineas Pett		
1602/15	William Pickas		
1615/26	Henry Goddard		
1615/18	John May		
1618/29	Edward Boate		
1626/42	Nathaniel Apslyn		
1629/30	John May		
1643/52	Joseph Pett		
1653/60	Phineas Pett		
1653/63	Robert Eason		
1660/64	Robert Castle		
1664/78	Joseph Lawrence		to Master Shipwright Sheerness
1678/89	Robert Lee		to Master Shipwright Sheerness
1680/85	Daniel Furzer	1st AMS	to Master Shipwright Sheerness
1686/89	Edward Dummer		1st AMS Assistant to Surveyor of Navy
1689/94	William Bagwell		1st AMS to Master Shipwright Sheerness
1694/95	Robert Shortis	1st AMS	to Master Shipwright Harwich
1695/99	William Lee	1st AMS	to Master Shipwright Sheerness
1699/01	Benjamin Rosewell	1st AMS	to Master Shipwright Harwich
1702/20	Israel Pownoll	1st AMS	to Master Shipwright Plymouth
1720/38	William Shortis <sup>1</sup>	1st AMS	Died
1738/41	John Holland	1st AMS	to Master Shipwright Sheerness
1741/44	Thomas Fearn	1st AMS	to Master Shipwright Kinsale
1744/51	Phillip Gilbert	1st AMS	
1751/53	William Morland	1st AMS	to Master Shipwright Sheerness
1753/55	Israel Pownoll	1st AMS	to Master Shipwright Sheerness
1755	Joseph Harris	1st AMS	1st AMS Deptford
1755/63	Stephen Bingle	1st AMS	Died
1764/65	William Wallace	1st AMS	1st AMS Deptford
1765/72	Nicholas Phillips	1st AMS	to Master Shipwright Sheerness
1772/73	Thomas Mitchell	1st AMS	1st AMS Deptford
1773/79	Henry Peake	1st AMS	to Master Shipwright Sheerness
1779/81	Edward Mackie	1st AMS	to Master Shipwright Harwich
1781/85	John Nelson	1st AMS	to Master Shipwright Sheerness
1785/90	Edward Sison	1st AMS	to Master Shipwright Sheerness
1790/95	Thomas Mitchell	1st AMS	to Master Shipwright Sheerness
1795/97	Anthony Manley	1st AMS	Died
1797/22	Phillip Hellyer <sup>2</sup>	1st AMS	

1 William Shortis Foreman of Shipwrights Chatham was appointed Master Caulker at Woolwich in 1716

2 Died in 1825 and buried in Gillingham Churchyard

## CONSTRUCTIVE DEPARTMENT (MASTER SHIPWRIGHTS)

### Assistant Master Shipwrights (continued)

1822/28	John Weekes <sup>1</sup>	1st AMS
1830/32	J F Hawkes	1st AMS Pembroke
1832/34	William Morgan <sup>2</sup>	1st AMS
1834/38	John Moore	1st AMS
1838/44	J F Laire <sup>3</sup>	1st AMS Pembroke
1844	O W Lang	1st AMS
1847	John Moore	1st AMS
1849/59	J I Fincham <sup>4</sup>	1st AMS
1859/64	Alex Moore	1st AMS to Master Shipwright Devonport
1860/69	William Hutchens	(after retirement post was unfilled)
1865/70	Robert Dawson	Superannuated 1870, £320 pa
1870/78	E C Warren	(Titled Constructor after 1875)
1878	G H Stainer	

### Second Assistant Master Shipwrights

1680/89	Phineas Pett	Left service
1689	Elias Wass	To AMS Portsmouth
1690/92	Robert Shortis	To Master Caulker Chatham
1692/4	Thomas Kirk	
1694/95	William Lee	1st AMS Chatham
1695	John Lock	
1695/99	Benjamin Rosewell	1st AMS Chatham
1699/1705	Jacob Acworth	Master Shipwright Harwich
1705/08	Paul Stigant	1st AMS Portsmouth
1709/11	John Ward	AMS Deptford
1711/17	William Rosewell	AMS Deptford
1717/20	William Shortis	1st AMS Chatham
1720/26	Anthony Bryant <sup>5</sup>	AMS Deptford
1726	John Pool	2nd AMS Portsmouth
1726/32	Jeremiah Rosewell	Master Shipwright Sheerness
1732/38	John Holland	1st AMS Chatham
1738/41	Thomas Fearn	1st AMS Chatham
1741/51	William Morland	1st AMS Chatham
1751/52	Edward Allin	Master Shipwright Sheerness
1752/52	Israel Pownoll	1st AMS Chatham
1753/55	Stephen Bingle	1st AMS Chatham
1755/64	William Wallace	1st AMS Chatham
1764/65	Nicholas Phillips	1st AMS Chatham

1 Wife buried in Gillingham Churchyard

2 One of the first Students at First School of Naval Architecture

3 One of the first Students at First School of Naval Architecture

4 See Apprentices chapter 4

Married Mary Ruffin (nee Sliter) daughter of Robert Sliter Master Ropemaker at Chatham

## CONSTRUCTIVE DEPARTMENT

### Second Assistant Master Shipwrights (continued)

1765/72	Thomas Mitchell	1st AMS Chatham
1772/73	Henry Peake	1st AMS Chatham
1773/85	William Paine	Superannuated
1785	Edward Sison	1st AMS Chatham
1785/86	Edward Harriot (Harris)	Died
1786/89	James Dann	1st AMS Deptford
1789/90	Thomas Mitchell	1st AMS Chatham
1790/95	Anthony Manley <sup>1</sup>	1st AMS Chatham
1795/97	Philip Hellyer	1st AMS Chatham
1797	William Hunt (Acting)	
1797/98	Nicholas Diddams	2nd AMS Portsmouth
1798/1812	William Hunt	Superannuated
1801	Wm Plucknett	
1812/13	John Nolloth	Assistant to Surveyor of Navy
1813/22	John Weekes	1st AMS Chatham
1822/29	J F Hawkes	1st AMS Chatham

### Master Caulker

In the Accounts from 1622 to 1629 David Buck is named as the Master Caulker at a fee of £10 per year and his pay as a caulker. According to the Christmas Quarter 1622 (Extraordinary Account) he received £7 12s 4d for 731/2 days and two night s work at 2s a day and 2s 61/2d lodging allowance. There were 25 caulkers most of whom received 20d a day whilst their apprentices were paid 8d a day.

In the section on Master Shipwrights mention was made of William Thompson, the Master Caulker, who with the Boatswain and the Chaplain petitioned for an investigation into abuses in Chatham Yard in 1651. Thompson, who was the subject of counter- charges, was with others ordered to be discharged, but this instruction was countermanded.

He had a further escape from dismissal. A letter from the Navy Commissioners to the Admiralty Commissioners dated 29 September 1658 stated:

*Sent a letter from Peter Pett of Chatham of September 28 stating **Happy Entrance** has been set on fire by pitch boat driven on shore on east side of the river, still burning.*

On 7 October 1658 it was ordered that William Thompson, Master Caulker, William Rivers and George Shoosmith, Foremen at Chatham, were to be dismissed for neglect which caused the burning of the **Happy Entrance**. This mishap was attributed to carelessness on the part of workmen in the absence of the officers. In a letter dated 15 October 1658, Pett wrote:

*Have dismissed Thompson, the Master Caulker, cannot find a man suitable to succeed him.*

A fortnight later the Admiralty Commissioners ordered his readmission to the Yard. The burning of this ship led to the promulgation of an order that no Dockyard officer should absent himself without leave from the Commissioner, approved by the Admiralty or Navy Commissioners. This order was to be framed and hung in each Dockyard.

1 Buried in Chatham Churchyard



## CONSTRUCTIVE DEPARTMENT

In the Accounts of 1669 appears:

*Daniel Bowtell, Master Caulker, Chatham, for prest and conduct money for presting caulkers, 17 June 1669, £4.*

Robert Lee was promoted from Master Caulker to Assistant Master Shipwright in 1677 and was succeeded by Robert Clothier, who had been Carpenter of the **Prince**. Lee was mentioned in the Declared Accounts of 1655:

*Robert Lee, shipwright employed on the **Phoenix** when she was taken by the Dutch, for his hard usage during the time of his imprisonment, £2.*

Clothier's warrant was renewed 7 November 1689; his salary was £70 per year. In 1692 he was recommended for HM bounty for officers superannuated having served the Crown since the Restoration as Carpenter of great ships and Master Caulker at Chatham. Clothier was pensioned at the rate of £70 a year from 22 February 1691/2 and died in 1699.

Robert Shortis held the post from 1692 to 1694; he finished his career as Master Shipwright at Chatham Yard.

Shortis was followed by Thomas Kirk ex-Carpenter of the **Sovereign**.

At the beginning of the 18th century the post was held for a short time by John Poulter, promoted from the office of Purveyor. He then left Chatham to take up the post of Assistant Master Shipwright at Woolwich. The warrant for the next Master Caulker, Henry Deal, was dated 20 December 1701; he had to take the Oaths and Tests and pay the King's duty for the stamp. By the Pay Revision of 1695 the salary of the post was £100 per year, the same as the Assistant Master Shipwright. Deal was appointed Porter of the Yard in 1709.<sup>1</sup>

After 1752 the post of Master Caulker was combined with Third Assistant Master Shipwright. Mention has been made in the section on the Clerk of the Checque of Sir John Williams, Surveyor of the Navy, and his son, Clerk of the Checque at Chatham. John Williams, the father, was Master Mastmaker at Sheerness who was transferred to Chatham in 1755 for a short period as Master Caulker and Third Assistant Master Shipwright. He then moved to Portsmouth as Second Assistant and in the period 1762/5, was Master Shipwright at Sheerness. He finished his career as Surveyor of the Navy and was knighted in 1771.

An entry in the Gentleman's Magazine of November 1788 illustrates the linking of Yard employees through marriage.

*Marriage. At Plymouth, Joseph Foot, Esq, Builders Second Assistant at Plymouth Dockyard to Miss Betsey Williams, youngest daughter of the late Mr Williams, Master Mast Maker at the same place, and niece to the late Sir John Williams, Kt, late Surveyor of his Majesty's Navy.*

Williams was followed by George William White, whose warrant was renewed after the accession of George III. He moved to Woolwich but returned at the end of the war to Chatham. There is a memorial in Gillingham Church to White:

*George William White, late Master Caulker of His Majesty's Dockyard at Chatham. He departed life the 17th November 1763. Aged 42.*

<sup>1</sup> The move to a lower paid post can only be explained by the perquisites associated with the post of Porter

## CONSTRUCTIVE DEPARTMENT

In 1799 William Peek held this post; the salary was still £100 a year. His appointment was investigated by the Commission of Fees and Gratuities and it was stated that his ancestors and himself had upwards of 200 years in the shipwright branch in HM Yards. He had three servants, whose earnings produced in 1784, £109 10s 6d out of which he paid £39 for their board.

After the beginning of the 19th century the title Master Caulker seems to have been deleted, the officer was called Third Assistant Master Shipwright. The pay of the Assistant to the Master Shipwright was raised to £400 a year; the Foreman of Caulkers received £250 a year. The pay of Quartermen was £180 and £160 a year according to their class, and of Pro-Quartermen, 7s a day and the benefit of one apprentice.

With the introduction of iron shipbuilding into the Yard the work of the wood caulker became less important. Iron caulking was carried out by skilled labourers.

Mr Bevis retired in 1930 from his post as Inspector of Caulkers at Chatham. The remaining wood caulkers were regraded as shipwrights.

### Master Caulkers at Chatham

1622/30	David Buck	
1644	Morgan Griffin	
1650/60	William Thompson	
1660/68	Daniel Bowtell	
1671	Peter Bronsden	Dismissed
1671/72	Phineas Pett	
1672/78	Robert Lee	To AMS Chatham
1678/92	Robert Clothier	Pensioned at £70 per year
1692/94	Robert Shortis	2nd AMS Chatham
1694/1701	Thomas Kirk	Died
1701	John Poulter (Coulter)	AMS Woolwich
1701/09	Henry Deal (Dale)	Porter, Chatham
1709/35	Henry Leak	
1735/38	Thomas Fearne	2nd AMS Chatham
1738/45	Cheney Marsh	Died
1745/46	John Rosewell	1st AMS Deptford
1746/50	John Ward (Jr)	Ex-Master Caulker, Sheerness
1750/51	Edward Allin	AMS Woolwich
1751/52	Stephen Bingle (Bugle)	AMS Woolwich

### Master Caulker and Third Assistant Master Shipwright

1752/55	Edward Clench	Died
1755	Peter Jope	AMS Plymouth
1755	George William White	AMS Woolwich
1755	John Rosewell	Died
1755	John Williams	2nd AMS Portsmouth
1755/63	George William White	Died
1763/64	Thomas Mitchell	1st AMS Woolwich
1764/73	William Paine	2nd AMS Chatham
1773/79	George Hayes	
1779/89	William Peek	Died
1789/93	Charles Keverne (Kivern)	2nd AMS Plymouth
1793/1801	Thomas Cloeman	

## CONSTRUCTIVE DEPARTMENT

### Third Assistant to Master Shipwright

1801	Thomas Coleman	
1801/08	William Plucknett	Died. Timber Master
1808/10	William Stone	Timber Master
1810/24	S Jones	Timber Master

### The Purveyor

The function of this officer was the selection and provision of timber, principally oak and elm, for the building of ships. This entailed his visiting woods and selecting trees of suitable size and shape to make frames, knees, etc. The timber for masts and yards was usually imported from abroad.

Once the trees were cut, the land carriage of the timber was the duty of the county in which the trees lay, and the justices found the necessary carts, paying the Kings price of five pence a load (c 50 cubic feet) <sup>1</sup> per mile and sometimes more. On occasion the county discharged its service by contract. Only the excess above the Kings price had to be met by the county, but this was often complained of as a heavy burden. During the Commonwealth there is no trace of this system, and the State appears to have paid the whole of the carriage. Purveyance was abolished by an Act of 1656 but reintroduced after the Restoration and lasted until the end of the century. In 1663 the Justices of the Peace for Gloucester were censured for slackness in providing land carriage for timber in the Forest of Dean.

By 14 Car II c 20, carriages and horses might be taken by warrant of the Lord High Admiral or two Principal Officers of the Navy, acting through two Justices of the Peace, for the transport of timber, etc, at 1s a load per mile for timber and 8d a ton per mile for other provisions. Ships and hoys could be pressed for transport, but the exercise of compulsory powers was unpopular and the conversion of timber on the spot led to a great saving of carriage. If sawpits were dug, the Navy Board bore the cost of reinstatement. Conversion at the place where the trees were growing would result, however, in the impressment of sawyers. It should be noted that workmen could be impressed for Dockyard work in peacetime.

The King levied some of the New College timber at Great Horwood in 1667. The village elders asked if they should obey the warrant for carrying the Kings ship-timber or not. The Warden found that the new Act of 1667 . . . required the said carriage of all men without exception or consideration of charters and for some satisfaction allowed 12d per mile.

In his autobiography Phineas Pett wrote:

*14 May 1635. I took leave of his Majesty at Greenwich, with his command to hasten my journey into the north, to provide and prepare the frame and timber and planks and trenails for the great new ship to be built at Woolwich (Sovereign of the Seas 1637) and having despatched all warrants and letters concerning that business and some imprests of money for travelling charges, I took leave at Woolwich and came to Chatham, leaving my son to see all the moulds and other necessaries to be shipped in a Castle (Newcastle) ship, taken up for that purpose . . . then, having marked such trees as were fittest our purpose our workmen were disposed of to their various charges, and began to fell, square, and saw with all expedition we could. That work being settled, my*

<sup>1</sup> Two or three thousand loads would have been required for a third rate.

## CONSTRUCTIVE DEPARTMENT

*son carefully followed that business while I myself attended the Lord Bishop of Durham with my commission and instructions, whom I found wonderfully ready and willing to give all furtherance to us, assisted by other knights and gentlemen, Justices of the Peace in the county; who with all care and diligence took order with the county for the present carriage . . . in a short time as much of the frame was made ready as laded away a great collier belonging to Woodbridge, which was safely landed at Woolwich.*

The easiest method of conveying timber was by water and a Bill was promoted in 1664 to improve the navigation of the River Medway but lack of funds prevented any action. In 1740 a Bill was passed to make the Medway navigable from Forest Row to Mistress Edmonds Wharf in the town of Maidstone. By 1741 the river was opened to Tonbridge and ordnance and timber were sent via the Medway and Thames. Locks were built and barges could be towed from Tonbridge to Maidstone in 10 hours, men, not horses, did the towing.

The Declared Accounts 1575 to 1579 refer to Christopher Baker, Purveyor:

*1577 Christ. Baker, Purveyor, as well as travelling about providing timber and plank and board in Sussex, etc £30 8s 4d.*

His pay was 20d a day.

In the Armada period the Purveyor was James Humphrey, whose pay was 1s a day; he was followed by Walter Portriffe at the same rate of pay.

Richard Merritt, Purveyor in the reign of James I, is mentioned in the autobiography of Phineas Pett. In 1606, Pett received a warrant for the surveying of the forest of Alice Holt in Hampshire and the forest of Shotover near Oxford. He wrote:

*Warrants being granted for the number of trees to be taken in both these places, I substituted my brother Peter, my purveyor in Alice Holt, and one Richard Merritt, purveyor for Shotover.*

The post of Purveyor no doubt had many perquisites and Pett, when acting as Purveyor in 1598 stated:

*All my doings and accounts were thoroughly sifted, but thanks be to God nothing could be proved against me, so that I had all my bills passed quickly.*

Nevertheless the Treasurer of the Navy cut off £20 from Pett's account.

According to the Report of the Commission of 1618, the Purveyor received 3s 4d a day when travelling and 2s 6d a day when at home.

In the Interregnum, George Maplidsen, a shipwright of Linton near Maidstone, acted at times as both private agent and purveyor. Between 1 May 1641 and March 1642 he claimed £1,098 3s 4d worth of oak timber to be delivered to Chatham for which he had not been paid. In 1651 he was acting as purveyor when he surveyed timber and reported on its value and cost of carriage to the Admiralty. In 1651 he offered elm at Cliffe at 25s the load, the water passage to Chatham being only 3s, while elm at Gillingham cost 27s with 1s 6d water transport. 40 oaks at Horsmonden, comprising 45 loads, were offered at 16s a ton with land and water carriage costing 15s a load; at Chiddingstone the oak would cost 10s a ton and transport 20s a load.<sup>1</sup>

<sup>1</sup> See Seventeenth Century Kent by C W Chalkin

## CONSTRUCTIVE DEPARTMENT

There were delays in the 1677 shipbuilding programme at Chatham owing to the lack of suitable supplies of timber in the neighbourhood, particularly of keel pieces. The Commissioner, Sir Richard Beach, sent the Master Shipwright and the Purveyor on an extensive search for timber for keel pieces and frames. Sir Edmund Baron of Gillingham declared that the timber had been purchased earlier by private shipbuilders.

Some timber was delivered into Chatham Yard by contractors at this period. A Navy Board letter of 14 June 1677 stated:

*Melchior Reynolds, shipwright of Chatham, contracted with Commissioner Beach to deliver into Chatham yard between now and 30th September straight oak, average 60 feet in a piece, 300 loads at £2 10s a load, and Compass Timber, 50 feet per piece, 85 loads at 58s per load.*

Benjamin Rosewell, appointed Purveyor in 1689, was given the warrant of Purveyor after the accession of William and Mary, the date of the warrant being 25th August 1691. Four years later he was appointed Second Assistant Master Shipwright at Chatham, and finished his career as Master Shipwright at this Yard.

In 1695 the salaries of the officers were revised and the Purveyors at Chatham, Portsmouth and Plymouth were given £50 per year and travelling expenses; the same salary was paid in 1787. By Navy Board Order of 24 January 1700/1 the Purveyor was allowed one apprentice.

The post of Purveyor was a stepping-stone to the more responsible posts in the Yard. One of the most distinguished holders of the office at Chatham was John Henslow, later Sir John, who was Senior Surveyor of the Navy from 1784 to 1806. After serving an apprenticeship with Thomas Slade, he was appointed quartermaster in 1754. In 1755 he was moved from Deptford to the Navy Office, being appointed draughtsman to Sir Thomas Slade, then Surveyor of the Navy, and designer of the Victory. In 1762 he was appointed Master Boatbuilder at Woolwich and two years later Purveyor at Chatham. He was then moved to Woolwich after being appointed Master Caulker and Second Assistant Master Shipwright at that Yard. After further promotion he was appointed Joint Surveyor of the Navy in 1784 and knighted in 1793.

An idea of the duties of the Purveyor may be gained from an account rendered by William Rann, appointed Purveyor in 1705. The accounts cover the period 1 April to 30 June 1707.

<i>Date</i>	<i>Plan and Business</i>	<i>Days out</i>	<i>Charge</i>
April 2	To several places in Kent & Sussex to view Mr Robt Salmons timber. Returned ye 8th	7	£2 6s 8d
April 10	To Maidstone to order down Mr Peirces keel pieces	1	6s 8d
April 14	To several places in Sussex to view Mr Steph. Fullers timber; returned ye 22nd	9	£3 0s 0d
April 24	To several places in Kent to view Mr Hen. Allards timber. Returned ye 28th	5	£1 13s 4d
May 1	To Maidstone to order down Mr Salmons Compass timber	1	6s 8d
June 24	To Tudeley and Tonbridge to order ye cutting and marking Mr Allard's timber; returned ye 26th	3	£1 0s 0d

## CONSTRUCTIVE DEPARTMENT

At the foot of the account on the previous page was :

*Mr Gregory. I approve of yr making a Bill to the Purveyor of the above services. G St Lo.*  
(Mr Gregory, Clerk of the Checque; George St Lo, the Commissioner.)

The post of Purveyor was abolished in the reforms at the beginning of the 19th century. The Purveyor dealt principally with the supply of relatively small quantities of timber to the Yard. In the section on Contractors, mention has been made of the appearance of timber merchants whose agents replaced the purveyors in this field.

### Purveyors

1575/79	Christopher Baker	
1581/89	James Humphrey	
1592/98	Walter Portriffe	
1603/17	Richard Merritt	
1625	Richard Mundes	
1636	Joseph Pett	
1643	Robert Morecock	
1677/79	Robert Eason	Died
1679/88	Robert Woolet	
1689/95	Benjamin Rosewell	To 2nd AMS Chatham
1696/01	John Poulter	To Master Caulker Chatham
1701/06	Joseph Downes	To AMS Woolwich
1706/08	William Rann	To Purveyor Woolwich
1708/18	Richard Naish	To Purveyor Woolwich
1718/35	Lawrence Sanderson	(Ex-Clerk of Survey, Kinsale) Master Caulker Woolwich
1735/38	Cheney Marsh	Master Caulker Chatham
1738/41	Gabriel Ackworth	(Ex-Carpenter of Adventure) To Purveyor Woolwich
1741/42	William Bateley	To Junior Surveyor of Navy (1755/65)
1742/50	Joseph Harris	To AMS Plymouth
1750/51	Stephen Bingle	To Master Caulker Chatham
1751/57	John Gray	(Ex-Master Mastmaker, Portsmouth)
1757/64	William Paine	Master Caulker and 3rd AMS Woolwich
1764	John Henslow	Master Caulker and 2nd AMS Woolwich
1764/88	William Kettle	Died
1788/95	George Evans	Died
1795/1801	Daniel Cowley	Foreman at Chatham

## CONSTRUCTIVE DEPARTMENT

### Other Officers of the Constructive Department

Details of the Master Mastmakers, Master Boat Builders, Master Smiths and Master Joiners, are given in the appropriate parts of the section on Development; those of Foremen, Quartermen, etc in a separate section, Subordinate Officers and Draughtsmen.

The holders of the post of Master were in many cases promoted to higher offices in the service. <sup>1</sup>

In British Naval Administration in the age of Walpole, Daniel A Baugh gives an example of the promotion ladder touched off by the death of the Master Shipwright at Plymouth in 1722.

<i>Name</i>	<i>From</i>	<i>To</i>
John Rosewell	1st AMS Deptford <sup>2</sup>	MS Plymouth
Joseph Allen	1st AMS Portsmouth	1st AMS Deptford
Peirson Lock	2nd AMS Portsmouth	1st AMS Portsmouth
Thomas Fellows	AMS Woolwich	2nd AMS Portsmouth
John Pool	AMS Plymouth	AMS Woolwich
Wm Richards	Master Mastmaker Portsmouth	AMS Plymouth
Robert Hays	Carpenter <b>Buckingham,</b>	Master Mastmaker Portsmouth
John Hunt	Carpenter <b>Greenwich,</b>	Carpenter <b>Buckingham</b>
Joseph Luck	Carpenter <b>Jamaica,</b> Sloop	Carpenter <b>Greenwich,</b>

<sup>1</sup> After 1822 the titles of Master Mastmaker and Master Boatbuilder were abolished and the supervision was carried out by Foremen

<sup>2</sup> By the middle of the 18th century Deptford had displaced Chatham as the yard with the best prospects. The officers of Deptford were consulted directly by the Navy Board on matters relating to the Dockyard and were regarded as the most capable and experienced in the service.

## CHAPTER 6

### MECHANICAL ENGINEERING

#### Headquarters Staff

Samuel Bentham was appointed Inspector-General of HM Naval Works in 1796<sup>1</sup>. On his staff was W Sheffield, Metal Master, and Samuel Reche, Mechanist. In 1808 Bentham joined the Navy Board with the title of Civil Architect and Engineer. His Mechanist then was Simon Goodrich, who, among other duties, investigated the Chatham Ropery and was responsible for some mechanisation of the rope-making process. He was an extremely versatile man; he approved the drawings of the Chatham Dockyard Chapel.

In 1812 the office of Civil Architect and Engineer was abolished. Outside professional engineers were engaged for consultation, and engineering works contracted out. The Architect, Edward Holl, was retained and Simon Goodrich was appointed Supervising Engineer and Mechanist in 1814 at a salary of £600 a year with headquarters in Portsmouth Yard. Goodrich retired in 1831 when the post lapsed. Owing to Bentham's efforts, Portsmouth Yard had been provided with block and metal mills, etc. Masters of the Wood Mills, Metal Mills and Millwrights had been appointed in 1814.

On the retirement of Goodrich, Thomas Lloyd, an ex-student of the First School of Naval Architecture, was appointed Superintendent of the Wood Mills and Blockmaking machinery at Portsmouth.

In 1835 Peter Ewart was appointed Chief Engineer and Inspector of Machinery at a salary of £650 a year. Lloyd ultimately joined Ewart's staff at Woolwich Yard where the first Steam Factory was completed in 1840.

In 1837 there was the first appointment of a Naval Officer to deal with purely naval problems associated with steamers. Captain (afterwards Admiral) Sir Edward Parry, the Arctic explorer, was appointed Comptroller of Steam Machinery and Packet Department. (The Admiralty had taken over P&O steam packets on cross-channel work.) He was succeeded in 1846 by Captain Alexander Ellice. Thomas Lloyd who had been Ewart's assistant was appointed Chief Engineer of the Navy under Ellice as Comptroller. In 1860 when the title Surveyor of the Navy was altered to Controller of the Navy, Lloyd became Engineer-in-Chief of the Navy. He retired in 1869 and was followed by another civilian, James Wright. In 1887, Wright in turn, was succeeded by Inspector of Machinery, Richard Sennett, the first Naval Officer to hold the post of Engineer-in-Chief.

#### Development of Mechanical Engineering in Chatham Yard

There was a great prejudice against the use of steam engines in all naval establishments at the end of the 18th century. Bentham argued strongly in favour of the introduction of steam power into the Dockyards but Admiralty had doubts. They feared the fire risks and the resentment of the Dockyard workers to the introduction of machinery which would make some of their numbers redundant. One obvious improvement was the replacement of men and horses by steam engines for the pumping of dry docks. This was successfully carried out at Portsmouth Yard.

At Portsmouth Yard Bentham persuaded the Admiralty to introduce block-making machinery and by 1805 the supply of blocks by the contractors was discontinued. Tree-nails

<sup>1</sup> His duties are noted at the beginning of the section on Civil Engineering in chapter 8



## MECHANICAL ENGINEERING

were also made by machinery at Portsmouth. The last Admiralty blockmaker apprentice, Thomas Birch, was entered at Portsmouth Yard in 1945. In that year the craft of blockmaker was absorbed in that of Shipwright.

During Bentham's term of office there was a regular establishment of millwrights into the Yards when the increased employment of machinery occurred. Steam engines at Chatham had been installed and maintained in the Saw Mills, built about 1814, and the Pump House, dated 1827, serving the dry docks. In 1816 Matthew Bacon was appointed Master of the Saw Mills and Superintendent of Machinery at Chatham.

By 1840 the number of steam vessels in the Royal Navy necessitated the provision of a Steam Yard at Woolwich. The capacity became strained and Steam Yards were established at Portsmouth, Keyham and Sheerness, but not at Chatham.

The Steam Factory at Woolwich was started about 1837 and was completed about 1840. Before the completion of the Factory minor repairs to engines had been carried out by the Engineer & Mechanist under the direction of the Master Shipwright. There was a separate establishment of salaried officers and craftsmen in the Steam Department. The Chief Foreman of the Factory and the Chief Boilermaker were appointed at £200 and £160 a year respectively. These salaries were raised to £225 and £180 rising to a maximum of £250 and £200 in 1843. In 1846 Engineering Departments were formed in other Yards.

The Engineering Department at Chatham assumed importance after the closure of Woolwich Yard in 1869 and the transfer of the Steam Reserve to Chatham from Sheerness in 1873. The engine manufacturers whose names are given in the Ship list installed their own engines in warships.

The supervision of this department was carried out by Engineer Officers of the Royal Navy, borne on a ship; in the 20th century HMS **Pembroke**. By 1847, the upper two classes of such officers, the Inspector of Machinery Afloat and the Chief Engineers were appointed by commission, but the Assistant Engineers were appointed by order only.<sup>1</sup> In 1866 a new rank designated Chief Inspector of Machinery was introduced.

The first head of the Engineering Department at Chatham, appointed in 1846, was Alexander Laurie, designated Chief Engineer, and receiving £500 per year. He was responsible for the machinery in the Yard: Saw Mills, Foundry, Ropery, Millwrights Shop, Lead Mills, etc. (The workmen in these sections belonged to the Master Ship-wrights Department.)

In 1847, Millwrights were employed in some departments as single-stationed workers. The Engineer at the Saw Mills was paid 7s a day, the Draughtsman in the Millwrights Shop was paid 5s 9d a day, the Millwright at the Lead Mills was paid 5s a day. The Mill-wrights attending water works, caissons, etc were paid 4s 6d a day for 7 days a week.

In 1858, the Millwright at the spinning machines in the Ropery was borne as a Leading Man and received 7s a day pay. The pay of the millwright<sup>2</sup> in the Yard was 5s 2d a day. By 1873 the scales of day pay for established employees in the Millwrights Shop were: Writers, 6s to 8s; Leading Men, 1st Class, 8s; 2nd class, 7s; Pattern Makers: 1st class, 5s 3d; 2nd class, 5s; Millwrights and Fitters: 1st class, 5s 6d; 2nd class, 5s; Assistant Fitters, 3s 6d; Turners and Machine Men: 1st class, 5s 3d; 2nd class, 5s; Founders: 1st class, 5s 9d; 2nd class, 4s 6d.

Laurie was succeeded in office in 1856 by Thomas Baker (Commissioned Officer), who had been one of the six apprentices of Goodrich, assistant to Samuel Bentham. At the

<sup>1</sup> For the early training of such officers see Apprentices chapter 4

<sup>2</sup> A millwright's shop is shown to the south of the Metal Mills and another at the Saw Mills in the 1858 map.

## MECHANICAL ENGINEERING

Dockyard Enquiry of 1858, Baker stated that he was 50, his salary was £550 per year and he had a house in the Yard.

Before his entry into the Dockyard, Baker had served in **Comet**, the first steam vessel built for the Royal Navy, and a number of other wooden paddle vessels. In 1844, he was the Engineer of Queen Victoria's first steam yacht, **Victoria & Albert**. During the Crimean War he was the head of his department in the Mediterranean and built a factory at Constantinople. For his services in the war he was made a knight of the Legion of Honour and awarded the Order of the Medjidie; after his retirement he was awarded the CB.

Baker made great efforts to build up an efficient department. There was a tendency to upgrade labourers for posts in his department to avoid paying the wages necessary to attract entrants from private industry and he strongly opposed this policy. He tested all entrants from outside the Yard before their engagement and finally after 1878 his efforts secured the recognition of engine fitting as a major trade and the introduction of youngsters into the Yard as fitter and turner apprentices ranking equal with shipwright apprentices. Apprenticeships for trades such as boiler making and founding were also introduced.

In February 1862, William Eames was appointed Assistant to the Chief Engineer of Chatham Yard and borne in **Wellesley**, 72. In 1869, the office of Chief Engineer was abolished, saving £650 a year, and Eames carried out the duties of his ex-chief. The office of Master Shipwright was combined with that of the Chief Engineer from 1869 to 1875. In 1870, Eames was appointed Inspector of Machinery at Chatham, and a year later, Chief Inspector of Machinery. His assistant, James Paterson, was appointed Chief Engineer and Inspector of Machinery at Sheerness in 1872.

In 1875 the Master Shipwright changed his title to Chief Constructor and discarded his duties as Chief Engineer and Storekeeper. The officer in charge of the Engineering Department was termed Chief Engineer, but was considered subordinate to the Chief Constructor. His immediate subordinates were termed First and Second Assistants.

In 1872, the charge of the Ropery had been transferred to the Master Shipwright and Engineer from the Master Attendant; in March 1875, the Ropery was transferred to the Engineering Department. There was some interchange of work performed by the men in the Engineering and Constructive Departments, and distinctions drawn between the work on ships done by shipwrights and ship fitters under the Chief Constructor and that done by engine fitters under the Chief Engineer.

At this period the Engineering organisation of the Navy was beginning to be regularised. The grade of Engine Room Artificer was introduced into the Navy and the selection and training of Engineer Officers was being conducted with greater care and attention.<sup>1</sup>

This was the end of the period when a Naval Engineer was a workman in uniform; after this the manual work was done by Artificers working under the supervision of Naval Officers. On shore, the Fitting<sup>2</sup> and Boiler Shops were erected on the south side of No 1 Basin in the 1870s<sup>3</sup> The more ambitious scheme of building a special factory by the side of the Factory Basin foundered for the lack of financial provision. Apprentices were admitted to the trades of the Engine Fitter (who had replaced the Millwright) and the Ship Fitter, in the period 1878/9.

J A Bedbrook was appointed Assistant to William Eames in 1872 and they were both borne in HMS **Pembroke**. They lived next door to each other in The Terrace. Bedbrook

1 See Apprentices in chapter 4

2 The first Foreman of the Factory was Mr Ord, Foreman of Fitters at Portsmouth, salary £180-£250

3 See section on Development in chapter 1

## MECHANICAL ENGINEERING

took great interest in the activities of St Mary's Church, Chatham, and was superintendent of St Mary's Boys & Girls Sunday Schools. He succeeded Eames in 1881, and held the post of Head of the Engineering Department until 1888, when he was appointed the Fleet Engineer to the **Medusa**.

### 1891 Chief Engineers Department

	Established Men	Hired Men
Boilermakers	6s 8d . .	5s 4d
Boilermakers	7s 6d . .	5s 4d
Braziers & Coppersmiths	6s 4d . .	5s 0d
Fitters	7s 4d . .	5s 4d
Bricklayers	4s 6d	
Skilled Labourers	4s 6d . .	3s 4d
Engine Keepers	4s 6d	
Ordinary Labourers	3s 0d . .	2s 10d
Fitters	7s 0d . .	5s 4d
Founders	6s 4d . .	5s 4d
Hosemakers	4s 6d . .	3s 6d
Skilled Labourers: Boiler-makers' assistants, Fitters' assistants, Coppersmiths' assistants, Founders' assistants	4s 2d . .	3s 6d
Ordinary Labourers	2s 10d	
Patternmakers	6s 6d . .	5s 4d
Ropemakers	4s 6d . .	4s 4d
Spinners (Men)	4s 6d . .	4s 4d

By 1893, the Chief Engineer, W G Littlejohns, who followed Bedbrook had three Assistants, one of whom was in charge of the Drawing Office. "Chatham News" of 24 January 1891 reported a changed in engineering policy, the manufacture of engines in the Yard. Plans and drawings of the engine for the **Forte** were to be prepared. The paper noted that the engines of 9,000 hp were to be supervised by Mr Littlejohns, CE, under whose superintendence the engines of the **Gleaner** and the **Gossamer** were made at Sheerness Yard.

**Minerva**, 2nd class cruiser, laid down in December 1893, was supplied with two inverted three-cylinder triple-expansion engines built in Chatham Yard. The engines were supplied with steam from eight single-ended Scotch Boilers and drove two screws at 19.6 knots natural draught and 20.3 knots, forced draught.

In the Navy Estimates of 1893/4 the pay of the officers in the Civil Engineering Department were:

Chief Engineer	£650
1st Assistant	£500
2nd Assistant	£350
Assistant to CE for charge of DO	£268
Foremen of Engineering Branch (2)	£419
Foreman of Boilermakers	£300
Principal Dockyard Writer	£200
Writers (13)	£1,344
Chief Gunner	£215
Foreman of Ropery	£242

1 After 1906 almost all engines for warships were made by private contractors

## MECHANICAL ENGINEERING

In 1903 the older titles were changed by putting the word Engineer before the Executive title, e.g., Chief Inspector of Machinery became Engineer Rear-Admiral;<sup>1</sup> Inspector of Machinery, Engineer Captain. Many of those appointed subsequently as Head of the Engineering Department have held the rank of Engineer Rear-Admiral. In 1906 there was a change of title from Chief Engineer to Engineering Manager.<sup>2</sup>

A further change in nomenclature occurred as a result of the Selborne Scheme of 1903 which aimed at making the Executive and Engineering Officers indistinguishable, when the new title for the Engineer Officer became: Captain (E), Commander (E), etc. The distinctive purple cloth between the gold stripes of the Engineer was abolished, but was replaced in the 1920s. The purple stripe was removed again in 1956.

The Selborne Scheme stopped the award of Cadetships to Engine Fitter Apprentices. As a result the highest post in the Yard available for the Engine Fitter up to the formation of the Admiralty Engineering Service in 1963 was that of Senior Foreman. After that date opportunities were given for Drawing Office and Technical Grades with the requisite engineering qualifications to join the RN Engineering Service and secure promotion to higher posts in the Admiralty service.<sup>3</sup>

The responsibilities and duties of the Manager, Engineering Department were until after the changes of 1958:

Adviser to the Admiral Superintendent on all engineering matters.

Installation, repair and maintenance of all Dockyard machinery and boilers and their efficient operation.

Maintenance of records of Dockyard machinery and boilers.

Machinery proposals compilation for the Dockyard.

Gunnery equipment and Stores.

Torpedo Tubes and A/S Mortars.

Ropery.

During 1958 a new system of management was started in Chatham Yard and the Departmental system was gradually replaced by a new type of management structure.<sup>4</sup>

The scales of pay in 1969 were:

Assistant Director of Mechanical Engineering	£4,535/£5,200
Superintending Mechanical Engineer	£2,260/£4,000
Mechanical Engineer	£2,481/£3,406
Senior Assistant Mechanical Engineer	£2,225/£2,455
Assistant Mechanical Engineer	£1,633/£1,741

### The Factory

By Modern times the Factory was the largest Engineering Shop in the Dockyard; it had a floor area of 61/2 acres. In 1965, 450 men were employed supervised by a Foreman and seven Inspectors. In the post-Second World War era the Factory specialised in the manufacture of Admiralty Standard Range I Diesel Engines, the propulsion units used in

1 Four of the Engineer students who attended the Chatham Dockyard School became Engineer Rear Admirals. See Roll of Honour in chapter 4 Apprentices

2 The Engineering Manager's Office and Drawing Office were next to the Central Offices just south of No 2 Basin

3 See Apprentices in Chapter 4

4 See Administration in chapter 2

## MECHANICAL ENGINEERING

conventional submarines and some frigates.<sup>1</sup> This type of engine was designed at Chatham and was ultimately manufactured in the Yard and by private contractors. An article in Periscope March 1977, stated that 42 ASRI Diesel Engines had been made at Chatham; all were tested in the Factory and installed in vessels by Chatham staff. As well as the sections dealing with the propulsion of ships there were others specialising in torpedo tubes, aircraft catapults, materials testing, etc. The first application of the gas turbine was in two high speed motor gun boats constructed in 1947. Admiralty carried out further experiments with a view to applying the gas turbine to larger vessels and a unit was installed in the frigate **Hotham** in Chatham Yard in 1950. Gas turbines were brought into service to give a boost to the steam turbines and were also used to get the ship under way at short notice. **Exmouth**, a Blackwood class frigate was equipped at Chatham entirely with gas turbines.

### Officers in charge of the Engineering Department

c 1815/1838	M Bacon	Master Millwright (Master of Sawmills)
1846	Alexander Laurie	Chief Inspector
1856/1869	T P Baker, CB	Chief Inspector of Machinery
1869/1881	Sir William Eames, KCB	Chief Inspector of Machinery
1881/1888	J A Bedbrook	Chief Inspector of Machinery
1888/1890	Alfred Wood, CB	Chief Inspector of Machinery
1890/1904	W G Littlejohns, CB	Chief Inspector of Machinery <sup>2</sup>
1904/1905	G Goodwich	Engineer Commander
1906/1911	C Rudd	Engineer Rear-Admiral
1911/1916	W H Rawlinson	Engineer Captain (Salary £1000 in 1914)
1916/1920	W H Beckett, CB	Engineer Captain
1920/1924	J Mountifield, CBE	Engineer Rear-Admiral
1924/1927	J P Leahy, CB, OBE	Engineer Rear-Admiral
1927/1932	E G Pallot, DSO	Engineer Rear-Admiral
1932/1938	H H Perring, CB	Engineer Rear-Admiral
1938/1941	G B Allen	Engineer Rear-Admiral
1941/1944	C Ellis, CB	Acting Rear-Admiral (E)
1944/1944	P K L Fry	Acting Captain (E)
1944/1946	G B Burt, CB	Engineer Rear Admiral
1946	C Ellis, CB	Acting Rear-Admiral (E)
1949/1951	R G Murray, CB, CBE	Rear-Admiral (E)
1951	G Hearson, OBE	Captain (E)
1958	F A Lowe, DSC	Captain (E)
1960	G A Hewett, DSC, BSc	Captain (E)

### Other Officers of the Engineering Department

1870	W Lynn	Assistant Inspector of Machinery
1871	J Paterson	Assistant Inspector of Machinery
1872	J A Bedbrook	
1879	W G Littlejohns	
1884	R H Andrews	Assistant to Chief Engineer
1890	G G Goodwin	Assistant to CE i/c, Drawing Office
1892	G G Goodwin	Second Assistant Engineer

<sup>1</sup> Diesel engines for main propulsion were not installed in ships larger than frigates.

## MECHANICAL ENGINEERING

2 In 1903 there was a change of title. Chief Inspector of Machinery to Engineer Rear Admiral etc.

### Torpedo Engineer Officers

1896/1898	T J Haddy	Chief Engineer
1891/1901	J Fielder	Fleet Engineer
1901/1904	J E Johnson	Engineer Commander
1904/1907	W J Anderson	Engineer Commander
1907/1910	W V Juniper	Engineer Commander
1910/1914	G H Morris	Engineer Commander
1914/1916	E W Liversidge	Engineer Commander
1916/1919	G H Morris	Acting Engineer Captain
1919/1920	G H Jeffery	Engineer Commander
1920/1923	E Groves	Engineer Commander
1923/1926	F Kelly	Engineer Commander
1926/1928	E C Green, DSO	Engineer Commander
1928/1931	A C Bray	Engineer Commander
1931/1934	L H Smith	Engineer Commander
1934	W J Perrow	Engineer Commander
1934/1937	W T A Jordan	Engineer Commander
1937/1940	P B A Caruana	Commander (E)
1940/1944	D A Smart	Engineer Commander
1944/1945	T E Davies	Engineer Commander
1945	C K Clarke	Ty. Actg. Commander (E)
1945	D A Smart, DSO	Engineer Commander (Retd)

## CHAPTER 7

### ELECTRICAL ENGINEERING

#### Introduction

Electric firing circuits for naval guns powered by primary cells were introduced in 1870. In 1875, the first dynamo to provide power for searchlights, a Wildes belt-driven generator, was installed in HMS **Minotaur**. The searchlights were designed mainly for the detection of torpedo craft at night. In 1885, a number of ships including HMS Inflexible were fitted with dynamos to provide power for searchlights and electric lighting. The Torpedo Officer assumed responsibility for the electrical work on his ship.

The shops and offices of the Yard had originally been lit by candles. Gas works were erected on Rochester Common in 1818 and within a year gas lighting started to replace candle light in the Yard. By May 1881, the Factory was provided with electric lighting, the power being supplied by a 14 hp engine; No 8 Machine Shop was similarly provided in the following year. In 1893, a cable was laid from No 8 Machine Shop to No 7 Dock for the lighting of the dock at night.

The number of companies in England providing electricity for lighting increased rapidly from 1881. In Windsor Road, Gillingham, there can still be seen the New Brompton Power station of the Chatham, Rochester & District Lighting Company which was later taken over by Gillingham Council in 1902. The Power station of the Chatham Electric Light Company in Church Street, Chatham, was burnt down in 1905.

Though gas lighting was improved by the introduction of the gas mantle in 1893 the convenience of the arc and carbon filament lamp rapidly led to their adoption in industry, although attempts were made at Devonport in 1892 to provide gas flares on one of the slips for night work.

The electrical work in the Yards was originally the responsibility of the Director of Naval Construction and was carried out by officers and men of the Constructive Department.

The centre for naval electrical work, for the training of Dockyard Officers and Men in electrical engineering, and for the supply of electrical fittings for the Fleet was Portsmouth Yard. In 1886, it had been proposed that electrical staffs should be established at Chatham, Sheerness and Devonport. Officers and fitters of the Constructive Departments of these Yards were to be sent to Portsmouth for training in electrical work to form the production side of the electrical sections of these three Yards. This was implemented and up to the formation of the Electrical Department at Chatham in 1903, the officers in charge of electrical work were those belonging to the Chief Constructors Department. The work was carried out by ship fitters based on No 8 Machine Shop.

In the Management Training Centre at Chatham Yard there was a generator made in No 8 Machine Shop about 1890. it had a salient-pole type armature, the magnet poles were hollow and were presumably water cooled. When the machine was examined in February 1953 it would still generate.

"Chatham News" reported at intervals the sending of Assistant Constructors to Portsmouth Yard for instruction in electrical work. In 1891 this paper noted that Mr P Palmer, 3rd Class Assistant Constructor at Devonport, was to fill a vacancy in the Chief Constructors Department caused by the appointment of Mr W E E Day, promoted 1st Class Assistant Constructor, as Principal Electrician at Malta. Mr Palmer was to have charge of electrical fittings in ships.

## ELECTRICAL ENGINEERING

The Estimates of 1892/3 included £2,500 for an Electrical Shop in Chatham Yard; this was built next to No 8 Machine Shop.

### The Admiralty Organisation

As mentioned earlier the electrical work in the service was originally the responsibility of the Director of Naval Construction. In September 1901, the Board of Admiralty set up a Committee under Admiral Fane to examine the Department of Naval Construction and this Committee recommended the appointment of a qualified Electrical Engineer at Headquarters. C H Wordingham, who had held the post of Chief Electrical Engineer to Manchester Corporation and who had had charge of London Tramways, was appointed in 1903 to set up the Admiralty Electrical Engineering Section under the control of the Director of Naval Construction. He was given the rank of Superintending Electrical Engineer and a salary of £1,000 a year (non-pensionable).

Wordingham who was President of the Institution of Electrical Engineers in 1917 and 1918 left Admiralty service in 1918 at the age of 52. He was followed by W McClelland as Director of Electrical Engineering, an independent Electrical Department at Admiralty having been formed in March 1918. McClelland had been an assistant of Wordingham at the time of the formation of the electrical section. McClelland retired in 1934 and joined the board of Messrs W T Henley Telegraph Works.

After the reorganisation of the Ship Department of Admiralty in 1958 the Directors of Naval Construction and Electrical Engineering were subordinate to the newly appointed Director General Ships, a post which could be held by an engineer of any specialisation.

Finally after the formation of the Royal Naval Engineering Service the posts of Director of Electrical Engineering and Marine Engineering were replaced by the Director of Engineering who became responsible for both mechanical and electrical engineering to the Director General Ships.

### Directors of Electrical Engineering

1918/1934	W McClelland
1934/1937	A D Constable
1937/1945	Sir James Pringle, KCB
1945/1960	Sir Hamish MacLaren, KBE *
1960/1964	J S Thompson
1964/1967	Rear-Admiral Hughes

#### \* The service career of Sir Hamish MacLaren, KBE

1926	Assistant Electrical Engineer served at D C Trincomalee
1934	Electrical Engineer Admiralty Superintending Electrical Engineer i/c electrical engineering at Singapore
1940	Assistant Director of Electrical Engineering
1945	Director of Electrical Engineering
1946	Awarded CB
1951	Awarded KBE
1954	LLD St Andrews
1960	President Institution of Electrical Engineers.



# ELECTRICAL ENGINEERING

## The Electrical Engineering Department of Chatham Dockyard

In the Section on the Admiralty Organisation it was mentioned that in 1903 the Admiralty Electrical Engineering Section was established under C H Wordingham. Earlier in October 1900, Louis J Steel, a qualified electrical engineer had been appointed Electrician (1903 Electrical Engineer) at Portsmouth Yard. In 1903, Electrical Engineers were appointed at Chatham, Devonport, Pembroke and Sheerness Yards. L Newitt held the first appointment of Electrical Engineer at Chatham. His salary in 1914 was £700 a year. He was provided with a residence in the Yard, a bungalow near Pembroke Gate. He carried the title of Superintending Electrical Engineer in the 1924 Navy List.

Some ship fitter apprentices who entered the Yard in 1902 were transferred to the Electrical Engineering Department in 1903; one of them, Mr Frewen, reached the rank of Superintending Electrical Engineer. From the October 1903 entry examination two electrical fitter apprentices were entered for the first time.

Contrary to practice in private industry the wiremen of the Electrical Department were classed as skilled labourers. In 1959, they were upgraded to the status of Electrical Fitters subject to Trade Union agreement and the passing of a trade test.

In 1910, the regulations for the appointment of Electrical Engineers and of First and Second Assistant Engineers were published. Vacancies for Electrical Engineers were to be filled by selection from the grade of First Assistant; vacancies for First Assistant Electrical Engineers were to be filled by selection from one or other of the following classes: Second Assistant Electrical Engineers, Dockyard employees who had held the Admiralty Scholarship <sup>1</sup> and outside candidates possessing appropriate qualifications. As a rule every second vacancy was to be filled by the appointment of an outside candidate. Appointments for Second Assistant Electrical Engineers were to be made by means of a competitive examination open to Inspectors of Electrical Fitters and First Class Draughtsmen of three years seniority, together with the holders of Admiralty Scholarships in Electrical Engineering.

### Introduction of Electric Power into the Yards

In 1900 the Chief Constructor and the Electrical Assistant at Portsmouth visited several works for consultation on the problem of supplying the whole of the Yards with electric light and power. In 1906, the electric power station at Chatham was erected; it was extended in 1921. In 1928 electric station fitter apprentices were entered in the Yard. <sup>2</sup>

The pay of Electrical Station Staff in 1913 is given below:

Station Supervisor (B class)	45s 6d . . 52s 6d
Mechanic Drivers & Dynamo Attendants	Minimum for hired men, 44s 4d
Assistant Drivers & Dynamo Attendants	29s 2d . . 33s 10d
Switchboard Attendants	36s 2d . . 39s 8d
Leading Stokers	33s 10d . . 37s 4d
Stokers	26s 10d . . 33s 10d
Electrical Fitter (Hired)	38s 0d
Electrical Fitter (Established)	36s 0d

One result of the introduction of electric lighting in the Yard was a reduction in the consumption of coal gas. The invention of the incandescent gas mantle by Welsbach in

1 See chapter on Apprentices

2 See chapter on Apprentices

## **ELECTRICAL ENGINEERING**

1885 had given a great boost to gas lighting. (In the Estimates of 1869/700, £1,400 was allowed for lighting the Yard with gas.)

Gas consumption in the Dockyard, Victualling Yard, Gun Wharf & Chattenden

1905 30<sup>1</sup>/<sub>2</sub> million cubic feet

1906 30<sup>1</sup>/<sub>2</sub> million cubic feet

1907 24<sup>1</sup>/<sub>2</sub> million cubic feet

The consumption remained stationary at a later date at about 6 million cubic feet a year.

In 1960, the Yard ceased to generate its own electric power. A ceremony confirming the complete dependence of the Dockyard electric power supplies on the South Eastern Electricity Board was held in November 1961. The supply of power was then initially drawn from the Grid sub-station at Upnor through 33/11 kV (15 mVA) transformer. Further supplies were added later. The 200 foot high chimney of the Station built in 1906, was demolished in 1963; the rest of the Station was converted for the use of the Yard Service Department.

### **The Work of the Electrical Department**

Initially the work of the Electrical Department was mainly the installation and repair of electrical equipment in the ships and Yard, together with the provision of electric lighting, power and communications in the establishments of the Yard. When submarines were propelled by electric motors a division dealing with secondary batteries was developed on the north side of No 1 Basin. The Electrical Department participated in the design and development of electrical equipment for submarines. later they carried out work on the process of stud welding which reduced the need for drilling through watertight bulkheads for the securing of fittings. The growth of this Department had been accelerated by the progress made in communications, navigational aids, etc, after the 1930s.

From the 1920s the electronic side of the department grew with the development of measures to combat attack by submarines, mines, aircraft and to improve wireless communication and gunnery control.

The names asdic, degaussing and radar became familiar terms during the Second World War. Throughout this war there was gradual progress in electronic engineering and ships entering the Yard for refit were supplied with the latest radar sets, etc.

Mention has been made of No 1 Electrical Shop. The growth of the importance of electrics in the Fleet had resulted in the building of No 2 Electrical Shop and the Radio Centre. The headquarters of the Department and the Drawing Offices were on the first floor of the Central Offices just south of No 2 Basin. On the ground floor of this building were the offices of the Constructive Department.

### **Changes after 1940**

Up to and during the Second World War electrical engineering duties ashore were carried out by civilian Admiralty Electrical Engineers; a practice contrary to that of the Mechanical Engineering Branch where the supervisors were officers of the Engineer Branch of the Royal Navy. There was a slight infiltration during the War into the shore establishments of Navy Officers who were engaged principally on the supervision of the fitting and repair of radio and radar equipment.

In 1946, the Electrical Branch of the Royal Navy was formed and officers of this branch served in some posts ashore previously filled by civilian engineers, as well as in sea-going appointments. The civilian Electrical Engineers were offered the opportunity to transfer to L Branch (RCNC declined to adopt a similar scheme).

## ELECTRICAL ENGINEERING

In 1963 the RN Engineering Service was formed and included two groups of civilian engineering officers; Mechanical and Electrical.<sup>1</sup>

In 1969 the salaries of Electrical Officers were:

Assistant Director of Electrical Engineering;	
Manager, Electrical Department	£4,535 to £5,200
Superintending Electrical Engineer	£3,260 to £4,000 <sup>2</sup>
Electrical Engineer	£2,481 to £3,406
Assistant Electrical Engineer	£1,445 to £2,325

In 1941, the title of the head of the Electrical Department in the Yard was changed from Superintending Electrical Engineer to Electrical Engineering Manager.

The duties and responsibilities of the Manager were up to 1958:

Adviser to the Superintendent on all matters of electrical nature

Electrical installations on ships

Installation, repair and maintenance of the electrical portion of all machinery in the Dockyard and outlying establishments.

Co-operation with Manager, Engineering Department, on gunnery and control matters.

Electrical supply arrangements

Electrical installation of shore establishments in the area

Generating Station

Communications (telephones, etc) \*

Safety: Lightning conductors, earthing of buildings and of ships in dock, etc, prevention of injury from electric shock

### \* Communications

In the section on Sheerness Dockyard mention is made of the visual telegraph systems in use between London and Chatham in the period 1796/1822. By 1852 Chatham Yard was in communication with Admiralty by electric telegraph.

By the last decade of the 19th century public telephone systems were in use. In 1885 the exchange of the South of England Telephone Company was set up and application was made to put posts in Maidstone Road to connect Chatham and Maidstone by telephone. The systems were run by private companies until the GPO took them over in 1911. (The author was told that the first exchange in the Yard was in the Old Saw Mills.) During the Second World War the Yard Exchange was underground with an entrance near the old Dockyard School.

### Officers in Charge of the Electrical Engineering Department at Chatham

1903/1926	L Newitt	Superintending Electrical Engineer
1926/1931	G G Leys	Superintending Electrical Engineer
1931/1936	H A Nott	Superintending Electrical Engineer
1936/1941	H Martin	Superintending Electrical Engineer
1941/1948	H Martin	Electrical Engineering Manager

<sup>1</sup> See chapter on Apprentices

<sup>2</sup> In 1914 the salary was £700

## ELECTRICAL ENGINEERING

*Officers in Charge of the Electrical Engineering Department at Chatham continued*

1948	C H Stubbings	Electrical Engineering Manager
1951	F J Jenvey	Electrical Engineering Manager
1952	L J N Kirkby	Electrical Engineering Manager
1958/1961	E W Tucker, CB <sup>1</sup>	Electrical Engineering Manager

### Notes on Shore Electrical System at Chatham

- (a) Source of Supply (the 1980's): SEEB at 33 kV into X Grid Sup-Station at Upnor, through 33/11 kV transformer. (15 mVA normal capacity)
- (b) Standby Supply (the 1980's): SEEB at 11 kV into A & B Sub-Stations from Manor Road. (6mVA capacity at each)  
Note: Arrangements are in hand (the 1980's) for the following:
  - (1) New SEEB supply at 11 kV into ÔK'2 Sub-Station (25 mVA capacity)
  - (2) Increased supply at ÔX' Grid Sub-Station up to 25 mVA capacity.
- (c) The electricity supply from Upnor is transmitted across the river at 11 kV to C 2 and A Sub-Stations respectively and the basins are ringed by a number of sub-stations at 11 kV. The south end of the yard is spur fed from 2 sub-station with an emergency 11 kV interconnector being installed from A' to E sub-station (near 2,3, & 4 docks).
- (d) At each sub-station there is one simple transformer or two in parallel. The sizes used are 500 and 75 kVA respectively and the volts ratio is 11 kV/433V, no load, with the object of providing 415/240 volts at each workshop or load.
- (e) Up to about 150 HP a load is supplied at 415 volts but above this and up to 100 HP at 3.3 kV - above 1000 at 11 kV. This means at the moment 2000 kV frequency changers to give 60 cycles supply for shore supplies to AC ships are the only machines supplied at 11 kV. New 3.3 kV motors are supplied through 11/3.3 kV transformers.
- (f) All 11 kV services supplied from sub-stations, and the ring main, are protected by circuit breakers.
- (g) A balanced feeder protection is provided on the 11 kV ring main with back up over overcurrent and earth leakage at certain specific sub-stations depending upon the time setting of X Grid sub-station - the SEEB intake. Overcurrent and earth leakage protection is provided for each service.
- (h) the neutral point of the 11 kV system is earthed at X Grid sub-station.
- (i) Each 415 volt sub-station switchboard consists of circuit breakers for transformers, with a busbar section breaker if two transformers are installed, and each service protected by a circuit breaker (above 400 amps capacity) and an HRC fuse switch (if 400 amps and below).
- (j) From the 415 volt sub-station switchboard underground cables feed out to each workshop or service. Generally the feeds are radial but occasionally where convenient a ring main connecting a number of services in an area is used.

<sup>1</sup> Director of Dockyards 1967/1969

## **ELECTRICAL ENGINEERING**

- (k) The underground supply terminals is a main switch, which in the case of a building is generally outside. Exceptionally for a large building where a switchboard is used the main switch may be on a switchboard but controlled from outside the building.
- (l) Except for a very large building the main switch feeds a main T P & N fuseboard, wall mounted, and the distribution is broken down into various T P & N fuseboards with the lighting and power separated out after the main fuseboard - unless the building is very small.  
For large buildings where a fuse switchboard is used in conjunction with wall mounted fuseboards the main services are fed direct from the switchboard.
- (m) A number of fuseboards have rewirable fuses but it is present (1980's) practice to use HRC fuses throughout for complete new installations.
- (n) The neutral point of the 415 volt system is earthed at the sub-station transformer and 240 volts is used for lighting and other single phase services.
- (o) Paper insulated copper conductor, lead sheathed, wire armoured, cables are used generally for 11 kV and 415 volt services but recently (1980's) DGD & M have allowed the use of lighting standards used for new installations are in accordance with a DGD & M Bath Technical Memo.
- (p) A separate system derived from the 11 kV system is used for supplying AC ships viz: 6.6 kV from 2 mVA 11kV 50 cycles/6.6 kV 60 cycles frequency changers. The 6.6 kV system is earthed at the frequency changers and supplies a number of basin and dockside transformers of 300 and 500 kVA capacity ration 6.6 kV/450 volts through a number of 6.6 kV switchboards. The transformers are protected by fused switches. The 450 volts system connected to the ships supply system through dockside boxes is unearthed.
- (q) 220 volts DC unearthed for connecting to ships supply systems on DC ships is derived from M/Gs and rectifies the supply volts for the latter and some of the former being 415 volts, 3 ph, 50 cycles. Some M/Gs are supplied at 3.3 kV 3 ph, 50 cycles and 440 volts DC (from the rotary converters at the Yard Services Centre which still (1980s) provides limited DC to shops and other services.

## CHAPTER 8

### CIVIL ENGINEERING

#### Introduction

Until the latter part of the 18th century the Master Shipwright and his officers designed many of the buildings in the Yard. The construction of a timber-framed building presented no difficulties to the Shipwright who regarded such a structure as an inverted ship. Such buildings as the Mast House described in the Section on Development were erected by the Master House Carpenter and his men, extra hands being engaged if the jobs were large. The brickwork and tiling of such buildings would be carried out by the Master Bricklayer and his men.

The buildings erected in the early part of the 18th century: Main Gate, Dockyard Terrace, etc may have been designed by Sir John Vanbrugh who was Comptroller of HM Works from 1702 to 1713 when his patent was revoked. He was knighted by George I and reappointed to his post in the following year. John Newman (West Kent & The Weald, edited by Nicholas Pevsner) stated that both

Main Gate and the Dockyard Terrace present a Vanbrugh appearance.

The Double Ropery completed in 1792 was built by outside contractors, Messrs Samuel Nicholson & Son, Baker & Martyn, since the labour force was insufficient for a task of this magnitude. The subsidiary buildings: hatchelling house, tarring and black and white yarn houses were built by Yard labour.

#### Headquarters Staff

The Commission appointed in 1785 to enquire into Fees, Gratuities, Perquisites and Emoluments, etc expressed surprise that contracts for civil engineering projects were supervised by the Shipwright officers. They considered that a Surveyor of Civil Architecture should be attached to the Navy Board. An Order in Council dated 23 March 1796 authorised the appointment of Samuel Bentham to the post of Inspector-General of HM Navy Works at a salary of £750 per year. His duty was the improvement of the buildings, fitting-out, arming, navigating and victualling warships, etc and of the docks, slips, basins and buildings, etc of Naval Establishments. He was answerable only to the Board of Admiralty. Samuel Bentham had been trained as a shipwright apprentice.<sup>1</sup> By the same Order an establishment was made under Bentham including Samuel Bunce, a former pupil of James Wyatt, as Architect and Engineer. His death, incurred whilst performing his duties on the Isle of Grain, is mentioned in the Section on Sheerness.

As a result of a recommendation of the Commission of Naval Revision<sup>2</sup> Bentham was made a member of the Navy Board with the rank of Commissioner and the title of Civil Architect and Engineer of the Navy in 1808. The warrants of appointment of his staff were changed. Edward Holl who succeeded Bunce was designated Assistant Architect and Engineer. Holl was responsible for the design of Sheerness Dockyard which was opened in 1823, Chatham Dockyard Chapel and the Main Offices.

Bentham lost his office in 1812 and was pensioned on full pay of £1500 a year. He had proposed and carried out many improvements in the Yards: housing over the docks and slips, the introduction of steam power to pump docks and to power the sawmills and other industrial units, particularly at Portsmouth. Bentham introduced the caisson and the

1 See Apprentices in chapter 4

2 See Administration of Navy in chapter 23

## CIVIL ENGINEERING

inverted masonry arch entrance to the docks which avoided the expense of the immense number of piles usually employed before his time. He secured better management of timber in the Yards and the abolition of chips. His proposal to reform the management structure was not implemented; the Resident Commissioner was to be relieved of direct responsibility for the operation and manufacturing business in the Yard and was to function directly as the representative of Admiralty in the Yard; the Master Shipwright was to be responsible for shipbuilding and repairs and to control all officers except those in the Accountant Branch which was to check the activities of the operative branch. Unfortunately, the proposal would have diminished the power of the Master Attendants who were regarded as Deputies of the Resident Commissioner.

In 1821, George L Taylor succeeded Edward Holl in office. He supervised the work at Sheerness Yard after the death of Holl. He designed the Garrison Church, Sheerness, and the Melville Hospital, Chatham, both opened in 1828. Owing to retrenchment, he left Admiralty service in 1837, when this branch of Admiralty service was placed under the Royal Engineers. In private practice, Taylor was employed by Walter May to build the folly, Hadlow Castle Tower in Kent.

From 1837 the designation of the Royal Engineer Officer in charge of Civil Engineering was Director of Engineering and Architectural Works by the Admiralty. Mention has been made of Col G T Greene in connection with the works at Sheerness and No 7 Slip at Chatham. This officer prepared the initial scheme for Chatham Dockyard Extension but the officer who was responsible for the final design was Major (later Lt General Sir) Andrew Clarke who succeeded Greene. The Extension works were supervised by Col C Pasley, RE and Mr E A Bernays, CE. In 1873 Pasley succeeded Clarke as Director and Bernays was appointed SCE of Chatham.

In 1895 the Naval Works Loan Act was passed. The necessary finance for naval works was to be found year by year as occasion demanded by a yearly Naval Works Bill. Provision was made for the deepening and improving the harbours of Portsmouth, Chatham, Devonport, haul bowline, for the Keyham Extension and for Naval Barracks at Chatham and Walmer, and later for the Naval Hospital at Chatham.

Mr Goschen referring to the Naval Estimates 1896/7 in February 1896 stated:

*In view of the magnitude and importance of the works included in the Schedule of the Naval Works Act a separate department has been formed at the Admiralty to superintend their execution - the late Director of Works (Major Pilkington, RE, CB) has been appointed Civil Engineer-in-Chief of the Department.*

During his term of office (Sir Henry) Pilkington was responsible for the RN Barracks, completed in 1903, and the RN Hospital, opened by Edward VII in July 1905.

### Master House Carpenter

In the Declared Accounts of the last quarter of the 16th century there are two entries referring to payment made to House Carpenters engaged in the framing of buildings and wharves at Chatham and at Upnor Castle. For example:

*1582, for money paid for building a great Long Store House at Chatham . . . Richard Parmiter, Walter Sedeeke and nine other house carpenters £38 7s 3d. To said Richard Parmiter and 12 other carpenters and sawyers for wages and victualling and lodging while they wrought upon a great long frame for a Storehouse . . . £37 15s 6d.*

Another House Carpenter of this period whose name appears in the Accounts is Walter

## CIVIL ENGINEERING

Sedgwick or the Seedeke mentioned above. At the beginning of the 17th century Thomas Nash of Rochester was employed in similar work in the Yard.<sup>1</sup> These tradesmen worked under the direction of the Master Shipwright.

When the New Dock was being built, Elias Blackett, House Carpenter, was paid 72s 8d for several journeys from Woolwich to Chatham and received £172 in 1619 for work on dock gates and wharves. In 1623 he was paid £271 7s for work on the buildings of New Dock.

According to the Account of the Extraordinary, Christmas Quarter, 1622, there were five house carpenters at Chatham in pay at 18d a day, including Elias Blackett. The Master House Carpenter worked by contract and also performed worked paid by day wages.

William Blunden carried out a large amount of carpentry work in the 1630's. In 1631 he received £94 7s 4d for work on a storehouse at New Dock and a Ropehouse and Barge House at Old Dock. In 1637 he received £42 5s 6d for carpentry work on the Lower Sconce near Upnor Castle and a dwelling house belonging to Bay Sconce; this work was surveyed and rated by the Master Shipwright. In the same year Blunden was paid 5s a day for eight days' travelling expenses for journey from Chatham to Gillingham and Maidstone to warn sawyers and carpenters for work at Chatham Yard. he set up at a charge of £7 a new crane at Old Dock for taking in ordnance from ships.

In 1649 Isaac Sewell received a payment of £5 for making a pair of gates and apron of the double dock converted from the original single dock. In 1656 he constructed a new wharf and stable at the cost of £207 4s 8d.

In 1657, officers from Chatham Yard were required to go to Portsmouth to supervise the building of the new dock. Taylor, the Master Shipwright at Chatham, wrote to the Navy Commissioners that he did not want to go owing to lack of experience in dock construction.<sup>2</sup> He wrote:

*There is no principal man at Chatham now that Ewell is at Mardike. He is the best headpiece in the land for such foundation work and pitching wharves but will be a month before he can come away and therefore know none better than Blundell (Blunden) who made the dock at Chatham and dwells at Shoreditch or the Minories thought he is ancient yet he is of good judgment.*

The Navy Commissioners did not approve of Ewell's going to Portsmouth and in any case a letter dated 23 December 1637 stated:

*Mr Ewell who came from Mardike last Thursday desperately sick, died last night, and recommend Thomas Tunbridge of Chatham to succeed him.*

Thomas Tunbridge, House Carpenter, married as his second wife, Susan a daughter of Edward Yardley and held the post of Master House Carpenter in Chatham Yard until 1684, when he was succeeded by his son, Thomas, born 1659.<sup>3</sup>

Thomas Tunbridge's name appears on the 1686 list of Yard officers appointed by warrant; the salary was £32 13s per year. After the Pay Revision of 1695, the salary was 2s 6d per day, i.e. £39 2s 6d a year.

Most of the large building work in the Yard was performed by contract; in 1685 John Rogers contracted to build the new dock at Chatham for £5310. For erecting eight new

1 See Development in chapter 1

2 Wood not stone was used in dock construction

3 See Yardley family in section on Master Shipwrights in chapter 5



## CIVIL ENGINEERING

mast houses, Thomas Tunbridge was paid £261 in 1688 and £198 in the following year. Again in 1688, Thomas Tunbridge, George Sheppard, Bricklayer and John Ambrose, Scavelman, were paid £330 9s for materials and work on the mast dock and the foundations of the eight new mast houses.

After the Pay Revision of 1808 the pay of the Master House Carpenter and his subordinates was:

Master House Carpenter	£250 a year	(the privilege of apprentices withdrawn)
Foreman of House Carpenters	£140 a year	(the privilege of apprentices withdrawn)
Leading Man of House Carpenters	4s 9d a day	Summer when supervising day work
	3s 9d a day	Winter Extra 6d per hour
Leading Man of House Carpenters	5s 9d a day	Summer
when superintending Task & Job	4s 6d a day	Winter Work Extra 7d per hour

The office of Master House Carpenter was abolished in 1822.

The House Carpenters' Shop is shown in Lempriere's map of 1719 east of the Smiths' Forge and the Joiners' Shop. In 1742 a very presentable three storey, brick built Carpenters' Shop was built adjacent to the north end of the Officers' Terrace. In front was a walled yard, the Carpenters' Pound.

### Master House Carpenters

c1582	Richard Parmiter Walter Sedeeke (Sedgwick)
c1604	Thomas Nash
1611/1623	Elias Blackett
c1630	William Blunden
1649	Isaac Ewell Nicholas Burford
- 1689	Thomas Tunbridge
1689/1692	Thomas Tunbridge (Jnr) *
1692/1708	John Rogers
1708/1722	Ralph Ward
1722/1725	Anthony Colebrooke (deceased)
1725/1753	John Golding (Goulding) from Sheerness
1753/1793	John Southerden
1793/1798	William Bowers
1806/1823	Thomas Scott (This post was then reduced)

\* In 1694/5 Robert Crosfeild, a professional pamphleteer, made charges against persons of trust in the Navy which included frauds and embezzlements of stores. Mr Justice Yardley of Chatham was ordered to investigate the activities of Thomas Tunbridge and to see that he brought up 'such of the King's stores that he has in his custody.'

Brought before Mr Justice Yardley was Thomas Tunbridge of Chatham, Mr Pawlin, brazier of Rochester, (contract brazier to the Yard) and Mr Adds of Chatham who lived near Mr Tunbridge.

As a result of a Parliamentary enquiry Crosfeild was arrested by Black Rod and in February 1695/6 Crosfeild petitioned to be discharged out of custody.

# CIVIL ENGINEERING

## Master Bricklayer

In the Accounts of 1584 appears the item:

*Harry Smith, Bricklayer, for stopping up all the chinks of the wall about the great storehouse, 20s*

*Harry Smith and Walter Sedgwick, House Carpenter, for setting up new storehouse at Chatham, 33 feet long and 30 feet broad, £59 7s 5d.*

Thomas Fenn was employed in thatching the new storehouse.

When New Dock was being built the name of John Chapman, Bricklayer of Gillingham, appears frequently in the Accounts. As well as work in the Dockyard he installed ranges and hearths in the cookrooms of HM ships. He was paid £3 for making a Lime Kiln and £5 for digging and steining a new well of depth 21 fathoms. In 1623 John Chapman was paid £247 3s 7<sup>1</sup>/<sub>2</sub>d for brickwork of the new building erected at New Dock.

In the Account of the Extraordinary, Christmas Quarter 1622, under the heading of Bricklayers appears:

*John Chapman, Senior, 18d a day for 14 days, £1 1s 0d and 5<sup>1</sup>/<sub>2</sub>d lodging money; John Chapman, Jr, 18d a day for 10 days; one bricklayer at 17d a day and two at 12d a day.*

In 1637 John Chapman did bricklaying at the mast dock and dug a well 18 fathoms deep for which he was paid 107s and John Shepherd worked on the mast house at the Old Dock, retiling and plastering. In the same year John Shepherd contracted for building a new Tar House of bricks for ropemakers at Chatham, 112 feet long, 14 feet wide, and with chimney and furnace at a price of £237 0s 8d. In 1639, John Chapman and John Sheepeheard (Sheppard, or Shepherd) were engaged in building walls and storehouses in the Yard and setting up a crane for ordnance at the Old Dock. The latter was paid £475 12s for his contract. The glazing was done by John Nicholson.

The Master Bricklayer, George Sheppard, appears in the 1686 list of Yard Officers appointed by warrant with a salary of £31 6s 8d. After the Pay Revision of 1695 he was paid 2s 6d a day, i.e. £39 2s 6d per year.

After the Pay Revision of 1808 the pay rates of the Master Bricklayer and his subordinates were:

Master Bricklayer                      £250 pa (the privilege of apprentices withdrawn)

Foreman of Bricklayers                £140 pa (the privilege of apprentices withdrawn)

When the number of Bricklayers exceeded 25 a Leading Man was appointed.

Leading Man when superintending

Day work	Summer	4s 0d per day		
	Winter	3s 9d per day	Extra	6d an hour

Leading Man when superintending

Men employed by Task	Summer	5s 9d per day		
	Winter	4s 6d per day	Extra	6d an hour

A Bricklayers' Pound is shown to the east of the Mast House and Mould Loft in the 1821 Map.

## CIVIL ENGINEERING

### Master Bricklayers

c 1584	Henry Smith	
c 1620	John Chapman	
c 1637	John Sheepeheard (Sheppard)	
c 1660	John Chapman Jnr	
1681/1692	George Sheppard	His warrant was renewed in November 1689
1692/1723	Matthew Spray <sup>1</sup>	
1723/1737	Edward Hammond <sup>2</sup>	Ex-Master Bricklayer, Sheerness
1737/1754	John Spray	Ex-Master Bricklayer, Sheerness
1754/1786	John Vinall	His warrant was renewed in 1761
1786 -	John Vinall Jnr	In office in 1829

### The Works Department in the Yard

From the 1840's building and repair work in the Yard supervised initially by the Master Shipwright became the responsibility of the Head of the Works Department; a post filled in some cases by Officers of the Royal Engineers. The Head was assisted by his Clerk of Works. In 1844 Captain Thomas Mould, RE was put in charge of the civil engineering works; his activities were supervised by the Director of Engineering and Architectural Works to the Admiralty.

W McDonnell who was appointed about 1855 had served 3 years under Colonel Greene, Director of Works. He was in charge of the improvements being made to No 3 Dock as well as new work carried out by convict labour in the Yard and at St Mary's Island.

Colonel C Pasley, RE was appointed in 1865 by the Duke of Somerset, First Lord of the Admiralty, to take charge of the Extension Works of Chatham Yard at a salary of £750 per year and a house. He was assisted in this great task by Mr E A Bernays appointed to Chatham in 1862 as Assistant Civil Engineer.<sup>3</sup> Col Pasley was appointed Director of Works at Admiralty in 1873 and Bernays was appointed at Chatham in his stead. After the completion of the Extension Works, Bernays, aged 64, who was receiving a salary of £775 per year was pensioned in 1886 at the rate of £576 for his service of 45 years 4 months. He died the following year.

Bernays was followed by Major (later Sir Henry) Pilkington, RE with a salary of £700 per year and a residence. Pilkington was appointed Director of Works in 1890 and was later made the first Civil Engineer-in-Chief. The title Superintending Civil Engineer seems to have been used after the formation of the Civil Engineering Chief's Department under Sir Henry Pilkington.

By the 1890's the staff of the Works Department consisted of the SCE on a salary of £700 per year; ACE on a salary of £320 to £450 per year; Clerk of Works on salary of £250 to £300 per year and rent allowance of £50; two draughtsmen on salaries of £125/£300 per year; and two Accountant Clerks on salaries of £110/£300 per year.

1 Buried in Gillingham Churchyard

2 Tombstone in Gillingham Churchyard,... wife of Edward Hammond Master Bricklayer of His Majesty's Dockyard Chatham died 1729

Ed Hammond was buried 24th September 1737 at Gillingham

3 In 1864 Bernays lived at No 1 Ordnance Terrace Chatham, he moved to Paddock Terrace on the New Road. After his appointment as Head of the Works Department he lived on The Terrace in the Dockyard. He was an Admiralty Conservator, 1881/1886 on the Medway Conservancy Board

## CIVIL ENGINEERING

The duties and responsibilities of the SCE were:

Civil Engineering and building work in the district

Gas and Water supplies

Supervision of the contractors on works

Dredging of Admiralty Harbours

Repair and maintenance of buildings, etc - external painting every 4 years; internal, with certain exceptions, every 8 years.

Land and Property Management for which duties an officer of the Lands Branch of the Department was professionally responsible

Proposals for new works.

The Works Department for the 100 years up to closure of the Yard occupied the section of the Yard north of the Mould Loft. Some of the ground used as their pounds were originally occupied by the Convicts' Yard.

### Clerk of Works (CW)

Most of the building work in the Yard was done by contract, and the Admiralty Supervisor was designated Superintendent of Contract work. From 1822 the title seems to have been changed to Clerk of Works and the first holder of this office was Philip Richards who was in office at least from 1816 to 1829. The offices of the Works Department, later occupied by Personnel Department, were built in 1822.

In 1844 W T Rivers was appointed Clerk of Works at a salary of £180 per year at Chatham under Captain Mould, RE. He gave evidence at the Dockyard Enquiry of 1858; he stated that he was 60 and that his salary was £250 a year. He had under him a Foreman paid £3 per week, a Clerk paid £2 8s per week, a Draughtsman paid 36s per week, and a Messenger paid 21s a week. There was no Leading Man in the Department. He stated that previous to 1844 the Works Department was under the Master Shipwright. In that year an officer of the Royal Engineers was appointed to take charge with Rivers as his Assistant. The establishment in 1845 was reduced and in 1848 most of the work was put out to contract. In 1850 Rivers was appointed in full charge and had a house in addition to his salary. Ordinary repairs were done by hired men, the rest by contract. Contractors for ordinary repairs used his workshops in the Yard; the main Contractor was Messrs Foord of Rochester.

The Foreman of Works, Joseph Ellis, also gave evidence at the Enquiry. He stated that he was 46 and that his pay was 10s a day. His duties were to look after the Contractor's workmen, to set them to work and to see that they earned their money at Day Work, to keep an account of the expenses of each service and to draw stores either from the Government or the Contractor, and to keep an account of that as well.

The Yard, of course, had its own bricklayers, carpenters, masons, paviors, etc who were paid between 4s and 4s 6d a day in the 1870's. (The rate for the established shipwright was 5s a day.) The work by them was mainly maintenance. Certainly after 1760 contractors performed most of the new construction. There was the feeling that the Works Department was not closely allied with the other departments of the Yard. They retained the term Leading Man and their apprentices were encouraged to attend the courses at the local Technical Colleges as more suitable than those provided in the Yard. In 1912 Works Department apprentices commenced attendance at the Dockyard School. The CE-in-C considered that this School was designed more particularly for shipwright, mechanical and electrical fitter apprentices as stated in a letter dated 23 November 1918:

*. . . It will be advantageous if the apprentices in other trades in the Works Department cease the Dockyard School training after the end of their first year*

## CIVIL ENGINEERING

*and take up technical and theoretical training in subjects more closely allied to their trades at the outside Technical Schools or colleges.*

In fact this procedure had always been followed except for Works Department apprentices who had secured promotion to the 3rd and 4th year Upper School. These were permitted to attend outside classes in their professional subjects whilst receiving instruction at the Dockyard School in Mathematics, Mechanics, etc.

### *Clerks of Works*

1844	W T Rivers	
	Joseph Ridout	Census of 1861. Clerk of Works, Admiralty Dept, 3 York Terrace, Marlborough Road, Brompton.
1871	F G Fishenden	Duty at Cape of Good Hope
1877	Edward Aslett	
1878	G Tinkler	
1878	J Carruthers	
1879	W E Riley	
1887	D C Leitch	
1889	F W Kite	

### **Changes after 1959**

A new structure for the Admiralty Civil Engineering Organisation was adopted in 1959. The new Head of Admiralty Civil Engineering, 'The Director General of Navy Works,' remained responsible to the Civil Lord. The country was divided into districts and Chatham became the headquarters of the SE England Navy Works District. The offices of the Works Department in the Yard were vacated and as mentioned earlier were taken over by the newly formed Personnel Department. The headquarters of the District were housed in the Sailors' Home in Barrier Road, Chatham, where its first head was J H Siddons, previously SCE at Chatham Yard.

Admiralty Works was in 1963 absorbed by the Ministry of Public Buildings and Works which assumed responsibility for Civil Engineering work in the Yard. This ministry was later renamed 'The Department of the Environment.'

### **Civil Engineering Staff at the Admiralty**

In 1796, as mentioned previously, Samuel Bentham was appointed Inspector General of Navy Works; in 1808 his title was changed to Civil Architect & Engineer of the Navy. His office was abolished in 1812 and separate directors were appointed for the civil and mechanical engineering departments.

### *Civil Architects*

1796	Samuel Bentham
1808	Edwardè Holl
1821	George L Taylor discharged in 1837

After 1832 civilian control of the administration of the Navy passed to the Board of Admiralty. Civil engineering was placed under officers of the Royal Engineers and mechanical engineering under engineering officers of the Royal Navy.

## CIVIL ENGINEERING

### *Directors of Engineering & Architectural Works*

	Captain Brandeth RE
	Colonel Irvine
1848	Lt Col Archibald, RE
1850	Lt Col G T Greene, EICS
1864	Major Andrew Clarke, RE
1873	Lt Col Charles Pasley, RE
1884	Lt Col P G L Smith
1896	Civil Engineer-in-Chief
1959	Director General Navy Works

### **Heads of Civil Engineering Department in Chatham Yard**

1844	Captain Thomas R Mould,	RE Officer of RE i/c works
1855	J McDonnell	Acting SCE i/c of work at No 3 Dock as well as new work carried out by convict labour in the Yard and at St Mary's Island
1865	Lt Col C Pasley, RE	
1873	E A Bernays	
1886	Major H Pilkington, RE	
1890	F G Fishenden	£600 pa and a residence
1895	W E Riley	
1896	T Sims	
1899	W J Clarke	Superintending Civil Engineer
1901	C Millard	Superintending Civil Engineer
1903	T C Hunter	Superintending Civil Engineer
1903/5	J Brookes-Hunt	
1905	L Parr	Superintending Civil Engineer
1907	N Cartwright-Reid	Superintending Civil Engineer
1912	R E Oakley	Superintending Civil Engineer
1916	T G Argutter	Acting Superintending CE
1917	A D Shortridge	Acting Superintending CE
1923	R E Clarke	Acting Superintending CE
1925	W T Caldicott	Superintending Civil Engineer
1930	R B Simmers	Superintending Civil Engineer
1936	J R Ardron	Superintending Civil Engineer
1938	J A Seath	Superintending Civil Engineer
1940	G A Wilson <sup>1</sup>	Superintending Civil Engineer
1942	D W Fletcher	Acting Superintending CE
1943	R W Higginbotham	Acting Superintending CE
1945	J H Jellet	Acting Superintending CE
1946/51	D W Fletcher	Superintending Civil Engineer
1952	G V Kibblewhite	
1957/9	J H Siddons	

<sup>1</sup> Obituary Notice of Mr George A Wilson. He got his first at Liverpool University and went out for one tour with the Anglo Persian in Southern Iran, then joined CE-in-C in 1937. He became SCE Drawing Office. His next post was SCE Chatham and then out to Ceylon for the rest of the War. He became Deputy Chief Engineer in the PLA and finally Director of Engineering. He organised the rapid construction of useful container berths round the North West basin, he built at Tilbury. In 1972 he was President of the Institution of Civil Engineers