

The Administration of the Navy from the Restoration to the Revolution

PART II.—1678–1679.

THE Test Act, which received the royal assent on 29 March 1678, had the effect in the long run of revolutionising the administration of the navy. But the authority of the duke of York was not immediately overthrown. It was indeed now impossible for any honest Roman catholic to retain permanent office, but the necessity for the test did not arise immediately. The new arrangements are described in the Pepysian MSS.¹ as taking effect from May 1678, but in a paper of 18 June² the duke is still alluded to as the lord high admiral of England, and the new commission was not issued until 9 July.³

This paper of 18 June, entitled 'Instructions established by His Majesty in Council for ascertaining the Duty of the Lord High Admiral of England,' is a formal statement of the duties of the office in view of impending changes, but it contemplates only a single holder of the office, and gives no hint of the form the changes were to take. The lord admiral is to be 'able at all times to give his majesty a perfect account of the state of his . . . navy, relating to the condition both of the ships and yards, with the stores remaining, persons employed, and services to be performed therein.' For the better enabling him effectually to control his subordinates he is once at least in every month 'to visit and sit with the principal officers and commissioners of the navy at their public place and time of meetings,' and to 'demand and receive' from each of them a weekly report of his proceedings. Before giving orders for any work or service to be done he is to obtain an estimate of its cost from the comptroller, signed by three or more of the principal officers and commissioners, of whom the treasurer must be one. 'This estimate being approved and signed by himself, he is then 'with the treasurer' to present it to the king, 'and the same being

¹ *Naval Minutes*, p. 305.

² *Miscellanies*, ii. 401. Another copy is *ibid.* p. 149, and two more in *Naval Precedents* (pp. 35 and 149).

³ *Ibid.* ii. 405 and x. 221. Another copy (*Naval Precedents*, p. 146) gives the date as 19 July; perhaps by a confusion with the day on which the commission was opened.

by him approved, to assist the said treasurer in all his solicitations with his majesty and the lord high treasurer for the obtaining seasonable and sufficient supplies of money 'for enabling the officers of the navy to carry on the service. 'For the more regular dispensing of which moneys,' when received, the lord admiral is 'in no wise to direct or permit' the navy board 'to apply any part thereof to any other use than what it was originally assigned to, or paid in any other method or course than what is already or hereafter shall be to that purpose established by his majesty in council.' Nor is the admiral without order from the king to command or allow his subordinates to do anything 'contrary to the known and allowed practice and precedent of the navy,' nor is he to 'make or interpose in the making' of any contract except the contract for victualling, 'the same being always to be done by his majesty at the council board, after being first consulted on and prepared by the lord treasurer and lord admiral.' The admiral is only to promote deserving officers, and he is not to grant any commission on shore to any commander 'without the privy and approval of his majesty first had in writing therein.' He is to proceed 'in all matters herein not specified' according to the known and allowed practice of the navy or according to orders received from the king; and he is 'to see that a perfect and fair record and register' of all navy proceedings be kept in an office by the admiral's secretary for future reference.

This new establishment of the admiral's office, in which the importance of the king is so clearly brought out, prepared the way for the next step, which had perhaps been already determined upon. On 16 June 1673 Prince Rupert was appointed to act against Holland as 'admiral and chief commander of our fleet for this present expedition,'⁴ although his powers were restricted in various ways, and particularly with regard to the nomination of his officers.⁵ And on 9 July a commission under the great seal was issued to Prince Rupert, the earl of Shaftesbury (lord chancellor), Viscount Osborne (lord high treasurer), the earl of Anglesey (keeper of the privy seal), 'and to our chancellor, treasurer, and keeper of our privy seal for the time being,' the dukes of Buckingham, Monmouth, Lauderdale, and Ormonde, the earl of Arlington (a principal secretary of state), Sir George Carteret (vice-chamberlain of the household), Henry Coventry (a principal secretary of state), and Edward Seymour, empowering them to execute the office of lord high admiral of England,⁶ now void by the resignation of the duke of York.

By this commission only a part of the functions of the admiral's office was delegated, the rest being retained by the king himself.

⁴ *Miscellanies*, ii. 405.

⁵ Ranke, iii. 542.

⁶ Their full title was 'the right honourable the lords commissioners for executing the office of lord high admiral of England' (*Admiralty Letters*, v. 104).

The commission was to act in accordance with the instructions of 13 June, and such other instructions as should be hereafter made by the king in council, but all admiralty dues were to be collected for the king's 'only use and behoof,' and all places and offices in the admiral's gift were to be disposed of, not by the commission, but by the king. This retention of powers in the king's hands was probably intended to give an opportunity to the duke of York, who, in spite of the Test Act, remained until 1679 an important influence in naval affairs.⁷

The commission of 1673 was renewed 28 July 1675, with the substitution for Shaftesbury of Heneage, Lord Finch, keeper of the great seal, the omission of Buckingham, and the addition of the earls of Ossory and Craven, and Sir Jos. Williamson, now Henry Coventry's colleague as secretary of state.⁸ It was renewed again on 26 Sept. 1677, with the addition of Sir J. Ernle, chancellor of the exchequer, and Sir Thos. Chicheley, master-general of ordnance,⁹ and in this form it continued until 14 May 1679.¹⁰

Upon the surrender of the duke of York 'his majesty was pleased' to 'call' Mr. Pepys, 'the only survivor of the first . . . set of officers of the navy at his restoration, from his charge of clerk of the acts to that of secretary to himself and the said commission in the affairs of his admiralty of England; that of Scotland, Ireland, and his foreign colonies resting still in the hands of his royal highness.'¹¹ The date of his formal appointment was apparently June 1678.¹² This important promotion can scarcely have surprised any one, for by this time his industry and method had made him one of the most efficient of naval experts. He was succeeded in his office of clerk of the acts by his brother John Pepys and his clerk Thomas Hayter, acting jointly.¹³

The appointment of the commission of 1678 did not carry with

⁷ 'The despatch of the general current business' of the commission was 'wholly performed by the immediate direction of his majesty (with the advice of his royal highness) to Mr. Pepys, the meeting of the commissioners being uncertain, and only in cases admitting delay and requiring the formality of public debate; at which meetings his royal highness did, by the king's command, always assist, until by his removal out of the land in 1678 (through the malignity of the then times) his majesty was (to the utmost ruin of his navy) bereft of his brother's further aid therein' (*Miscellanies*, xi. 228). '1678' is a reference to March, 1678-9.

⁸ *Ibid.* xi. 222.

⁹ *Ibid.*

¹⁰ *Ibid.* p. 224.

¹¹ *Ibid.* p. 221.

¹² Pepys is described as holding the office of secretary to the admiralty as early as 3 Nov. 1672 (Whitely, *Samuel Pepys and the World he lived in*, p. 49), but this must be a reference to his relation to the duke of York, and not to the commission, not yet in existence. The instructions of 13 June refer to 'the admiral's secretary.' The patent of his successors in the office of clerk of the acts is dated 18 June 1678, and Pepys was paid to 25 June (Duckett). In *Naval Minutes* (p. 805) Pepys copies 'Mr. Hewer's account of the secretaries of the admiralty.' According to this the first was Sir William Coventry, from June 1660 to Michaelmas 1667; the second, Matthew Wren, from Michaelmas 1667 to Midsummer 1672; the third, Sir John Weldon, from Midsummer 1672 to May 1673; and Pepys himself the fourth, from May 1673.

¹³ Duckett, and *Dict. Nat. Biog.* xliv. 368.

it many other changes in the higher offices of the navy. In July the earl of Danby was succeeded as treasurer of the navy by Edward Seymour, one of the distinguished parliamentary politicians of his day,¹⁴ and the commissionership of the navy which he thus vacated fell to Sir Richard Haddock, but no other change was made. The comptroller was still Sir Thomas Allin, who had been appointed in April 1671; Sir John Tippetts, who had been made surveyor in September 1672, continued to act in that capacity; Lord Brouncker remained comptroller of the treasurer's accounts, Sir Jeremy Smith of the victualling, and Sir J. Ernle of the stores; the extra commissionerships remained in the hands of Sir John Harman and Sir John Werden, while Sir Richard Beach continued to act as resident commissioner at Chatham and Sir Anthony Deane at Portsmouth.

The changes that took place between 1678 and 1679 were also few in number, and did not in any way interfere with the character of the navy board as a body of experts. On 25 Nov. 1675 Sir Anthony Deane, the famous shipbuilder, became comptroller of victualling, in succession to Sir Jeremy Smith, and his place at Portsmouth was filled by Sir John Kempthorne, a distinguished officer, whose experience of the sea had begun as an apprentice in the merchant service before the civil war.¹⁵ On 26 Nov. another commissioner was appointed in the person of Sir John Chicheley, an officer of less experience but scarcely less distinction, who had fought in both the Dutch wars of the reign.¹⁵ In 1676 Sir John Ernle ceased to be comptroller of stores, and the office remained vacant from 24 June of that year until 1680.¹⁶ Last of all in 1677 John Pepys died, and his place was filled by the appointment from 14 April of James Sotherne, who was Hayter's colleague as clerk of the acts until 1680. Thus out of a board of twelve principal officers and commissioners of the navy who were holding office in 1679 no less than eight might fairly be described as naval experts, while two were great persons, and two more represented 'clerkship.'¹⁷ Whatever charges might be sustained against a body so constituted, they could not be accused of ignorance of naval affairs.

¹⁴ Duckett, and *Dict. Nat. Biog.* li. 812. Seymour was paid from 13 July.

¹⁵ *Dict. Nat. Biog.* xxx. 397 and x. 281.

¹⁶ Duckett.

¹⁷ In 1678 the board consisted of thirteen persons—Edward Seymour, treasurer, Sir Thos. Allin, comptroller, Sir John Tippetts, surveyor, Thos. Hayter and John Pepys, clerks of the acts, Lord Brouncker, comptroller of the treasurer's accounts, Sir Jeremy Smith, comptroller of victualling, Sir John Ernle, comptroller of stores; also three extra commissioners, Sir John Harman, Sir John Werden, and Sir Richard Haddock; and two resident commissioners, Sir Richard Beach at Portsmouth and Sir Anthony Deane at Chatham. Of these nine were experts—Allin, Tippetts, and the last seven named. In 1679 Jas. Sotherne, a clerk, had replaced John Pepys, a clerk, and Sir Jeremy Smith, Sir John Ernle, and Sir John Harman had ceased to be members of the board, but their places had been filled by the appointment of Chicheley and Kempthorne.

The new admiralty commission opened on 19 July 1673, meeting on Mondays, Wednesdays, and Fridays 'at eight of the clock in the morning at the council chamber, until some other place shall be appointed.'¹⁹ Two days after they made order that the navy board should attend them weekly on Saturdays at eight,¹⁹ and Mr. Secretary Pepys was instructed to require from the board an account of the state of the navy stores, and of the present and probable future debt of the navy.²⁰

The early zeal of the members of the new administration, which had stimulated them to three weekly meetings, led them within the first month of their existence to carry through two minor reforms. Before the end of July they reported to the council concerning 'a complaint of the merchants against the present practice of the captains of his majesty's ships in exacting more than hath been formerly demanded for bringing home money, plate, and bullion.' The 'anciently accustomed and allowed rate' was one per cent., and this had been exceeded under various names, such as 'freight,' 'primage,' or 'average.' Accordingly an order in council was passed, on 30 July 1673, forbidding the commanders of the king's ships to take more than one per cent. 'for moneys carried from place to place belonging to the king's subjects.'²¹

On the same day the lords of the admiralty made an order directing the navy board 'to prepare an establishment of cabins fit to be allowed to a ship of each rate in the royal navy,' in view of the 'very great charge and many other inconveniences rising by the unlimited number of cabins' built in the king's ships. This led in particular to 'the pestering of the ship,' 'contracting of sickness,' temptation to officers 'to neglect their duties and mispend their time in drinking and debauchery,' and 'the danger of fire,' 'besides its being a charge not in any degree allowed either in the French or Dutch ships.'²² The establishment thus required was presented by the navy board on 15 Aug., and being approved by the king was formally adopted by the commission in an order of 16 Oct.,²³ requiring that the assignment of cabins therein made be strictly observed, 'so as that each officer to whom any . . . are therein so designed, may enjoy the same as a right belonging to his place, without being subject to be dispossessed thereof by his commander or other superior officer,' unless by a special warrant from a flag officer or the navy board.

The establishment of cabins thus adopted was as follows:—

¹⁹ *Adm. Letters*, ii. 24.

²⁰ *Ibid.* p. 28. But from a letter of 31 July 1673 (*ibid.* iv. 204) it appears that the commission afterwards came to meet only once a week—on Wednesdays at Hampton Court. Pepys thought this insufficient, and the letter in question recommends that they should meet on Saturdays also.

²¹ *Ibid.* ii. 28.

²² *Naval Precedents* p. 476.

²³ *Ibid.* p. 535.

²⁴ *Ibid.* p. 539.

FOR SHIPS OF THE FIRST AND SECOND RATE.

Upon the poop for trumpeters	4
Round house—the eldest captain	1
Afore the round house, on the starboard side—the second captain . .	1
Afore the second captain on the starboard side—the eldest lieutenant	1
Afore the round house on the larboard side, for the secretary, if an admiral	1
Afore the secretary on the larboard side, for the master	1
In the two bulkhead cabins upon the quarter deck—the chief mate and judge advocate	2
Bulkhead of the coach on the starboard side, for the second lieutenant	1
On the larboard side—the commander of the land officers	1
Upper great cabin for the commander	1
In the lobby on the starboard side—the minister	1
On the larboard side (if no staircase)—a land officer	1
On the bulkhead of the forecastle on the starboard side, for the carpenter	1
On the bulkhead of the forecastle on the larboard side, for the boatswain	1
Within the forecastle on that side, for his mate	1
The lower great cabin for the reformadoes.	
On the second deck, canvas cabins, for mates, pilots, pursers, midshipmen, and other officers, as the captain pleases to dispose of them	18
Pantries of wood for the commander's use	2
In the gunroom bulkhead—gunner and chyrurgeon	2
In the gunroom, standing cabins for mates	2
Hanging cabins	6
Cockpit for the purser, steward, and chyrurgeon's mates	5
Steward room	1

FOR THIRD-RATE SHIPS.

Upon the poop for trumpeters	4
Round house divided—the starboard side, the master	1
On the larboard side, the lieutenant	1
Afore the round house, on the starboard side, for a chief mate, if no second lieutenant	1
On the larboard side, for the minister	1
In the coach—half-cabins for servants	2
Bulkhead of the coach on the starboard side—a second mate	1
Larboard side—a land officer	1
Bulkhead of the quarter-deck, on the starboard side—the carpenter .	1
On the larboard side—the boatswain	1
In the steerage, cabins for a second mate and pilot	2
Pantries for the captain	2
Forecastle bulkhead, on the starboard side—the cook	1
Larboard side—the boatswain's mate	1

Under the gangway—the coxswain and midshipmen	2
In the forecandle—a midshipman and carpenter's mate	2
In the gunroom bulkhead—gunner and chyrurgeou	2
In the gunroom, standing cabins	2

Between Decks, before the Gunroom Bulkhead.

Cockpit—the purser	1
The steward's room and cabin	1
The chyrurgeon's mate	1
The captain's storeroom	1

FOR FOURTH-RATES.

On the poop—trumpeter's cabins	2
The round house (if divided)—the master and lieutenant	2
In the cuddy—two mates	2
Bulkhead of the steerage on the starboard side—the carpenter	1
On the larboard side—the boatswain	1
In the steerage, for a land officer and midshipman	2
Pantry for the captain	1
Forecastle bulkhead on the starboard side—the cook	1
Larboard side—the boatswain's mate	1
In the gunroom bulkhead—gunner and chyrurgeon	2

Between Decks.

Cockpit—the purser, steward, and chyrurgeon's mate	8
Captain's store room	1
In the forecandle—carpenter's mate and midshipman	2

FOR A FIFTH-RATE.

Round house—the master	1
Bulkhead of the steerage on the starboard side—the carpenter	1
Larboard side—a lieutenant	1
In the steerage—two mates and midshipmen	2
Bulkhead of the gunroom—gunner and chyrurgeon	2
Cockpit—purser	1
Steward room	1
Chyrurgeon's mate	1
Bulkhead of the forecandle—the boatswain and cook	2

FOR SIXTH-RATES.

The steerage bulkhead—the master	1
Cockpit built in hold—the boatswain, carpenter, gunner, and other officers	6

No standing cabins on the middle deck of the 1st and 2nd rate ships to be more than six foot long fore and aft, and five foot wide upon the deck.

No cabin in the steerage and forecandle of a 3rd and 4th rate ship to be more than five foot nine inches long and four inches [*sic*] wide upon the upper deck.

In the steerage of a 5th-rate ship no cabin to be more than five foot six inches long, and four foot wide upon the upper deck.

In 1673 the principle of pensions on superannuation, which had been applied in 1672 to cases of old age,²¹ was extended to officers wounded in service at sea. An important step in this direction had been taken by the duke of York just before resigning office, for on 6 June an order in council was adopted, on his suggestion, giving to such officers one year's wages, 'and the continuance of them in pay during the whole time they shall by good proof appear to have lain under cure.' These wages were to be: for the first three rates, what they actually received; and for the last three rates, what the corresponding officer would receive on board a third-rate. This was to be paid 'in ready money, and not by pension, and extend not to any less wound than the loss of an eye or limb, or the total loss of the use of a limb,' or 'such as shall be (upon joint search made by the king's serjeant chyrurgeons and chyrurgeon-general of the fleet) by them certified to be in all the effects thereof of equal prejudice to the health of the body with the loss of a limb.'²² On 15 Oct. 1673 the provisions of the order of 6 June were extended by another order in council, adopted on the recommendation of the admiralty commission, to volunteers borne 'by particular order of the lord high admiral,' and to 'the officers of the land soldiers serving on board any of his majesty's ships,' 'both as to their own relief in case of wounds, and their widows and orphans in case of death.'²³ Four months later, on 6 Feb. 1673-4, another order in council, also adopted on the recommendation of the admiralty commission, carried the same principle a little further. This provided that in cases not coming under the order of 6 June, owing to the wounds received at sea not being equal to the loss of an eye or limb, 'the party wounded may be continued during the time of his cure in the pay he enjoyed at the time of his being wounded, and be further allowed . . . such expenses relating to his said cure as, upon producing the particulars thereof from his doctor, nurse, apothecary, and chyrurgeon respectively, shall be found reasonable' by the 'chyrurgeon-general at land' and the chyrurgeon-general of the fleet. Volunteers recommended by special warrant from the king, or the lord high admiral for the time being, were to have allowance for their wounds as if they were lieutenants, according to the rate of the ship in which they were wounded.²⁴

On 6 May 1674 the system of half-pay for officers during the

²¹ *Ante*, p. 64. The report of the commission of 1618 had allowed for the charge of certain 'reasonable pensions to those aged and impotent servants which are unfit to be continued in their places,' but these were special cases of seamen and labourers in the yard, and there were only six of them altogether.

²² *Naval Precedents*, p. 218. There is another copy in *Miscellanies*, vi. 67. This order was 'explained' by a subsequent order of 27 March 1674, which provided that flag officers should have their year's pay according to the flag borne at the time of wounding, and not according to the pay due to them as captains of ships (*Nav. Prec.* 221, and *Misc.* vi. 69).

²³ *Naval Precedents*, p. 219.

²⁴ *Ibid.* p. 220.

time when they were not actually employed, which had been first established for flag officers in July 1668,²⁸ was extended by order in council²⁹ to the captains of first and second rates, and to the second captains of flag ships. The order refers to the 'establishment some time since made by his majesty in council' whereby 'an allowance is already provided for the support of such sea commanders in time of peace as have had the honour of bearing a flag in his majesty's fleets during a war,' and the absence of similar provision 'for such other commanders as, having not carried a flag, have nevertheless borne command in his majesty's ships of the first and second rate, and therein gone through the greatest hardships of war, without any of the encouragements arising from the accidental benefits incident to commanders of lesser ships from prizes, convoys, and otherwise,' and provides for 'an allowance of half-pay' in such cases, to continue 'so long as they shall remain unprovided for to the value of the like half-pay, either by some new employment in his majesty's service or by any pension, annuity, or other benefit which already is or hereafter may be conferred by his majesty,' it being understood that if the value of such employment should fall short of half-pay, it was to be made up to that amount. Half-pay is to be calculated according to the value of the best command in which the officer in question has been employed; but no such commander or captain 'shall go abroad in any merchant's service without his majesty's licence first had and obtained.'

A twelvemonth later, on 19 May 1675, the provisions of this establishment were still further relaxed by order in council,³⁰ so as to enable commanders of squadrons to share its benefits. A petition was presented by Sir Robert Robinson, pointing out that although not qualified for half-pay as a flag officer or the commander of a first or second rate, 'he hath gone through considerable charges by having had the chief command of several considerable squadrons of ships both in the former and latter war with the Dutch.' The strength of this claim was at once recognised, and half-pay was extended 'to such commanders as shall have the command of twelve ships of war, besides fire ships and small craft; and they were to receive the same allowance as the rear-admiral of a squadron received on the previous establishment.'³¹ Another order in council of the same date, and following the lines of the previous order of 6 May 1674, established an allowance of half-pay 'to the several persons now living who have served as masters in his majesty's ships of the first and second rate' in the last war, in consideration of the 'trust

²⁸ See *ante*, p. 63.

²⁹ *Naval Precedents*, p. 164. There is another copy on p. 259.

³⁰ *Ibid.* p. 165.

³¹ *I.e.* 150*l.* a year. See *ante*, p. 64.

reposed in the masters which serve in 'the 'great ships, and the small number of persons qualified for the discharge of the same.'³²

Early in the reign of the lords commissioners for executing the office of the lord high admiral a change was made in the system of dealing with sick and wounded seamen. At the close of the war with Holland the temporary commission for this purpose³³ was withdrawn, partly in order to 'retrench the great charge attending the same,' and partly because 'by the determination of the war the principal ground of that commission is removed.'³⁴ The duties of the commission were thereupon handed over by a warrant from the lords of the admiralty, dated 28 March 1674, to James Pierce, 'chyrurgeon-general of the navy.'³⁵ There is among the Pepysian papers a report from him made to Pepys 'for the king's information,' dated September 1687, which gives a general account of the reforms he had introduced during a long tenure of office.³⁶ From this report it appears that Pierce had been first commissioned to take care of sick and wounded seamen by an order from the duke of York, dated 20 June 1670, in consequence of an accident to two men on board his yacht,³⁷ and thus he was only returning to duties with which he was already familiar. In 1687 he claimed to have 'reduced it into such a method that it is not possible for me (or whomsoever shall succeed me) to wrong his majesty or injure his subjects.'

1. No man was received on shore from any ship without a certificate signed by the captain and officers, 'whereof the purser or steward is required to be one,' in order that his allowance on board may be stopped towards meeting the cost of his accommodation on shore.
2. Either by contract or perhaps by an application of the principle of insurance, based on a calculation of averages, it was arranged that 'how long soever any man lies sick on shore his majesty pays but 6s. 8d. for attendance, physic, and surgery.'
3. On the making up of the accounts of the department the chyrurgeon-general's 'deputies for that service' were not only required to produce the certificate above mentioned for each man, 'but they swear also to the truth of the account,' and 'give not only their own receipts for the money, but produce also (after payment) each landlord or land-

³² *Naval Precedents*, pp. 167 and 261. This establishment for masters applied only to those who had served in the second Dutch war of the reign. A case came up in 1676 of a certain Captain Pybus, who had served as master in the first war and as commander of a small ship in the second, and had thus lost his half-pay as master by his promotion to be captain. On 14 Dec. he was put on the masters' establishment by special order from the council table as 'the only surviving master of the first and second rate ships unprovided for of all that served his majesty in the former war' (*Adm. Letters*, v. 285).

³³ *Ibid.*, p. 64.

³⁴ *Miscellanies*, xi. 106.

³⁵ *Ibid.* The original report is pasted into the volume of *Miscellanies*. It includes copies of the various orders and warrants, and specimens of the various printed forms used in carrying out the system established by Pierce.

³⁷ *Ibid.*

lady's receipt for the money in that account said to be due for each man's quarters.' But the work of the chyrurgeon-general's department was not confined to the care of the sick and wounded; it was at this time extended also to the provision of medical necessaries and comforts for the fleet. By an order from the navy board, dated 8 Feb. 1672-3, itself in pursuance of an earlier warrant of 'January last' from the lord high admiral, James Pierce had been directed, 'for the more regular and seasonable supplying of his majesty's ships with the necessaries appointed for relief of sick and wounded seamen of his majesty's fleet,' to issue from time to time, upon receipt of warrant from the navy board, 'the usual proportion of spices and other necessaries' to the surgeons of the ships named in the warrant, taking care that the inclusive charges (including 'boxes, portorage, and transportation') do not exceed 2*d.* a man per month, 'which being the utmost of his majesty's allowance, you are not upon any consideration whatever to expect more.' 'For the timely enabling' him to make such provision the navy board undertook to 'imprest' to him from time to time such sums as might be necessary. 'And for discharging yourself of the same you are to bring the chyrurgeons' hands on the back of our warrant, acknowledging the receipt of the proportion of necessaries for the number of men and time specified in our said warrant, which shall be allowed you upon account after his majesty's aforesaid rate of 2*d.* a man per mensem.' To seamen under cure in the hospitals of London the king allowed 2*d.* per diem, 'which hath been allowed from time out of mind.' For this also Mr. Pierce, who seems to have been a man of method after Pepys's own heart, was accustomed to give regular account, producing 'each man's receipt for the same, with also one or more witnesses to it.'

'Mariners and soldiers maimed in his majesty's service at sea' were entitled to relief out of the chest at Chatham. The rate at which such relief was given in the latter part of the century appears from a paper of July 24 1685,²⁰ supplied by the clerk of the chest 'in answer to a demand of Mr. Pepys's upon that subject.'

A Leg or Arm lost is £6 13 <i>s.</i> 4 <i>d.</i> paid as present relief, and	£	<i>s</i>	<i>d</i>
so much settled as an annual pension for his lifetime .	6	13	4
If two Legs be lost his pension is doubled	13	0	8
For the loss of two Arms, in consideration of his being			
thereby rendered incapable of getting a livelihood any			
other way, per annum	15	0	0
But if an Arm be on, and disabled only, is £5 per annum .	5	0	0
An Eye lost is £4 per annum	4	0	0
If a Pensioner desires to be bought off he is paid two years' pension in			

²⁰ *Miscellanies*, vi. 71.

full satisfaction, no more or less, with all his arrears due to that time, and is paid to all indifferently; but this practice of buying off (where a leg or arm is lost) extends only to Scotch, Irish, or such who live beyond sea, in consideration of the charge they must otherwise inevitably be at in appearing at a general pay once in three years, which they are called to for preventing frauds by forged certificates.

And where any wound or hurt occasions a fracture, contusion, impostumation, or the like, under the loss of a limb, such are viewed by the chyrurgeons, and certified to deserve what in their opinions may be a proportionable reward in full satisfaction. And these sorts of hurts frequently accompany the loss of a limb in other parts of the body, for which they have a reward apart from their annual allowance, according to the chyrurgeon's discretion.

Although on paper the strength of the English navy in 1678 was pretty much what it had been in 1660,³⁹ the effect of the Dutch war, and in particular of an indecisive action like the Texel, in which, without the actual loss of ships, an immense amount of damage had been inflicted on the English fleet, had been to reduce considerably the effective strength of the navy. And these damages want of money made it impossible to repair. Thus we find Sir Anthony Deane, in October 1674, making a very gloomy report to the lord treasurer Danby on the condition of the fleet at that time.⁴⁰ In answer to a demand for a fleet of fifty ships, Deane proposes to fit out six first-rates, four second-rates, sixteen third-rates, and twenty-four fourth-rates, 'being the ships that need least repair in the navy.' But he notes that, except for a few fifth-rates, which 'are not to be mentioned in the time of war, unless for convoys,' these fifty ships will constitute the whole available fleet; yet they are only one-third of the Dutch fleet in number and strength, and not more than three-fifths the French. To equip them will cost 98,765*l.*, exclusive of expenses at sea,⁴¹ and the work will take the whole of the summer. As soon as these are equipped, and the docks set free for fresh work, Deane urges that the business of repairing damaged and decayed ships should be taken up,⁴² a business which, according to his estimate, would take two years, if neither money nor men were wanting. The king's yards being thus employed, it would be 'of great importance' to build by contract five large third-rates a year for four years. This would, in his opinion, make the fleet of sufficient strength.

³⁹ *Ante*, p. 58.

⁴⁰ *Sir Anthony Deane's Observations relating to the State of His Majesty's Fleet, Anno 1674, presented to My Lord Treasurer Danby* (Pepysian MSS., *Miscellanies*, v. 49).

⁴¹ This was reckoned at a 'medium' of 4*l.* a man *per mensem*.

⁴² These were classified thus: 'To be rebuilt'—Sovereign, Old James, Rainbow, Unicorn, Defiance, Plymouth, Tiger, Richmond, Eagle, Revenge. 'Needing very great repair'—Triumph, St. George, Mary, Monk, Rotterdam, Happy Return, Princess, Ruby, Success, Bonadventure, Leopard.

It was not long before the needs of the navy, thus set forth by Deane for the benefit of Danby, were brought under the notice of parliament. The idea of the importance of sea power had already acquired a considerable hold upon the political classes of England, and the wars with Holland had served to extend it. Charles II had read rightly the feeling of his subjects when he had allowed his chancellor to say in his speech to the Pension Parliament at the beginning of the eleventh session, 'England would no longer be a free country if she allowed herself to be robbed of her dominion at sea; with just jealousy she watched the growing greatness of any prince at sea.'⁴³ Thus, in spite of the peace with Holland, the needs of the navy attracted a good deal of attention in the year 1756. On 22 April Mr. Pepys was ordered 'to bring into the House a true state of the present condition of the navy, and of the stores and provisions thereof,'⁴⁴ and in pursuance of this order a number of papers were presented to the Commons on Saturday, 24 April.⁴⁵ From these it appeared that on paper the naval force of the nation consisted of eight first-rates, nine second-rates, twenty-two third-rates, thirty-seven fourth-rates, sixteen fifth-rates, and eight sixth-rates, with fifty smaller vessels of various kinds, fourteen of which were yachts. But this was followed by an instructive comparison with foreign fleets, in which 'his majesty's fleet as the same now stands this 24 April 1675, consisting of men-of-war (carrying from twenty guns upwards) and fire ships,' was brought into relation with the same figures for Holland and France, taken from the lists of 1673.

Ships				English	French	Dutch "
Of 100 guns and upwards	.	.	.	7	4	—
" 90 " under 100	.	.	.	2	2	—
" 80 " " 90	.	.	.	2	2	10
" 70 " " 80	.	.	.	7	14	24
" 60 " " 70	.	.	.	18	12	24
" 50 " " 60	.	.	.	22	25	28
" 40 " " 50	.	.	.	19	26	22
" 30 " " 40	.	.	.	10	9	24
" 20 " " 30	.	.	.	5	2	4
Total				92	96	130
Fire ships				3	4	40
				Men of War	Fire Ships	—
French excess				4	1	—
Dutch "				44	37	—

In the same report which contained these disturbing comparisons Pepys represented that nearly 150,000*l.* would be required

⁴³ Ranke, iii. 547.

⁴⁴ Pepysian MSS., *Miscellanies*, v. 185.

⁴⁵ *Ibid.*

⁴⁶ The Dutch built no very large ships, on account of 'their scantiness of water' (*Miscellanies*, ii. 455).

to equip the fleet, and in a letter to the Speaker, dated 19 June, he explained rather more fully the nature of the expenditure required.⁴⁷

(1) For the enabling the officers of the navy to proceed upon the repair of the fleet, and saving the season for providing and bringing in of materials towards the same (through the want whereof they are said to be at this day at an almost total stop therein), the charge whereof is estimated, and was so represented to the parliament, at 144,016*l*. (2) Towards the providing of materials and stores for the magazine required for maintaining the whole fleet when repaired for eight months' sea service, estimated and likewise represented to the parliament at 95,089*l*. 16*s*. 7*d*. (3) For the providing of stores to be lodged at Malta for answering the wants of the fleet under Sir John Narborough, estimated at 4,712*l*.

To these three particulars, which his majesty was pleased to commit to your soliciting my lord treasurer about this day sennight, there are added, upon discourse had thereon by my lords of the admiralty with the officers of the navy this day:—

(4) The making good 16,000*l*. by them said to be yet in arrear upon their assignations on the assessment. (5) The payment off of the St. David, newly come home from the Barbados. (6) The enabling the officers of the navy to pay themselves their own salaries.

The result of these representations was that in October 1675 a sum of 300,000*l*. was granted to build twenty ships,⁴⁸ the number which had been suggested by Sir Anthony Deane. It is probable that this was mainly intended to meet the increase in the French fleet. In the debate on the disposal of the money, Pepys made a speech in which he defended the naval administration from the charge of mismanagement.⁴⁹ In consequence of the conditions attached to this grant by the Commons it was not accepted by the king, and thus the whole question came up again in February 1676–7, after the fourteen months' prorogation. By this time the official demand had risen, and it was urged in the House that it would be better to take in hand at once the construction of thirty new ships.⁵⁰ This was the occasion of another parliamentary effort on the part of the secretary to the admiralty. The substance of it is reported in Grey's 'Debates,' but, inasmuch as what an orator intends to say is often nearer the truth than what he actually says, a manuscript preserved among the Pepysian papers⁵¹ containing what appear to be notes for this speech has a special interest of its own.

The speech was clearly intended to deal largely in technicalities,

⁴⁷ *Adm. Letters*, iv. 147.

⁴⁸ Ranke, iv. 16.

⁴⁹ *Parliamentary History*, iv. 774.

⁵⁰ Ranke, iv. 29.

⁵¹ *Heads for a Discourse in Parliament upon the business of the Navy, Anno 1676*. Pepysian MSS. (*Miscellanies*, ii. 453.)

but for the sake of clearness it was to be divided methodically under thirteen heads. Under the head 'Comparison of the first and second rate ships, and usefulness of three-deck ships, and consequently those two rates above the third rate, and all three above the fourth rate, and why more ships to be built,' Pepys was prepared to urge the necessity of a reserve of ships, 'which . . . the present fleet will not bear. . . . ' 'Our neighbour's force,' he said, is 'now greater than ours, and they will still be building more, so that we are as well to overtake them for the time past, as to keep pace with them in the present building.' What should be the rate of the new ships? Second-rates need fewer men, less draught of water, and a smaller weight of ordnance and ammunition, than first-rates, but having three decks they are 'as terrible to the enemy,' since they are 'as lofty,' and so 'playing down upon them.' 'First-rates we must have, though not in reference to the Dutch, who can't nor do build three-deck ships, as requiring too great draught of water for their ports; yet against the French, who can build as big as he will, and has bigger than we, his ports enduring it better than ours.' First-rates also 'will bear shot, and therefore stand against an enemy's battery and batter better than any other.' But on the whole Pepys appears to incline to building three-deck ships of the second rate. More fourth-rates were quite unnecessary. They 'serve now only for convoys (which the fifth-rates for the most part can do), and to fight against the Turks . . . so that the 36 fourth-rates we have are fully as many, or more than necessary. Besides that they are at any time soon run up, and their want supplied by merchant ships.' From this important question of policy in building the orator passes to questions of a highly technical kind—'why the difference of price, &c., [is] greater between a third-rate and a second than a second-rate and a first-rate,' and 'workmen, time, places, and materials for building ships of the first, second, and third rates.' Under this latter head Pepys notes that scarcity of timber which had already given trouble to naval administrators, and which was to lead to the new ships being built for the most part with foreign timber.

It is Sir Anthony Deane's judgment [he writes] all the king's forests, and private men's timber within twenty miles of his majesty's yards and river of Thames, will not afford compass timber, knees, standards, breast hooks, &c., to build two first-rates and six second-rates in four years; for straight timber, it may be had to do it in two years, if private persons will let it be felled when occasion [requires]; besides the first and second rates above mentioned I conceive it very difficult, if not impossible, to find compass timber, knees, standards, stems, harpins, &c., to build twenty third-rates in four years, stripping all the forests and gentlemen's timber within twenty miles of any land or water carriage or navigable place of England; for straight timber, if the gentlemen will

fell, I suppose there may be as much got in four years as to complete the said work.' ⁵²

Pepys also urges 'our buildingships more burdensome, stronger, and giving them more breadth.' The advantages of this would be that it would prevent the necessity for girdling; 'make them bear sail better, our great ships being generally crank-sided; ' 'make them carry their guns better—that is, higher—our great ships failing therein, especially in bad weather; ' enable them to carry made masts, which would not be so easily carried overboard under fire;

⁵² On the scarcity of timber in England see *Holland's Discourses of the Navy* (Navy Records Society, vol. vii.), p. 207, note 2, and p. 213. 'We have suffered ourselves to come to want of our own growth almost everything that goes to the building and equipping of a ship,' writes Pepys in the *Naval Minutes* (p. 81), '... whereas a naval nation that could have done it ought to have encouraged the having everything within itself.' So far was he impressed with the importance of this policy in regard to timber, that there is among the Pepysian papers (*Miscellanies*, ii. 541) a draft bill for the preservation and increase of timber, 'prepared by Mr. Freeman' and 'drawn by the joint care of the company of shipwrights, at the instance of Mr. Pepys, anno 1675.' An act passed in 1667-8 (19 and 20 Car. II, c. 8) 'for the Increase and Preservation of Timber within the Forest of Dean' had alluded in the preamble to the 'apparent scarcity of timber there, as in all other parts of this kingdom, so that some course is necessary to be speedily taken to restore and preserve the growth of timber for the future supply of his majesty's royal navy,' and the scheme of 1675 was intended to carry this out. The proposed bill attributed the need for legislation to the 'spoils, wastes, and great destruction that hath of late years been made of wood and timber within this nation,' and in particular to the 'unnecessary waste' of wood in London and Westminster and other towns 'that might have been built of brick or stone.' In this connexion it is curious to find Sir William Petty, two years later (1677) declining to regard the 'decay of timber' in England as an evil, because its place can be supplied by foreign commodities, and instancing 'the rebuilding of London, and of the ships wasted by the Dutch war,' to prove it 'no very formidable thing' (*Political Arithmetic*). The clauses of the draft bill provided (1) that all 'forests, chases, parks, manors, woods, wastes, or lands,' whether belonging to the king or private owners, should be under the regulation of the forest laws. (2) No trees to be cut down which 'carry not some apparent mark of decay,' and where trees are felled for the king's use 'other thriving trees' to be planted. (3) At the 'first felling of any coppice' 'twelve standells of oak, ash, elm, or beech' to be left on every acre, and so at the second and third fellings, 'all which 36 standells or trees shall be preserved for timber to the growth of 100 years at least upon thriving grounds, and upon other grounds longer; ' and upon the 'felling and cutting down of trees thus formerly preserved' not more than 20 to the 100 of decaying trees, and 10 to the 100 'respecting the whole number of those that are yet flourishing and of thriving condition at any one felling,' and their places to be filled by fresh planting, or the reserving of an equivalent number of standells at the next felling. This was to be enforced under penalties. (4) Any one making 'any fall or sale of timber' shall give notice in writing of the place, quality, number, and quantity to 'the commissioners or supervisors of the woods for the time being' three months beforehand; and the officers of the navy are to have the right of pre-emption for the use of the navy at reasonable rates. And no such felling or sale of timber shall take place within 20 miles of the sea or any navigable river until it is certified by the commissioners of woods to be 'of sufficient growth for the use of shipping.' (5) 'No person shall lop or cut off the head, principal boughs, or branches of any timber trees, especially of oak, elm, ash, or beech, for browse, fire wood, or any other use, nor space out, chip, bark, or girt the bodies of any such trees or plants, but only of such trees as have been pollards, dottards, old, unsound, and knotty trees, not fit for any other use,' under penalty of fine at pleasure by the commissioners of woods, or in default corporal punishment, inflicted by order of the nearest justice of the peace.

enable them 'to carry more timber and thicker sides,' less easily penetrated by shot; give room for more victuals and stores; and carry the heavier guns that are now cast. To enforce his argument under this head Pepys brings into comparison one or two of the principal French and Dutch ships.

The Tonnage of Four French Ships of War.

	Keel	Breadth	Tonnage
Soll Royall	—	—	1,940
Royall Lewis	—	—	1,800
La Roynne	140	48-4	1,764
Roy Tereau	140	48	1,715

Four Dutch Ships of War.

White Elephant	3 decks {	. .	181	46-9	1,482
Golden Lion			180	46-9	1,477
Seven Provinces	2 decks {	. .	—	—	1,841
Great Hollandia			—	—	1,885

Draught of water, 19 feet 8 inches.

English Ships.

Royal Charles, with the girdling of 10 inches measure	1,581
The Prince is full as big now girdled, and as long on the gun deck, as the Charles, but having a long rake, they measure short on the keel, or she would be	1,520

The Dutch ships have a great rake afore, or else they would measure bigger, being of good breadths. The capital French and Dutch ships with two decks are more in number and much larger than our third-rates considerable, and therefore require large if any be built.

On the important question 'about the rates and fruits of building ships by the king and by contract' Pepys pronounces definitely, as John Hollond had done before him,⁵³ in favour of building by the state. It is profitable to the contractor, who 'must live by his skill and labour,' 'to build slight;' 'the king works with better materials, and works stronger.' 'In the king's yards there is one use or other for all materials that is left, whereas the contract-

(6) All coppices appointed 'for the planting, increase, and growth of timber' to be fenced in 'immediately after such felling, and so kept fenced and preserved free from all kinds of cattle for the space of nine years,' under penalties, with a provision for double or treble penalties for wanton waste or neglect. (7) All persons that have 100 acres of 'land of inheritance' shall have five acres of the same 'of coppice or wood land,' and those who already have more than this proportion are to be required to preserve it all. (8) Fit persons are to be nominated by the king in council as commissioners and supervisors to execute the act.

The replanting of the kingdom seems to have been accomplished without such stringent legislation. Evelyn's writings on forest trees suggested a remedy, and very large quantities of English timber were produced for the navy during the latter part of the eighteenth century, which was chiefly supplied by plantations made between the Restoration and the end of the seventeenth century. (Darrick, *Memoirs of the Royal Navy*, p. 77.)

⁵³ *Discourses of the Navy* (N. R. S. vol. vii.), p. 85.

builder must buy no more than just the ships in building useth, it lying dead upon his hands.' From this and other technical questions of administration Pepys passes to 'the king's love for the navy.'

The king hath outbuilt manifold the proposal of the council board itself in the project of 200,000*l.* per annum.⁵⁴ The king and duke contrivers for the building of ships by tacit engaging my lord treasurer into the beginning of ships, in dependence upon the carrying of it on when begun, and this sometimes against the advice even of the navy officers, when they have contemplated the loss of ships lying long in hand.⁵⁵ King and duke more active in person than any private man.

In his notes Pepys does not seem to have appreciated the possibilities of this head for the purpose of a peroration, for his eloquence finally loses itself in a sandy disquisition on the question why the Forest of Dean is 'no fit place to build ships at.'

The adoption of the scheme for the thirty new ships Pepys was modest enough to attribute chiefly to the impression produced by his own speech in the House. 'I doubt not,' he writes on 23 Feb. 1676-7 to the navy board,⁵⁶

but ere this you may have heard the issue of this morning's debates in the House of Commons touching the navy, wherein I thank God the account they received from me of the past and present state thereof, compared first with one another and then with the naval force of our neighbours as it now is, different from what it ever heretofore has been, was so received as that the debates arising therefrom terminated in a vote for the supplying his majesty with a sum of money for building ships not exceeding 600,000*l.*⁵⁷

Pepys then informs the board that he had also urged on parliament the 'present ill condition of the old fleet,' which would require 300,000*l.* to repair it, fit it for sea, and form a magazine of stores as a reserve. He also suggests to them that, in view of a possible rise in the price of provisions for ship-building, labour, materials, &c., in consequence of so great an undertaking, they should compile a record of the present prices on which the estimates for building the new ships were based, to serve as 'vouchers on behalf of his majesty's conduct and yours, in case by any excessive increases of price or otherwise the charge of building these ships should arise beyond what the same is now reasonably to be judged.' In a later letter, of 16 April 1677, to Sir John Tippetts, the surveyor of the navy,⁵⁸ Pepys refers to an amendment in the Lords, which, though not eventually insisted on, had at one time rendered him 'very

⁵⁴ See *ante*, p. 50.

⁵⁵ Cf. *ibid.* p. 20.

⁵⁶ *Adm. Letters*, v. 345-7.

⁵⁷ The act is 29 Car. II, c. i. (§ 35). In the preamble the commons describe themselves as 'highly sensible how necessary the increase of your majesty's naval force is at this time for the defence of this your realm, and for the preservation of your majesty's ancient and undoubted right unto and dominion over the Narrow Seas.'

⁵⁸ *Adm. Letters*, v. 380.

distrustful of the success of the bill ;' but he is now able, after all, to communicate to this correspondent the news that 'the bill (blessed be God) is . . . passed this night by the king.' He accordingly loses no time in instructing the surveyor to go down at once to Shoreham, to see if it is a suitable place for building a third-rate,

his majesty being very desirous to increase the number of building places as much as may be, as well out of the considerations of having thereby the more room at home for continuing our repair of old ships, together with the building new, the prospect of the condition wherein matters are likely to stand between us and France rendering the dispatch of our repairs no less indispensable than that of our new building. The king and his royal highness are extremely importunate that not an hour's time be lost.

This disposition to push forward naval preparations was abundantly justified by the events of the next year. In February 1678 England, in alliance with Holland, appeared to be on the eve of war with France, and the king's new anti-French policy was eagerly supported by parliament.⁵⁹ The decision was taken to equip a fleet of ninety ships, and the imposition of a poll tax was agreed to for military and naval preparations. The Pepyeian papers contain several allusions to these proceedings, and among them estimates of the naval strength of France about this time.⁶⁰

A List of the Fleet of France presented to Monsieur Colbert, 1677.

Rate	Number	Guns	
1st	12	1,230	With 1,470 mariners, 2,580 officers and soldiers, and 6,300 slaves
2nd	17	1,338	
3rd	57	3,570	
4th	43	1,904	
5th	30	1,016	
6th	21	266	
Galleys	30	—	
Total . . .	210	9,384	

A Particular List of the Seamen, Bargemen, Fishermen, and Watermen in every Province of France.

Province	No. of Men	Province	No. of Men
Flemish Coast . . .	1,083	Darcachon . . .	1,809
Picardy . . .	2,311	Guienne . . .	4,009
Normandy . . .	18,922	Rousillon . . .	1,886
Brittany . . .	17,132	Languedoc . . .	9,703
Poitou . . .	2,679	Provence . . .	17,009
Coast of Dauniz . . .	11,905	River boatmen . .	5,670
Saintonge . . .	1,611		

The total is given in the manuscript as 103,876, of whom 47,596 were coast fishermen, 10,274 bargemen, lightermen, and watermen employed on rivers, leaving 46,006 able mariners.

⁵⁹ Ranke, iv. 43.

⁶⁰ *Miscellanies*, v. 271-81.

The navy lists in the Pepysian library supply the material for a rough comparison of the English naval force in 1679 with this account of the French navy as it was in 1677. During the period 1678-9 the following vessels were added to the navy.⁶¹ Those that were built under the act of 1677 for thirty new ships are distinguished by an asterisk. A list of these is given in Derrick, 'Memoirs of the Royal Navy,' appendix 6, and they are distinguished by Pepys in the general list of ships printed at the end of the 'Memoirs.'

FIRST-RATES.

Name	Prize	Built	Re-built	Keel in Feet	Beam in Feet	Depth in Feet	Draught in Feet	Tonnage	Men in War ⁶²	Guns in War
'James Royal' ⁶³	—	1675	—	132	45	18·4	20·6	1,422	780	100

SECOND-RATES.

o' Vanguard' ⁶⁴	—	1678	—	142·6	44 ⁶⁵	18·5	20·6	1,482	660	90
o' Windsor Castle' ⁶⁶	—	1678	—	142	44	18·3	20	1,462	660	90
o' Duchesse' ⁶⁷	—	1679	—	143	45·8	18·4	20·6	1,516	680	90
o' Sandwich' ⁶⁸	—	1679	—	132·6	44·6	18·3	20	1,395	660	90
Total .								5,885	2,640	360

⁶¹ The materials for this and the following lists are contained in a manuscript volume entitled *The History of every Ship and Vessel of the Royal Navy of England from Mr. Pepys' Entrance thereto with King Charles II, 1660, to his Quitting the same with King James, 1688* (No. 2940). It is possible that this is the list referred to in a letter of 5 Aug. 1678, sent by Pepys to all the shipwrights, in which he alludes to 'very great disagreement' in all the general lists of dimensions accessible to him, and asks for authentic details from 'each person now surviving that has had the honour of building of any of his majesty's ships that either now are or have been in being since his majesty's restoration,' since he had 'an occasion of making a perfect list as soon as may be for his majesty's own use' (*Adm. Letters*, viii. 19).

⁶² The number of men was sometimes calculated by the ship's burden—one man to every four tons above 40 and under 400 tons; above 400 tons one man to every three tons. The alternative method adopted here (see *infra*) was 'after the number and quality of the great guns that the ship doth carry, with an answerable allowance of some upare hands for the handling of the sails' (Boteler, p. 66).

⁶³ Built at Portsmouth by Sir Anthony Deane to replace the 'James Royal,' that had been burnt in the fight of 18 May 1672.

⁶⁴ Built at Portsmouth by Daniel Furzer. Named after the older 'Vanguard,' which had been sunk at Chatham in June 1667. The new vessel, though also a second-rate, was considerably larger.

⁶⁵ After 1673 the English shipbuilders increased the beam of their second-rates. As to our three-deck ships,' says Pepys (*Naval Minutes*, p. 269), the French and the 'Dutch build them upwards of 44 foot broad, but we build none of our deck ships of the third-rate above 41 broad, and several under, by which means the Henry, the Catherine, &c., were useless until they were girdled. And, to prevent the like for the future, his majesty has directed those 9 three-deck ships of the second rate built and a-building to be near 45 foot broad, which is another improvement we had not till the year '73, the builders of England before that time having not well considered it that breadth only will make a stiff ship.'

⁶⁶ Built at Woolwich by Thomas Shish. ⁶⁷ Built at Deptford by John Shish.

⁶⁸ Built at Harwich by Isaac Betts.

THIRD RATES.

Name	Prize	Built	Re-built	Keel in Feet	Beam in Feet	Depth in Feet	Draught in Feet	Tonnage	Men in War	Guns in War
'Harwich' ⁶⁰	—	1674	—	123-0	38-10	15-8	17-6	993	420	70
'Oak Royal' ⁷⁰	—	1674	—	125	40-6	18-3	18-8	1,107	470	74
'Defiance' ⁷¹	—	1675	—	117	37-10	15-10	17-6	890	390	64
'Mountagu' ⁷²	—	—	1673	117	36-6	16	17-4	829	355	62
'Anne' ⁷³	—	1678	—	124	40	17	18	1,089	460	70
'Captain' ⁷⁴	—	1678	—	138	39-10	17-2	18	1,164	460	70
'Hampton Court' ⁷⁵	—	1678	—	131	39-10	17	18-0	1,105	460	70
'Hope' ⁷⁶	—	1678	—	124-5	40	16-0	18-6	1,058	460	70
'Lenox' ⁷⁷	—	1678	—	131	39-8	17	18	1,096	460	70
'Restoration' ⁷⁸	—	1678	—	123-6	37-8	17	18	1,032	460	70
'Berwick' ⁷⁹	—	1679	—	128	40	17	17	1,089	460	70
'Bredah' ⁸⁰	—	1679	—	124-6	39-10	16-0	18	1,055	460	70
'Burford' ⁸¹	—	1679	—	140	40-10 1/2	17-3	18	1,174	460	70
'Eagle' ⁸²	—	1679	—	120	40-0	17	18	1,047	460	70
'Elizabeth' ⁸³	—	1679	—	137-6	40-11 1/2	16-8 1/2	18	1,106	460	70
'Essex' ⁸⁴	—	1679	—	134	40	16-9 1/2	18	1,072	460	70
'Expedition' ⁸⁵	—	1679	—	120	40-0	17	18	1,059	460	70
'Grafton' ⁸⁶	—	1679	—	139	40-5	17-2	18	1,174	460	70
'Kent' ⁸⁷	—	1679	—	134-10	40-2	16-9 1/2	18	1,067	460	70
'Northumberland' ⁸⁸	—	1679	—	137	40-4	17	18	1,050	460	70
'Pendenis' ⁸⁹	—	1679	—	136-0	40-1	17	17	1,093	460	70
'Stirling Castle' ⁹⁰	—	1679	—	133-11	40-4	17-3	18	1,114	460	70
Total								23,465	9,915	1,530

FOURTH RATES.

'Oxford' ⁹¹	—	1674	—	109	34	15-6	17-8	670	280	54
'Kingsfisher' ⁹²	—	1675	—	110	33-8	13	13	603	220	46
'Woolwich' ⁹³	—	1675	—	112	35-9	15	16-4	761	280	54
'Charles' Galley ⁹⁴	—	1676	—	114	28-6	8-7	12	492	220	32
'James' Galley ⁹⁵	—	1676	—	104	28-1	10-2	12	438	200	30
'Marygold' ⁹⁶	1677	—	—	100	31-6	12-8	14	495	190	44
'Tiger' Prize ⁹⁷	1678	—	—	112	33	12-8	15	649	230	48
Total								4,166	1,620	308

⁶⁰ Built at Harwich by Sir Anthony Deane. He copied the dimensions from a French ship, the 'Superbe,' which came to Spithead with the French fleet during the Dutch war. 'This ship,' says Pepys (*Naval Minutes*, p. 269), 'was greatly commended, both by the French and English that went on board her. She was 40 foot broad, carried 74 guns and six months' provision, and but 2½ decks. Our frigates, being narrower, could not stow so much provision nor carry their guns so far from the water.' The English copy of the 'Superbe' became 'the pattern for the second and third rates built by . . . act of parliament, which is generally agreed to be without exception and the highest improvement that is known to this day.' When, in June 1675, the king went by sea, escorted by a squadron, Pepys reported, 'The Harwich carries the bell from the whole fleet, great and small' (*Adm. Letters*, iv. 161.)

⁷⁰ Built at Deptford by Jonas Shish. ⁷¹ Built at Chatham by Phineas Pett.

⁷² Originally built at Portsmouth in 1654 by John Tippetts. Rebuilt and widened at Chatham by Phineas Pett.

⁷³ Built at Chatham by Phineas Pett to replace the 'Anne,' which had been blown up by accident at Sheerness in 1673.

⁷⁴ Built at Woolwich by Thos. Shish.

⁷⁵ Built at Deptford by Capt. Castle.

⁷⁶ Built at Harwich by Isaac Betts.

⁷⁷ Built at Portsmouth by Daniel Furzer.

⁷⁸ Built at Blackwall by Henry Johnson. Named after the older 'Essex,' built in 1654, and taken by the Dutch, 2 June 1666.

⁷⁹ Built at Blackwall by Henry Johnson.

⁸⁰ Built at Bristol by Francis Bayly.

⁸¹ Built at Bristol by Francis Bayly.

⁸² Built at Woolwich by Phineas Pett.

⁸³ The 'Charles' galley was built at Woolwich by Phineas Pett, and the 'James' at Blackwall by Anthony Deane the younger. 'In the year '76,' writes Pepys (*Naval Minutes*, p. 269), 'Captain Willshaw came from Toulon, and was telling his majesty that they were building at Toulon several galley-frigates to row with many oars.'

FIFTH-RATES.

Name	Prize	Built	Re-built	Keel in Feet	Beam in Feet	Depth in Feet	Draught in Feet	Tonnage	Men in War	Guns in War
'Rose' ⁶⁶	—	1674	—	75	24	10	12-0	229	125	28
'Sapphire' ⁶⁶	—	1675	—	86	27	11	12-2	333	155	32
'Orange Tree' ⁶⁶	1677	—	—	76	26-4	8-10	11	281	120	30
'St. Paul' ⁶⁷	1679	—	—	74	25-0	11-2½	14	260	135	32
Total .								1,102	525	122

SIXTH-RATES.

'Lark' ⁶⁶	—	1675	—	74	22-6	9-2	9	199	85	18
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YACHTS.

'Katherine' ⁶⁶	—	1674	—	56	21-4	8-6	7-9	135	30	8
'Portsmouth' ⁶⁶	—	1674	—	57	20-6	7-4	7-6	133	30	8
'Charles' ⁶⁶	—	1675	—	54	20-6	7-0	7-8	120	30	8
'Charlotte' ⁶⁶	—	1677	—	61	21	9	7-10	142	30	8
'Mary' ⁶⁶	—	1677	—	66-6	21-6	8-9	7-6	166	30	8
'Henrietta' ⁶⁶	—	1679	—	65	21-8	8-3	8-9	162	30	8
Total .								853	180	43

Besides these, seven fire ships, all bought in 1678, one fly boat (a prize from Algiers), one hulk, one pink,⁶⁴ and one sloop were added to the navy during the period.

Thus the gross increase of the navy during the period 1673-9, neglecting temporary additions for special purposes, such as fire ships, may be tabulated as follows:—

Captain Willshaw could give his majesty but an imperfect account, for that he could not well describe them. The next time Sir A[nthony] D[eane] attended his majesty he was pleased to speak of it, and asked if we knew what they were. A. D. answered, "No." Sir Jos. Williamson (as I take it), standing by, propounded to send A. D.'s son to see them, to which was replied he had an acquaintance to whom he would write at Toulon, and upon his answer did not doubt but to understand it. The answer being returned, A. D.'s son drew the draught of the James galley-frigate, and Mr. Pett the Charles, upon the same principles, and from thence came that improvement so useful to us against the Turks.⁶⁵

⁶⁴ Algerine prize.

⁶⁵ Built at Yarmouth by Mr. Edgar.

⁶⁶ Built at Harwich by Sir Anthony Deane.

⁶⁷ A Dutch ship retaken from Algiers.

⁶⁸ Built at Blackwall by Sir Anthony Deane.

⁶⁹ Built at Chatham by Phineas Pett and named after the 'Katherine' yacht of 1661, which had been taken by the Dutch in August 1678.

⁷⁰ Built at Woolwich by Phineas Pett.

⁷¹ Built at Rotherhithe by Sir Anthony Deane. Cast away on the coast of Holland in November 1678.

⁷² Built at Chatham by Phineas Pett. Named after the first yacht given to the king by the Dutch in 1660, which had been cast away near Holyhead in 1675.

⁷³ Built at Woolwich by Thomas Shish. Named after the 'Henrietta' yacht of 1663, which had been sunk in action, August 1678.

⁷⁴ A 'saietty' or 'satties' taken from Tripoli.

ADDITIONS TO THE NAVY, 1673-79.

Rates	Number	Tonnage	Men	Guns
1st	1	1,422	780	100
2nd	4	5,885	2,640	360
3rd	22	23,465	9,915	1,530
4th	7	4,166	1,620	308
5th	4	1,102	525	123
6th	1	199	85	18
Hoya	—	—	—	—
Hulks	1	446	20	—
Ketches	—	—	—	—
Pinks	1	50	—	—
Sloops and smacks	1	24	10	4
Yachts	6	858	180	43
Total	48	37,617	15,775	2,490

The losses during the same period may be tabulated thus :

LOSSES DURING 1673-79.

Rates	Taken	Wrecked	Obsolete	Tonnage	Men	Guns
1st	—	—	—	—	—	—
2nd	—	—	—	—	—	—
3rd	—	1	3	3,812	1,450	244
4th	—	1	1	1,018	390	96
5th	—	1	2	748	360	84
6th	—	—	2	159	95	24
Hoya	—	—	—	—	—	—
Hulks	—	1	1	1,217	22	—
Ketches	—	—	2	108	80	14
Pinks	—	—	—	—	—	—
Sloops and smacks	—	2	1	137	23	12
Yachts	—	2	—	220	60	16
Total	—	8	12	6,919	2,480	490

The totals in the previous tables may be brought together thus, in order to give the comparison required :—

RESULT.

—	Ships	Tonnage	Men	Guns
Strength of the navy in 1673 ²²	144	61,161	20,458	4,294
Additions during 1673-9	48	37,617	15,775	2,490
Total	192	98,778	36,233	6,784
Losses during 1673-9	20	6,919	2,480	490
Strength of the navy in 1679	172	91,859	33,753	6,294

²² These figures differ slightly from those given in the table in the previous article on this subject (*ante*, p. 58), as the writer, while counting ships rebuilt among additions to the navy, omitted to include them among ships obsolete, and thus they were counted twice over. The error does not much affect any general conclusion, but the corrected figures are given on next page, as also those for the strength of the navy in 1660 where the totals cast from Pepys's list were not accurate in all cases. Mere changes in rating are neglected in all these tables, account being taken of new building and prizes only.

Thus the building of the thirty new ships had had the effect of bringing the strength of the navy considerably above the point at which it had stood either in 1660 or 1673. Although only twenty-two of the new ships come into the period under consideration, the figures stand thus :—

Date	Ships	Tonnage	Men	Guns
1660	156	62,594	19,551	4,642
1673	144	61,161	20,458	4,294
1679	172	91,859	33,753	6,294

The year 1677 saw the adoption of a 'general establishment' of men and guns, the credit of which was claimed by the indefatigable

ROYAL NAVY IN 1660. (*Corrected from p. 52, supra.*)

Rates	No.	Tonnage	Men	Guns
1st	3	4,078	1,600	260
2nd	11	9,307	3,380	658
3rd	16	11,529	3,520	820
4th	45	21,597	5,980	1,718
5th	87	9,096	3,375	832
6th	23	2,293	1,235	252
Hoys	1	33	3	0
Hulks	7	3,826	14	0
Ketches	5	300	175	88
Pinks	6	480	260	60
Sloops	1	33	5	2
Yachts	1	22	4	2
Total	156	62,594	19,551	4,642

LOSSES DURING 1660-73. (*Corrected from p. 57, supra.*)

Rates	Taken	Wrecked	Obsolete	Tonnage	Men	Guns
1st	3	1	1	6,558	3,100	448
2nd	3	3	1	6,700	2,710	494
3rd	2	4	—	4,448	1,670	382
4th	18	8	10	16,974	6,735	1,038
5th	4	8	21	9,096	3,895	974
6th	2	4	15	2,398	1,110	120
Hoys	3	—	14	1,246	167	52
Hulks	—	—	5	2,039	10	—
Ketches	2	1	4	423	248	46
Pinks	1	1	6	653	415	68
Sloops and smacks	4	4	1	393	193	24
Yachts	2	—	2	258	74	24
Total	39	34	36	51,184	19,967	4,360

RESULT. (*Corrected from p. 58, supra.*)

	Ships	Tonnage	Men	Guns
Strength of the navy in 1660	156	62,594	19,551	4,642
Additions during 1660-73	147	49,751	20,874	4,012
Total	303	112,345	40,425	8,654
Losses during 1660-73	159	51,184	19,967	4,360
Strength of the navy in 73	144	61,161	20,458	4,294

secretary to the admiralty.⁹³ Such an establishment had first come under consideration as early as 1674, and information on the subject had been supplied to the admiralty by the navy board on 10 March of that year. The first draft submitted by the navy board is in one of the smaller manuscript volumes in the Pepysian library (No. 1840), entitled 'An Establishment of Men and Guns to the whole Royal Navy of England.' This draft, 'after many debates had thereon,' and 'upon several conferences jointly had between the officers of his majesty's navy and ordnance, and several flag officers and principal commanders of his fleet,'⁹⁷ was adopted, with some slight modifications, by the king and the lords commissioners of the admiralty on 8 Nov. 1677.⁹⁸ It was intended 'for a solemn, universal, and unalterable adjustment of the gunning and manning of the whole fleet (otherwise than by order of the king and council).'⁹⁹

The establishment of guns thus determined is contained in 'Naval Precedents,' in two lists: the first according to number only, and the second according to the distribution of weight upon each deck. The tables subjoined give the figures for the largest and smallest ship of each rate¹⁰⁰ :—

ESTABLISHMENT OF GUNS IN WAR AT HOME.¹⁰¹

Rates	Names	Total No. of Guns	Cannon of 7	Demt-cannon	32-pounders	Whole Culverins	12-pounders	Demt-culverins	Sabers	Light Sabers	3-pounders
1st	'Royal Sovereign'	100	26	—	26	—	—	26	—	14	4
	'St. Michael'	80	—	26	—	26	—	26	—	10	2
2nd	'Royal Katherine'	84	—	26	—	26	—	—	24	8	—
	'Rainbow'	64	—	22	—	—	—	22	14	6	—
3rd	'Edgar'	72	—	26	—	—	24	—	—	16	4
	'Dunbar'	60	—	—	24	—	—	24	—	10	2
4th	'Leopard'	54	—	—	24	—	—	—	22	8	—
	'Nonpareil'	42	—	—	—	—	20	18	4	—	—
5th	'Sapphire'	32	—	—	—	—	18	10	—	—	4
	'Rose'	28	—	—	—	—	16	6	—	—	4
6th	'Lark'	18	—	—	—	—	—	16	—	—	2
	'Young Sprag'	10	—	—	—	—	—	—	10	—	—

⁹³ 'I first brought the establishment for men and guns for the whole fleet to be adjusted between the officers of the navy and ordnance and chief officers of the fleet, and upon solemn hearing before the king and lords of the admiralty and the measures thereof debated, signed by the king and the lords, and so settled' (*Naval Minutes*, p. 62). Pepys afterwards complained that this establishment was 'broken into' in 1683 (*ibid.* p. 201).

⁹⁷ *Naval Precedents*, p. 201.

⁹⁸ *Ibid.* The modifications made in the draft were two. (1) The admirals of the white and blue were allowed a retinue of thirty men each, instead of forty and thirty respectively, as proposed in the draft. (2) The establishment of men formally adopted was the maximum establishment only—that for 'war at home.' It was left to the discretion of the principal officers to make such abatements as they thought fit in the cases of 'peace' or 'war abroad.' The calculations of the officers were accepted *en bloc* as the establishment for ships under third-rates, on the ground that they were the best judges of their capacity (*Adm. Letters*, vi. 201-2).

⁹⁹ *Ibid.*

¹⁰⁰ The largest third-rates on the list in the 'Royal Oak,' 74 guns, but the figures given for this are clearly inaccurate.

¹⁰¹ A description of the various kinds of ordnance used in his day is given by Sir

ESTABLISHMENT OF GUNS IN PEACE, AND IN WAR ABROAD.

Rates	Names	Total No. of Guns	Cannon of 7	Demi-cannon	24-pounders	Whole Culverins	12-pounders	Demi-culverins	Sakers	Light Sakers	3-pounders
1st	'Royal Sovereign'	90	24	—	26	—	—	26	—	10	4
	'St. Michael'	80	—	24	—	24	—	24	—	8	—
2nd	'Royal Katherine'	74	—	24	—	24	—	—	20	6	—
	'Rainbow'	54	—	20	—	—	—	20	10	4	—
3rd	'Edgar'	62	—	24	—	—	24	—	12	—	2
	'Dunkirk'	52	—	—	22	—	—	20	—	10	—
4th	'Leopard'	46	—	—	22	—	—	—	18	6	—
	'Nonsuch'	36	—	—	—	—	18	14	4	—	—
5th	'Sapphire'	28	—	—	—	—	16	8	—	—	4
	'Rose'	26	—	—	—	—	14	8	—	—	4
6th	'Lark'	16	—	—	—	—	—	16	—	—	—
	'Young Sprag'	10	—	—	—	—	—	—	10	—	—

William Monson in his *Naval Tracts* (Churchill, *Voyages*, iii. 342). If this is compared with figures given in the draft establishment referred to above (MS. 1340), it shows an increase in the weight of the heavier pieces of ordnance. Thus:—

THE DIFFERENT WEIGHT OF GUNS USED IN THE NAVY.

Guns	Weight in Cwt. in MS. 1340			Weight in Cwt. in Monson's 'Naval Tracts'
	Least	Medium	Biggest	
Cannon of 7	51	57	63	49 (5,500 lbs.)
6-pounders	15	22	30	
Demi-cannon	40	45	50	35½ (4,000 lbs.)
Saker	14	20	26	12½ (1,400 lbs.)
24-pounders	32	38½	43	
Demi-culverin cutts	10	13	16	
Culverin	30	35	40	40 (4,500 lbs.)
Saker cutts	8	10	12	
12-pounders	27	30½	34	
Minion	7	9	11	9 (1,000 lbs.)
Demi-culverin	22	26	30	30 (3,400 lbs.)
3-pounders	3½	4½	5	

On the other hand the average weight of guns under the establishment of 1676-7 shows a slight reduction as compared with 1672. Thus:—

Ships	Rat. 14	Men	Medium Weight of Guns carried in the Year 1672										Medium Weight of Guns as they are now established by Rule in the Year 1676									
			Guns		Cannon of 7	Demi-cannon	24-pounders	Whole Culverin	12-pounders	Demi-culverin	Sakers or Demi-culv. Cutts	Minion	3-pounders	Cannon of 7	Demi-cannon	24-pounders	Whole Culverin	12-pounders	Demi-culverin	Sakers or Demi-culv. Cutts	Minion	3-pounders
'Royal Charles'	1	815	100	384	—	—	—	36	—	29	14	—	4	59	—	35½	—	25½	—	12½	—	6
'Victory'	2	530	82	—	17	—	23	—	27	13½	—	—	4	45½	—	31½	—	22	—	12½	—	—
'Resolution'	3	420	70	—	45½	—	23	—	—	—	—	—	4½	48½	—	—	—	11½	—	—	—	
'Leopard'	4	280	54	—	—	40	—	—	—	28	14	—	—	—	41½	—	—	6-p. 20½	—	10	—	—
'Norwich'	5	130	30	—	—	—	—	—	—	25	16	9	—	—	—	—	—	D.c. 30½	—	16½	7½	—
'Greyhound'	6	75	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—

NUMBERS, NATURES, AND WEIGHTS OF THE GUNS CARRIED ON EACH DECK.

Rates	Names	Lower Deck			Middle Deck			Upper Deck			Quarter-deck and Fore-castle			Poop			Total	
		Number	Nature	Weight in Tons	Number	Nature	Weight in Tons	Number	Nature	Weight in Tons	Number	Nature	Weight in Tons	Number	Nature	Weight in Tons	Number	Weight in Tons
1st	'Royal Sovereign'	26		78	28	24-p'ders	51	28	Demi-culv.	38	14	Light saker	9-4	4	3-p'ders	16	100	177
	'St. Michael'	24		72	26		47	26	Not given	35	10		6-19	4		16	90	162
2nd	'Royal Katherine'	26		58	26	Whole culv.	41	24	saker	26	8		5				84	131
		24		52	24		37	20		22	6		3				74	117
3rd	'Rainbow'	22		46	22	Demi-culv.	34	14		18	6		3				64	101
		20		41	20		30	10		16	4		3				54	90
4th	'Edgar'	26		61	26		26	12		43	16		9-14	4			18	72
		24		58			24	p'ders	39	12		6-17	3				8	62
5th	'Dunkirk'	24	34-p'ders	46			24	Demi-culv.	24	10		5-12	2				8	60
		22		42			20		23	10		5					52	71
6th	'Leopard'	24		50			22	saker	23	8		5					54	77
		22		45			18		18	6		4					48	67
7th	'Nonsuch'	20	Demi-culv.	32			18		12	4		1					42	39
		18		28			14		9	4		1					36	34
8th	'Sapphire'	16		22			10	Light saker	8	4		1					32	38
		16		20			8		6	4		1					28	32
9th	'Rose'	16		20			8		4	4		1					28	28
		14		17			8		4	4		1					16	26
10th	'Lark'						16	Saker	13	2							18	14
							16		13								16	13
11th	'Young Sprag'						10		5								10	5
							10		4								10	4

The corresponding establishment for the thirty new ships still to be built is given in the table below,¹⁰² with some further details

¹⁰² THE QUALITY, NUMBER, WEIGHT, AND LENGTH OF ORDNANCE PROPOSED TO BE ESTABLISHED FOR THE THIRTY SHIPS OF WAR TO BE BUILT OF THE RATES AND TONNAGE UNDERMENTIONED.

Ships' Burden	Number and Quality of Ordnance	Weight of each in Cwt.	Full Weight in Tons	Length in Feet		Total Weights in Tons
First-rate of 1,500 tons and 100 guns	26 cannon of 7	65	84-10	9	Weight of guns in the first-rate	187-8
	28 whole culverins	42	58-16	9		
	28 sakers	22	30-16	8		
	12 sakers	16	12-16	7		
	4 sakers	16				
	2 3-pounders	5	10	5		
	100 guns	Tons	187-8			
9 second-rates of 1,300 tons each and 90 guns	26 demi-cannon	54	70-4		Weight of guns in the 9 second-rates	1433-14
	26 whole culverins	40	52-0			
	26 sakers	22	28-12			
	10 sakers	16	8-0			
	2 3-pounders	5	10			
	90 guns	Tons	159-6			
20 third-rates of 1,000 tons each and 70 guns	26 demi-cannon	54	70-4		Weight of guns in the 20 third-rates	2480-0
	26 12-pounders	32	41-12			
	10 sakers	16	8-0			
	4 sakers	16	3-4			
	4 3-pounders	5	1-0			
	70 guns	Tons	124-0			
					Total weight	4101-2

concerning the dimensions of the ordnance, the armament of each rate being homogeneous.¹⁰³

The requirements of the whole fleet are also brought together in a final table, which includes the thirty new ships. The amount of detail given in this and the preceding tables is to be explained by the fact that they were intended primarily for the guidance of the master of the ordnance.

AN ABSTRACT OF THE NUMBER OF SHIPS AND NUMBER AND QUALITY OF GUNS IN EACH RATE.

	Rates		No. of Ships	Cannon of 7	Demi-cannon	24-pounders	Whole culverins	12-pounders	Demi-culverins	Sakers	Light Sakers	Minion	3-pounders	Total
135 ships of war	1	With 1 new ship .	9	203	26	28	222	—	216	—	113	—	82	850
	2	With 9 new ships .	17	—	420	—	380	—	44	410	146	—	—	21,402
	3	With 20 new ships .	42	—	750	316	28	792	266	—	572	—	172	2,896
	4	With 2 galleys .	40	—	—	236	438	—	164	816	226	—	10	1,890
	5	With 5 fire ships .	17	—	—	—	—	—	230	146	—	60	—	436
	6	With 2 ketches .	10	—	—	—	—	—	—	126	—	2	4	112
														[sic.]
														7,586
														[sic.]
45 small vessels		Hulks	6	—	—	—	—	—	—	—	—	—	—	—
		Hoys	4	—	—	—	—	—	—	—	—	—	—	—
		Sloops	13	—	—	—	—	—	—	—	—	—	52	52
		Smacks	5	—	—	—	—	—	—	—	—	—	—	—
		Yachts	17	—	—	—	—	—	—	—	—	110	—	116
Total 180				208	1,196	580	1,068	792	920	1,498	1,062	62	388	7,754
														[sic.]

The establishment of men was determined mainly by the number and size of the guns carried on board each ship, with the additional men, according to a specified proportion, for other duties that had to be discharged during an action at sea. The draft establishment referred to above (Pepysian MSS., No. 1340) gives the following scale for the whole navy [see Table A on next page]. The ships here selected, to show the principle on which calculations were made, are the largest and smallest of each rate.

This table does not include the thirty new ships; but a similar establishment for these can be obtained from Pepys's own correspondence in the 'Admiralty Letters' (vi. 221). This, however, shows some variations. [See Table B. on next page.]

The result of these rather elaborate calculations was also stated in the form of a simple rule of thumb, which could be applied to reckon readily in future the number of men required to work a ship of any given size. Ships with three decks were to be allowed

¹⁰³ Derrick, who appears to have drawn to a certain extent upon the Pepysian papers, gives a few of these facts in his 28th appendix.

in war fifty men to every hundred tons burden, and in peace thirty-six; ships under three decks were to be allowed forty and twenty-six respectively. For foreign service the complement was to be 'the medium number between war and peace.' This proportion applied

TABLE A.—ESTABLISHMENT OF MEN FOR THE FLEET.

Description of Guns, &c.	First-rate		Second-rate		Third-rate		Fourth-rate		Fifth-rate		Sixth-rate	
	'Royal Charles'	'St. Michael'	'Royal Katherine'	'Rainbow'	'Edgar'	'Dunkirk'	'Leopard'	'Nonsuch'	'Sapphire'	'Rose'	'Lark'	'Young Sprag'
	Guns	Men	Guns	Men	Guns	Men	Guns	Men	Guns	Men	Guns	Men
Cannon of 7—to each 7 men	26	182	—	—	—	—	—	—	—	—	—	—
Demi-cannon	—	—	36	180	26	130	24	120	24	120	—	—
24-pounders	—	—	—	—	—	—	—	—	—	—	—	—
Whole culverin	28	112	30	104	20	104	—	—	—	—	—	—
12-pounders	—	—	—	—	—	—	—	—	—	—	—	—
Demi-culverin	—	—	—	—	22	66	—	—	20	60	18	54
Baker	28	84	28	72	14	42	16	48	24	72	12	36
Minion	14	42	10	30	8	24	10	30	8	24	10	30
3-pounders	4	12	2	6	—	—	4	12	4	12	4	12
To carry powder for all the guns	84	80	23	20	23	18	12	8	6	6	4	3
To fill and hand powder for all the guns	15	10	6	6	6	6	6	6	6	6	6	6
Chyrurgeon and crew in hold	10	8	8	6	6	6	6	6	6	6	6	6
Carpenter and crew	8	6	4	4	4	4	4	4	4	4	4	4
Purser and crew in hold	8	6	4	4	4	4	4	4	4	4	4	4
Men for the small shot	110	80	65	51	45	37	20	16	14	15	11	10
Men to stand by the masts	120	90	75	61	55	45	24	20	16	17	12	12
Men for the boats and tops	80	25	20	20	15	12	—	—	—	—	—	—
Total	100	780	90	600	24	340	54	410	72	445	60	340

TABLE B.—ESTABLISHMENT OF MEN FOR THE THIRTY NEW SHIPS.¹⁰¹

No. of Guns	First-rate	No. of Men	No. of Guns	Second-rate	No. of Men	No. of Guns	Third-rate	No. of Men
26	Cannon of 7: 8 men to a gun	208	20	Demi-cannon: 6 men	156	20	Demi-cannon: 6 men	156
26	Culverin: 5 men to a gun	140	26	Culverin: 5 men	130	26	12-pounders: 4 men	104
	Men to govern the guns	8		—	8		—	0
26	Baker: 3 men to a gun	84	26	Saker: 3 men	78	12	Saker: 3 men	80
12	" 3 " " "	36		—	4	2	" 3 " " "	6
4	" 3 " " "	12	10	Saker: 3 men	30		—	—
3	3-pounders: 2 " " "	6	2	—	4	2	3-pounders: 2 men	4
	To carry powder	38		—	30		—	30
	To fill and hand powder	16		—	14		—	10
	To hand down wounded men	12		—	12		—	8
	Chyrurgeon and crew	8		—	8		—	5
	Carpenter and crew	8		—	6		—	4
	Purser and his crew	6		—	5		—	5
	Boats: three	30		—	30		—	10
	To the tops, if no flag	10		—	10		—	5
	For the helm	2		—	2		—	2
	To oon the ship	2		—	2		—	2
	Small shot	80		—	68		—	35
	To the sails and rigging	80		—	60		—	36
100		784	90		660	69		400

¹⁰¹ Cf. Derrick, appendix 28.

only to ships hereafter to be built; 'for what is already built no general rule can be given exactly, the burdens and number of ports being so various and different.' A similar proportion was also calculated for guns, the 'weight of guns' being 'to every hundred tons the ship is in burden, in war—

1st-rates	12½	} tons by this establishment the nearest numbers;
2nd "	.	.	.	.	.	.	.	12½
3rd "	.	.	.	.	.	.	.	11½
4th "	.	.	.	.	.	.	.	11½
5th "	.	.	.	.	.	.	.	11
6th "	.	.	.	.	.	.	.	7

in peace proportionably.'

The additional allowance of men for retinues was also fixed as follows:—

Over and above the establishment of men to each ship to be allowed the lord high admiral or general that commands the whole fleet, 50 men for his flag; to the admiral of the white, 40; to the admiral of the blue, 30; to the vice-admirals of the white, red, and blue, 20; to the rear-admirals of the white, red, and blue, 15; to an admiral jack flag abroad or at home, equal with an admiral of blue, and the like with vice and rear admirals; and all volunteers, midshipmen extraordinary, and their servants, that are sent on board any of his majesty's ships by warrant from his majesty and the lord high admiral.

The naval papers relating to this period contain a number of interesting particulars about the cost of materials for ship-building, the price of ships worked out according to the tonnage, and various calculations of a like nature. Thus we learn from the heads of Pepys's speech¹⁰⁵ that 1,000 loads of timber will build a third-rate of 1,000 tons, and 2,000 loads of timber a second-rate of 1,300 tons; that a ship of 500 tons will cost 8*l.* 5*s.* per ton, and a ship of 1,000 tons 10*l.* per ton; a ship of 600 tons costs 4,800*l.* 'off the stocks,' but 13,000*l.* 'set to sea.' According to a calculation made by Sir Anthony Deane, the cost of setting to sea first and second rates for six months was one-third of the hull, and third-rates half the hull; while Sir John Tippetts, who affected accuracy, gave the figures as 30 per cent. of the hull for a first-rate, 33 for a second, and 45 for a third. The latter was accustomed to calculate the cost of twelve months' sea stores by adding one-third of the cordage and sails to six months' stores. The same document also gives a number of details concerning prices at different times, thus:—

Great merchant ships, in 1658, 6*l.* a ton; in 1676, 8*l.* 2*s.* 6*d.*

Merchant ships of 250 tons, in 1664, 5*l.* 6*s.* a ton; in 1676, 7*l.* 2*s.* 6*d.*

Merchant ships of 450 tons in Suffolk and Hampshire, in 1664, 5*l.* a ton; in 1676, 6*l.* 17*s.*

¹⁰⁵ *Miscellanies*, ii. 458.

Timber, compass and straight, 1655, 38s. and 84s. a load ; 1661, 88s. ; 1675, 56s.

Plank, 1655, 3l. a load ; 1661, 3l. 5s. ; 1675, 4l. to 4l. 15s.

In 1674 Sir Anthony Deane estimated the cost of the hull of a new ship 90 feet long, and 27 feet 6 inches broad, at 2,440l., or 10l. a ton ; or, completely equipped with rigging, boats, &c., and six months' stores, but excluding gunner's stores, at 4,175l. 10s.¹⁰⁶

It is worth while noting here that a number of similar calculations are to be found in a small manuscript volume presented to Pepys by Mr. Edward Battine (or Batten), an official at Portsmouth. This bears the inordinate title of 'The Method of Building, Rigging, Apparelling, and Furnishing His Majesty's Ships of War, according to their Rates, with the Exact Proportion and Charge of all Things requisite thereunto ; also the Charge of Wages, Victuals, and Necessaries, as well for Ships in Harbour as at Sea ; the Number and Charge of Officers and Workmen at each Dockyard for building and repairing His Majesty's Ships, &c. ; the Salaries and Allowances granted to Commissioners and Officers of His Majesty's Navy, and the whole Charge of the same for one Year.' In the letter of dedication prefixed to Pepys's copy, dated Portsmouth, 20 Dec. 1684, Battine remarks—

The government of the navy is a subject too great for one of my capacity to discourse of, and should I offer it to your honour, it would be to light a candle to the sun ; nor do I think hereby, or in the following collection (which I have drawn from the experience and practice of the most ingenious), to inform your honour in anything which you know not already, but to let your honour know with what respect I am your honour's most obliged and faithful servant.

This modest opinion of his labours appears to have been fully shared by the functionary whom he addressed, for we find Pepys on 5 Jan. 1685-6 launching at Mr. Battine a rebuke of portentous solemnity.

I am entirely a friend to your industry [he writes¹⁰⁷], and so would not say anything in discouragement to it, but, on the contrary, cherish it all I am able. This only in truth of friendship I must take the liberty of saying to you, that by the time you shall have conversed in the world and business as long as I have done, you'll find it of much more use to you rather to distrust than to presume too easily upon the sufficiency and unanswerableness (as you term it) of your own conceptions ; the errors visible in your collection of tables presented to the king and my lord treasurer (and of which I thankfully acknowledge your giving me a copy) being such and so many as (though I say again I would not in any wise discourage your seeming zeal and industry in it) would have required your committing them to the overlooking of some friend (and particularly Mr. Surveyor, your master, whom I doubt you omitted among those most knowing officers you speak of) before you had exposed them,

¹⁰⁶ *Adm. Letters*, iii. 820.

¹⁰⁷ *Adm. Letters*, xi. 530.

especially with so much self-satisfaction as you appear to raise to yourself from them, as I may hereafter have opportunity between ourselves of showing you.

The collection of tables referred to contains a very large number of detailed calculations—the ‘proportions of ships, with directions for drawing or delineating ships’ bodies;’ a complete set of tables for the dimensions of different parts of ships of war, according to rates, with the charge of building per ton; ‘the charge of fitting pumps for a ship of each rate;’ a list of ships in the royal navy, with dimensions, burden, when, where, and by whom built, and the price of the hulls when launched; ‘the exact rule for ships’ masts and yards;’ ‘the dimensions and charge of masts for a ship of each rate;’ ‘the breadth and value of ships’ tops;’ ‘the size and length of ropes necessary for rigging a ship of each rate, with the quantity, weight, and value of the same, also a proportion of blocks, deadeyes, parretts, and other provisions required thereunto, with the value thereof;’ ‘a complete proportion of sails, anchors, cables, and other boatswain’s and carpenter’s stores for a ship of each rate for six months’ service, with the value of the same;’ ‘the number, nature, and weight of ordnance proper to each of his majesty’s ships of war, both in time of war and peace . . . also the quantity and value of gunner’s stores for a ship of each rate;’ ‘the charge of building, rigging, and equipping a ship of each rate;’ the allowance of wages to officers and seamen; the allowance of victuals; the charge of a ship at sea for six months; the number and charge of ships necessary for convoys, &c.; ‘the charge of a complete fleet for six months’ service;’ ‘the charge of mooring and harbour necessities for a ship of each rate;’ the charge of ships in harbour, of officers and workmen at each dockyard, the salaries of the principal officers; and, last of all, the whole charge of the navy for one year. The tables are beautifully written and bound, and they deal with matters susceptible of accurate calculation; but in view of Pepys’s criticism it would be premature to print them until they have been compared with such other calculations of the time as may be available. Such a comparison might show that Pepys was more anxious to repress ‘self-satisfaction’ in a subordinate than to give honour where it was due; but for the present Mr. Battine is under a cloud.

J. R. TANNER.

(*To be continued.*)