



Contents

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Editorial tribute to Lincoln Colcord, by Walter Muir Whitehill	3
Henry Eckford's <i>United States</i> of 1831, by Cedric Ridgely-Nevitt	7
The Designs of Our First Frigates, by M. V. Brewington	11
The Struggle for the Cape Henry Lighthouse, 1721-1791, by Arthur Pierce Middleton	26
Early Great Lakes Steamboats-The Battle of the Windmill and Afterward, 1838-1842, by H. A. Musham	37
Salvors versus Sea, by Philip H. Cook	61
Notes	70
Queries and Answers	71
Book Reviews	72
 PLATES	
1. Continental Frigate <i>Virginia-Lines</i>	<i>lacing</i> 24
2. Continental Frigate <i>Virginia-Deck</i> Plans	<i>between</i> 24-25
3. Continental Frigate <i>Hancock-Lines</i>	<i>between</i> 24-25
4. Continental Frigate <i>Hancock-Deck</i> Plans	<i>between</i> 24-25
5. Continental Frigate <i>Raleigh-Lines</i>	<i>between</i> 24-25
6. Continental Frigate <i>Raleigh-Deck</i> Plans	<i>between</i> 24-25
7. Continental Frigate <i>Randolph-Lines</i>	<i>between</i> 24-25
8. (a) Cape Henlopen Lighthouse	<i>lacing</i> 25
(b) Cape Henry Lighthouse	<i>lacing</i> 25



The Designs of Our First Frigates

BY M. V. BREWINGTON

T was the thirteenth day of December 1775. In the State House at Philadelphia the delegates to the Continental Congress were voting on one of the most important measures yet to come before them. The last 'aye' or 'nay' was tallied and the Honorable John Hancock rapped his gavel. After weeks of bickering, sectional log rolling, and personal feuding the resolution urged by the Rhode Island delegation to build an American Navy had passed.¹ That night Charles Thomson, the Secretary of Congress, entered the resolution in the smooth copy of the Journal. In part it read:

That five ships of thirty-two guns, five of twenty-eight guns, three of twenty-four guns, making in the whole thirteen, can be fitted for sea probably by the Last of March next, Viz: in New Hampshire one [*Raleigh*, 32], in Massachusetts bay two [*Hancock*, 32 and *Boston*, 24], in Rhode Island two [*Warren*, 32 and *Providence*, 28], in Connecticut one [*Trumbull*, 28], in New York two [*Montgomery*, 28 and *Congress*, 24], in Pennsylvania four [*Randolph*, 32, *Washington*, 32, *Effingham*, 28, and *Delaware*, 24], and in Maryland one [*Virginia*, 28]-

That a committee be appointed with full powers to carry the above report into execution, with all possible expedition at the expence of the United Colonies.²

With the decision once made Congress lost no time. The Committee, thereafter known as the 'Marine Committee' was selected, one member from each of the thirteen colonies. It went to work with enthusiasm. The members from the more distant colonies where ships were to be built dispatched letters to their provincial governments and constituents asking for advice on the best locations and the best men to undertake the work.³

¹ Peter Force, *American Archives*. 4. III. 231 (hereafter *Archives*); THE AMERICAN NEPTUNE. I (1941), 26'41.

² Journals of the Continental Congress. 13 December 1775. (Since many editions are easily available citations will be by date of entry. Hereafter *Journals*.) The frigates were not named until 6 June 1776 when the Congress itself made the selection and empowered the Marine Committee to assign them to each ship. See *Journals* 6 June 1776. For the sake of clarity, however, the names will be used.

³ New York Public Library, Bancroft Collection, Livingston Papers, I, 130; Connecticut Histor-

As this information was being assembled, the organization for building the frigates was formed. In Philadelphia, to which was assigned 'double the number [of vessels] of any other Colony, which was claimed as due to our Ship Carpenters who are more numerous,' no time need be wasted with letters.⁴ Supervising the whole business were the 'Commissioners for Building the Philadelphia Frigates' with Robert Morris, the Pennsylvania member of the Marine Committee as chairman. Functioning under the commissioners were several committees, each with particular duties. The first consisted of four master ship-carpenters who were appointed 'Timber Commissioners' and soon were advertising 'Ship Timber Wanted Immediately.'⁵ A second committee of four ship chandlers, nominated 'Commissioners of Naval Stores' were seeking supplies of rigging and stores in the warehouses along the Delaware River. A like number of merchants, the third committee, were appointed as 'Commissioners of Account' to keep records of the expenditures. And finally, and most important, four of the best-known Philadelphia shipwrights were given the task of building a frigate apiece. Each of the shipyards was allotted a superintendent and a clerk whose duties were to provide skilled labor and then to keep it busy. To each frigate was assigned one representative from each of the committees to see that the materials were obtained and sent to the yard when needed. That left the master shipwrights entirely free to devote all of their time to their job: shipbuilding.⁶ Frigate number one, *Washington*, was to be built by Manuel, Jehu and Benjamin Eyre.⁷ Frigate number two, *Randolph*⁸ was assigned to Wharton & Humphreys.⁹ Frigate number three, *Effingham*¹⁰ was given to Bruce & CO.⁹ Frigate number four, *Delaware*¹⁰ was built by Warwick Coats.¹⁰ *Washington* and *Effingham* were built in Kensington; *Randolph* and *Delaware*

ical Society, *Collections*, II, 345 (hereafter Col. CHS); E. C. Burnett, *Letters of Members of the Continental Congress* I, 282-283 (hereafter Burnett).

⁴ Historical Society of Pennsylvania, Joshua Humphreys Correspondence II, 1 (hereafter Humphreys) *Proceedings of the United States Naval Institute*, 62, 991-994 (hereafter USNI).

⁵ *Pennsylvania Packet*, 8 January 1776.

⁶ Papers of the Continental Congress, 78, 24, 331; Humphreys, II, 1; U. S. Naval Academy Museum MSS. Collection, Robert Morris Memorandum 1776; USNI, 62, 991-994.

⁷ Boies Penrose, Esqr. Family MSS., Penrose Shipyard Note Book; Peabody Museum, Fox Papers #939 (hereafter Fox); USNI, 62, 991-994. Until named the Philadelphia frigates were known by numbers-perhaps the origin of the Navy's system of numbering vessels.

⁸ Humphreys, II, 1; Fox # 939.

⁹ Historical Society of Pennsylvania, Christopher Marshall Diary, 11 April 1776. The name is probably incorrectly written and should be 'Grice & Co.' No 'Bruce & Co' can be found in any contemporary Philadelphia records or tax lists. On the other hand, the MS. Autobiography of Joseph Grice states that his father built vessels for the Continental Navy and that he, Joseph, worked on the *Effingham*.

¹⁰ Author's Collection, Humphreys MSS.

ware in Southwark, then both more or less autonomous sections of Philadelphia.¹¹

In the other ports where two vessels at the most were to be built no such complex organizations as that used at Philadelphia were necessary. In New Hampshire the building of *Raleigh* was entrusted by Josiah Bartlett, the New Hampshire Marine Committeeman, to John Langdon, ex-member of Congress and a well-known Portsmouth shipping merchant.¹² He farmed out the construction work to James Hackett, Stephen Paul and James Hill with Thomas Thompson as superintendent, the title given to the 'Government inspector.'¹³ A clerk of the yard was also appointed, and Langdon himself acted as the local chief of procurement and handled the accounts.¹⁴ In Massachusetts the work was given to Thomas Cushing, a political henchman of John Hancock, the Massachusetts Marine Committee member. Cushing let the contract for the building of *Hancock* and *Boston* to Jonathan Greenleaf and Stephen and Ralph Cross. Both frigates were built at Newburyport. Although the contract was a joint instrument, Greenleaf seems to have built *Hancock* and the Crosses *Boston*.¹⁵ Cushing, like Langdon, held the purse strings and John Avery and John Odin acted as superintendents.¹⁶

Down the coast in Rhode Island two frigates were to be built. This seems so to have taxed the energy of the Colony, or else so aroused the cupidity of its politicians that it was necessary for Stephen Hopkins, the Rhode Island Marine Committeeman, to appoint a board of eleven men to undertake the work. Nicholas Cooke, the governor of the colony, was elected chairman and more persons were told off to perform various small duties of procurement than can be mentioned here. Suffice to say that eventually the whole organization broke down and after severe censure the work of completing the frigates was placed in the hands of one man, Daniel Tillinghast. The actual work of building the frigate *Warren* was given to Benjamin Talman while Sylvester Bowers took charge of *Provi-*

¹¹ Burnett, J, 335.

¹² Burnett, I, 282; Library of Congress, Force Transcripts, William Whipple Correspondence, J, 87 (hereafter Whipple). Bartlett was ill or otherwise absent from the Committee a great deal of the time when the frigates were being developed; his place was taken by another of the New Hampshire delegates, William Whipple.

¹³ Connecticut State Library, Gurley Papers (hereafter Gurley).

¹⁴ Whipple, I, 83.

¹⁵ Library of Congress, Letter Book of the Navy Board Eastern District. To Board of Admiralty, 8 February 1781.

¹⁶ Historical Society of Pennsylvania, Etting Collection, J, 27 (hereafter Etting); Massachusetts Historical Society, Hancock-Cushing Correspondence, 1 February 1776 (hereafter Hancock); U. S. Naval Academy Museum MSS. Collection, Cushing to his son, 14 October 1787.

dence. Both frigates were built at Providence.¹⁷ In Connecticut the frigate *Trumbull* was entrusted to Barnabas Deane by his brother Silas Deane, the Connecticut member of the Marine Committee, with John Cotton actually doing the construction work in a yard at Chatham.¹⁸

The New York frigates, *Congress* and *Montgomery*) were built by Lancaster Burling at Poughkeepsie under the supervision of Samuel Tudor and Augustus Lawrence respectively. Francis Lewis represented New York on the Marine Committee and seems to have supplied much of the sails, rigging, and chandlery.¹⁹ But the whole business was under a commission, only one of whose members has been identified, Jacobus van Zandt.²⁰ In Maryland the business of building the frigate *Virginia* was handled by a committee of four men headed by Samuel Purviance, Jr. The committee, appointed by Samuel Chase of the Marine Committee, took charge of all materiel procurement and accounting and gave the construction work to Captain George Wells with Jesse Hollingsworth acting as superintendent.²¹ The frigate was laid down at Fells Point because as a British spy wrote of Baltimore 'the situation is exceedingly inconvenient. Ships cant come within a mile of the town . . . to a place called Fells point.'²²

While perfecting the local organizations for building the frigates, the Marine Committee was in daily session at Philadelphia, making decisions concerning the vessels to be built, their design, equipment and armament. Although not one of the thirteen men on the Committee could have qualified as a shipbuilder, most of them were ship-owners and some had been well acquainted at first hand with fighting ships as owners of or as officers on privateers in the wars with the French and Spanish. Their advice was probably as good as the colonies could have had at that time. Just how the Committee selected its designer is not known today but their choice seems to have been a good one.

The person was Joshua Humphreys, a twenty-four-year-old Philadelphia Quaker shipwright.²³ He was the partner of John Wharton, a

¹⁷ *Magazine of History*, VIII, 251, 317; IX, I, 1g8.

¹⁸ Connecticut Historical Society, Barnabas Deane Papers; C. O. Paullin, *Outletts of the continental Marine Committee*, I, 2; L. C. Middlebrook, *Maritime Connecticut*, II, 265.

¹⁹ *Public Papers of George Clinton*, I, 225-226 (hereafter Clinton); Papers of the Continental Congress, 37, 333, 337.

²⁰ *Archives*, 5, III, 204-205.

²¹ *Maryland Archives*, XII, 200-201, 207, 270; Burnett, I, 333; Maryland Historical Society, Portfolio 8. Chase was sent on a mission by Congress soon after the Marine Committee was organized and his work with the Maryland Committee was taken over by Joseph Hewes, the North Carolina Marine Committee member.

²² A. G. Bradley, *Journal of Nicholas Cresswell*, 15 September 1776.

²³ Humphreys, I, 22.

member of the Pennsylvania Committee of Safety, and more important, a close friend of Robert Morris, one of the most influential members of the Marine Committee. Humphreys had been apprenticed about 1765 to James Penrose, a well-known Philadelphia shipbuilder who in 1762 had built the privateer *Hero* whose exploits during the French and Indian War were by-words in Philadelphia. In 1771 Penrose died, and Humphreys, even though he had not yet completed his apprenticeship, was given the job of running the shipyard. Three years later, Humphreys rented the yard from the Penrose Estate and formed the partnership with Wharton. At the outbreak of the Revolution Humphreys was without practical experience as a naval designer except for what he may have learned from Penrose, but he undertook the conversion of the little fleet of merchantmen which became *Alfred*) *Columbus*) *Cabot*) *Andrew Doria* and *Providence*) each a successful vessel of the Continental Navy.²⁴ Later he built two gunboats for the Pennsylvania state navy, and for the Continental Navy the ship-sloop *Saratoga*) the packet brigantine *Mercury*, and designed at least one of the 74-gun ships.²⁵ In 1794 it was Humphreys who became the first Constructor of the United States Navy and in that capacity originated its first building policy.²⁶

Thirty-one days after Congress had passed the resolution to build a navy, Humphreys laid the 'draughts of the several ships of war' before the Marine Committee. A careful study brought the Committee's approval and copies 'one for each of the Contractors [were ordered] to be forthwith made out.'²⁷

Plans for the smallest, the 24-gun frigates, are known to exist. In the 28-gun class the drawings of but one have been found, those of *Virginia*. (Plates 1, 2) She was measured by the British Navy Board and the resulting plans are preserved in the Admiralty Collection, now in the National Maritime Museum, Greenwich.²⁸ There were five vessels of this class built but of the other four so little is known that only a statistical basis for comparison exists. Plans of three of the 32-gun class have been preserved: two are in the Admiralty Collection, *Hancock*,²⁹ (Plates 3, 4)

²⁴ Historical Society of Pennsylvania, Wharton & Humphreys Ledger.

²⁵ Historical Society of Pennsylvania. Dreer Collection. Humphreys Dock Yard Note Book. The brigantine *Mercury* is not to be confused with the Continental ketch of the same name built by John Peck.

²⁶Ira N. Hollis, *The Frigate Constitution*, 34 ff.

²⁷Whipple, I, 83.

²⁸'Virginia of 32 Guns taken off at Chatham November 1782' Box 39. Regd. 2351.

²⁹'A Draught of His Majestys Ship Iris as taken off at this Yard in June 1779-Plymouth Yarrl October 21st 1779' Box 38, Regd. 2285.

and *Raleigh*;⁸⁰ (Plates 5, 6) and one, *Randolph*, (Plate 7) is now in the National Archives.⁸¹ This last is the only original plan known to exist.⁸²

An examination of these drawings would induce the belief that individual designs had been created for each frigate. *Hancock* is different in all respects from *Raleigh*. And neither could be called an identical twin sister of *Randolph*. *Virginia*, however, while of a different class is quite similar to *Randolph*. One is, therefore, inclined to be somewhat awestruck at the ability of Joshua Humphreys to turn out individual designs for thirteen frigates within thirty days. For the sake of a remarkable achievement one wishes it were true. But in fact he did nothing so notable: as a maximum he created three distinct designs, one for each class of frigate.⁸³ As a minimum he drew one design, perhaps for the 24-gun class and then enlarged slightly for the 28-gun class and still more for the 32-gun class.⁸⁴

Copies of the designs, as we have seen, were ordered for the use of the various builders. These men, scattered from Portsmouth, New Hampshire to Baltimore, were instructed to follow the plans closely and no orders were sent to one builder without similar instructions going to the

so 'A Draught of His Majestys Ship Raleigh as taken off at this Yard in July 1779-Plymouth Yard October 21 1779' Box 40, Regd. 2400.

⁸⁰ Bureau of Construction & Repair, United States Navy #31 4'45.

⁸¹ The lines of only *Raleigh* and *Hancock*, both redrawn, have been published. No plans other than those mentioned have come down to us apparently. A midship section of *Randolph* is listed in the Bureau of Construction & Repair Index to Plans, drawing #108-12-1B, but the drawing itself has disappeared.

⁸³ *Hancock*, 13 February 1776.

⁸⁴ No basis for the designs of the three classes of vessels can be determined. Until the outbreak of the Revolution our shipbuilders had had very little experience in designing men-of-war. A few such vessels had been built in the colonies for the Royal Navy, notably at Portsmouth, New Hampshire, Boston, and New York, but in all probability the designs for these had been sent over from England. For an account of the naval shipbuilding around Portsmouth see G. H. Preble, *History of the U. S. Navy Yard*, Portsmouth, New Hampshire (hereafter Preble). The nearest approach to fighting ships of truly American origin were those vessels built specifically as privateers during Britain's wars with France and Spain. One such was *Hero*, built at Philadelphia in 1762 by James Penrose, Joshua Humphreys master. Her principal dimensions were 120 feet 6 inches by 95 feet 6 inches by 32 feet 6 inches by 10 feet 6 inches. See Penrose Ship Yard Note Book and Humphreys Dock Yard Note Book. Compare these with the dimensions of the 24-gun class of frigate as represented by *Delaware*, 119 feet by 96 feet by 32 feet by 10 feet 6 inches. The agreement is so close that knowing the imperfection of the measuring devices and the methods by which lines were developed in the late eighteenth century, one might be inclined to rest content at least for the design basis of that class. No bases, however, for the 28- and 32-gun classes have been found. In both the Penrose and Humphreys Note Books are the complete tabulations of all the British 'Establishments' from 1719 on. A search through these discloses that none of the three classes rested firmly on the British Establishments. Similarly the specific dimensions of several vessels of the Royal Navy, such as H.M.S. *Garland* and H.M.S. *Squirrel* also tabulated while close in some respects are too far away in others to warrant taking them as being the foundation for the designs. The dimensions of both the hull and spars of H.M.S. *Pallas* were, we know, put into the hands of the Rhode Island, Connecticut, and New Hampshire builders and as we will see later were used to some extent in two instances, but it does not appear that *Pallas* was the prototype of the design.

Likewise comparisons of the vessels used in the French works on naval architecture owned by Humphreys also fail to disclose a definite basis for the designs of any of the three classes. In default, then, of a design which Humphreys could have followed, the work should be at least tentatively attributed as original thought.

others.³⁵ How, then, can one account for the wide differences in the extant designs of vessels of the same class?

On 2 February 1776 the copies were in the hands of the members of the Marine Committee.³⁶ But an unexpected obstacle prevented getting them to some of the builders outside Philadelphia. What Bartlett wrote to Langdon of the plan of *Raleigh* is typical, 'Its so large I know not how to send it to you, it cannot be sent in a letter and what other way ... I know not. . .'.³⁷ Ten days passed before a safe means of transportation was found for the draughts intended for Massachusetts and New Hampshire. A messenger (ironically his name was John Bull) was going from Philadelphia to Cambridge with money for the Continental Army. In the vehicle with him was a letter from Hancock to Cushing covering 'Two Drafts for the Ships & beg the closest Attention may be paid to them' and 'Dimensions &c of the Ships for your Guide.' Along with the plans for *Hancock* and *Boston* also went a 'Plan for Mr Langdon of Portsmouth ... do forward it to him....'.³⁸ All of these plans were received by Cushing at Watertown, Massachusetts on 26 February 1776. He in turn dispatched them to Greenleaf and the Crosse at Newburyport with instructions to in their turn send *Raleigh's* plans on to Langdon by post rider.³⁹

In the delays in transmitting Joshua Humphreys' drawings to the contractors lies the reason for the variations in the designs.

Despite specific instructions 'to build rig, equip, and fit for sea ... according to your discretion except where you have particular orders,' and the orders were definite as regards the hulls, John Langdon on 26 February 1776, the very day the plans of *Raleigh* arrived at Watertown, wrote: 'I have got no Draught of the Ship as yet - but we are going on with one of our own drawing by the Dimentions which I bro't down ... dont Cramp my Genius and the ship shall be Launched soon.'⁴⁰

There, of course, is the answer to the wide difference between *Raleigh* and the standard 32-gun frigate. Langdon et al, had simply ignored the Marine Committee and had created their own design. The basis, so Langdon said, was the table of dimensions brought by him from Philadelphia, those of H.M.S. *Pallas*. But it is obvious these were not followed as can be seen by comparing the tabulation made by Thomas Thompson, super-

³⁵ Whipple, I, 85; Hancock, 13 February 1776. Humphreys, II, 1; USNI, 62, 991-994.

³⁶ Whipple, I, 83; Hancock, 1 February 1776.

³⁷ Whipple, I, 83. The original plan of *Randolph*, and that for *Raleigh* must have been of equal size, is 24 inches by 60 inches and the sheet shows signs of having been trimmed in recent years.

³⁸ Whipple, I, 85; Hancock, 13 February and 16 February 1776.

³⁹ Etting, I, 27.

⁴⁰ Whipple, I, 85; *New England Historical and Genealogical Register*, XXX, 309-310. The italics are the author's.

intendent of construction, or the tabulation on the Admiralty draught of *Raleigh* with the dimensions of *Pallas!*⁴¹ The result was the smallest of the 32-gun frigates but the design with its closed bow and other improvements was twenty years in advance of the others in the same class.⁴²

Now who were the 'we' who were 'going on with one of our own drawing'? It is hardly likely Langdon was more than a nominal part of the 'we.' So far as is known he never designed a vessel. He was not a professional shipbuilder but a merchant who as John Paul Jones remarked was 'bred in a shop and hath been but a voyage or two at sea under a nurse.'⁴³ The logical man was James Hackett, but too little is definitely known of his career and his work has been too confused with that of his cousin William and his uncle John to warrant the statement that he could have been actually capable of the design of *Raleigh*. He was a shipbuilder by trade and prior to the building of *Raleigh* had designed so far as is known nothing more than a row galley for New Hampshire.⁴⁴ Following the frigate he built the continental ships *Ranger* and *America* and the privateers *Portsmouth* and *Bellona*, and later the frigates *Crescent* and *Congress*, the ship *Portsmouth* and the revenue cutter *Scammel*. But of these he could have designed only *America* and *Ranger* and her sister ships the privateers *Portsmouth* and *Bellona*, because the designers of the others are definitely known to have been other men. From the little we know of *America*, it is likely her designer will be proved to be someone other than James, leaving only *Ranger*. Chapelle, without citing his authority, states that *Ranger* was designed by William Hackett, thereby leaving James completely out of the design phases.⁴⁵ All of this seems to indicate that James Hackett was well equipped by experience only as a shipbuilder, not as a designer. Of the other partners working on *Raleigh*, nothing is known of Stephen Paul's capabilities; James Hill was well known as a shipbuilder twenty years before *Raleigh* was laid down, but again nothing is known of his designing

⁴¹ Gurley; R. C. Anderson to the author in re *Pallas*.

⁴² A study of the dates easily disproved the often repeated yarn that *Raleigh* was laid down on 21 March (almost a month after the receipt of the committee's draught) and launched in sixty days. See Preble, 12; Walter E. H. Fentress, *Centennial History of the U. S. Navy Yard at Portsmouth*, 12; Nathaniel Adams, *Annals of Portsmouth*, 262; H. I. Chapelle, *History of American Sailing Ships*, 57; 'William G. Saltonstall, *Ports of Piscataqua*, 96. The sixty days meant just what the original source, the *New Hampshire Gazette*, 25 May 1776 said: 'Working days: That would have made the keel-laying not later than 13 March 1776 and depending on the weather perhaps even earlier than 26 February. Langdon was thoroughly aware that plans were being drawn in Philadelphia. He was a member of Congress and had been in Philadelphia from 23 December to about 31 December 1775. Not even he with his self-styled genius would have dared violate his instruction 'to build ... the ship ... according to your discretion, except where you have particular orders' and the orders as well as the Philadelphia drawn plans were in his hands by 21 March.'

⁴³ Quoted by Lincoln Lorenz, *John Paul Jones*, 117.

⁴⁴ *New Hampshire State Papers*, VIII, 48.

⁴⁵ Chapelle, op. cit., 59.

experience.⁴⁶ There are enough superficial similarities between the designs of *Raleigh* and U.S.S. *Essex* which we know positively was designed by William Hackett, to bring his name into consideration also although he is never mentioned in connection with *Raleigh* in any source.⁴⁷ However, until some unimpeachable evidence comes to light, the designer of *Raleigh* must remain anonymous.

Precisely the same course of events which led to the design of *Raleigh* by the unknown at Portsmouth took place with the Rhode Island frigates. The plans did not arrive from Philadelphia and the over-zealous Committee proceeded to hire a designer of their own.⁴⁸ He was Sylvester Bowers who was set to work to 'make a draught of the larger ship [*Warren*] as soon as may be'.⁴⁹ The architect for *Providence* is not mentioned in the Committee's journal, but as Bowers was appointed master workman on her, we can safely assume he was responsible for her design also.⁵⁰ A month after putting Bowers at work, the Committee, hearing rumors that the plans had been completed in Philadelphia and fearing the consequences of their haste, dispatched a messenger to Connecticut to borrow the plan of the ship to be built there.⁵¹ When he arrived, Deane refused to accommodate the Rhode Islanders because he needed the plan himself and the messenger returned empty handed. Finally the Rhode Island plans did arrive in Providence on 19 February and the Committee decided 'on Examining the same we find it impossible to follow the Draught sent us without retarding the Work at Least one Month' and then to show their repentance for their haste 'Voted, That Messrs Bowers and Talman proceed to finish the Bottoms of the Ships according to their present models and that they finish the upper Work Nearly according to the Directions sent in...'.⁵² In size *Warren* corresponded almost exactly with *Raleigh* (thanks perhaps to the dimensions which Langdon 'bro't down' to Portsmouth being the same as those Stephen Hopkins of the Marine Committee sent the Rhode Island committee. *Providence* was within a very few inches the same in her principal dimensions as *Virginia*).⁵³ Although the British had an opportunity to take off the lines of one of the vessels, *Providence*) if they did so the drawings cannot be found today, and we are unable to

⁴⁶ Wellesley College Library, James Hill MS. Diary and Note Book.

⁴⁷ Peabody Museum, Waters Papers, Hackett's Bill.

⁴⁸ Etting, I, 27.

⁴⁹ *Magazine of History*, VIII, 315.

⁵⁰ Ibid., IX, 1.

⁵¹ Ibid., IX, 63.

⁵² Ibid., IX, 64; Etting, I, 27.

⁵³ *Magazine of History*, VIII, 317.

determine what the Rhode Island bottoms and Philadelphia topsides may have been like. Whatever they may have been like, credit or debit should go to Sylvester Bowers.

In the other New England colonies, Massachusetts and Connecticut, the business took another turn. Neither Cushing, Greenleaf and the Crosses nor Deane and Cotton laid any claim to the genius of Langdon or the zeal of the Rhode **Islanders**.⁵⁴ John Cotton, the Connecticut master builder, probably had the plans by 8 February but at any rate reported on 27 February 1776 that 'yesterday we made a beginning in the Yard to fix a Berth for the Ship to Stand in but the rain putt us of[f] ... this Day we Expect Mr Ames and Others in Order to take of[f] [i.e., lay down] the Draught.'⁵⁵ Thanks to locally inclement weather the Humphreys plan had had ample time to reach the builder before any construction could be started and apparently the plan was closely followed; at least her breadth and depth of hold, the only definitely known dimensions of the frigate, were exactly the same as the others of her class.⁵⁶ Little more is known concerning *Trumbull*) however; the original copy of her plans has not come to light and when captured by the British, the Royal Navy Board surveyors did not consider her worth buying into the service and hence did not take off her lines.

With John Hancock, President of the Continental Congress, member of the Marine Committee and political boss of Massachusetts, as his mentor, Thomas Cushing was kept well informed about everything going on in Philadelphia. Cushing, like Langdon, had been a member of Congress and had been in Philadelphia when the plans were being prepared and he made no move towards having the plans for the vessels to be built in Massachusetts drawn locally. He simply bided his time like the good bureaucrat he was and eventually on 26 February the plans arrived. Four days after they reached his hands, he journeyed over to Newburyport and signed a contract with Jonathan Greenleaf and Stephen and Ralph Cross 'to build with the utmost dispatch two Ships for the Account of the Thirteen United Colonies Agreeable to the Draught & Directions which the said Thomas [Cushing] hath Deliver'd to them....'⁵⁷

This contract is worth close study. So far as is known it is the only extant document of this kind. In many respects it is general rather than specific and while details were covered in some instance, it had to be followed

⁵⁴ Col. CRS, 11, 351.

⁵⁵ Ibid., XXIII, 16-17; Deane Papers, 27 February 1776.

⁵⁶ Col. CRS, XXIII, 16-17.

⁵⁷ This contract, once in the collection of Dr. A. S. W. Rosenbach, is printed by his permission in full as an appendix.

by another document (location, if still in existence, unknown) which Hancock sent north from Philadelphia on 7 March 1776. It gave 'Dimensions of everything necessary for your Guidance in matters respecting the Ships & other Appurtenances.' In addition Hancock wrote 'what further Occurs to you necessary, let me Know & the Directions shall be transmitted you,'⁵⁸ all of which shows the guiding hand from Philadelphia. It should be especially noted that the builders in both Massachusetts and Connecticut were particularly enjoined that the vessels were 'to be built as near as possible to the draughts & directions....' In the light of all the evidence extant, i.e., the correspondence, the contract, and the dimensions of the vessels themselves as built, the plans were followed and to Humphreys should go the credit for the designs of *Hancock* (*Boston*) and *Trumbull*.

In New York the progress of the frigates *Congress* and *Montgomery* seems to have paralleled that of *Trumbull* in Connecticut. Ice in the Hudson River delayed the collection of timber and other materials at the building yard in Poughkeepsie and it was not until 7 March 1776 that ship-carpenters arrived from New York City to begin work. This allowed ample time for the Humphreys plans to reach Messrs. Tudor and Lawrence. But whether the plans were followed is another matter, one on which there seems to be no direct evidence extant.⁵⁹ Just about all we know is that considerable delay was experienced in building the vessels, thanks to strikes for higher wages by the carpenters and to the diversion of workmen and materials from the frigates to the construction of Arnold's fleet and the New York State galleys.⁶⁰

Very little correspondence concerning the Philadelphia-built frigates has been preserved (it is hardly likely much ever existed) to show what the four frigates were like. The statistical evidence does establish that the 32-gun frigates *Randolph* and *Washington* were as nearly identical as two vessels of their size built by different builders could be.⁶¹ Nothing is known about *Effingham* but *Delaware* in her measurements was very close to those in the contract for *Boston*) her paper sister. With builders as well as the designer to say nothing of the Marine Committee and the various building committees all in the same city; with no transportation problem to solve for the plans; and with the injunction to 'Conform as Strickly as possible to both the draft and dimentions' in all probability the origi-

⁵⁸ Historical Society of Pennsylvania, Conarroe Collection, Hancock to Cushing 7 March 1776. A duplicate is in the Massachusetts Historical Society.

⁵⁹ *History of Dutchess County*, 348; Clinton, I, 225-226.

⁶⁰ *Archives*, 4, VI, 1122-1123; Clinton, I, 285-287.

⁶¹ Fox #939.

nal designs were closely followed. Therefore it seems a safe inference to credit Humphreys with the designs of all four of the Philadelphia frigates.⁶²

While little of the correspondence of the Marine Committee with the Maryland committee relating to the plans has come to light, there seems to be no question but that the Humphreys design was used and closely followed. Transportation between Philadelphia and Baltimore was well organized and consequently no difficulties arose in sending the plans down to Wells. Work on the frigate got off to a slow start for on 27 March timber was still being collected and on 10 April the committee was still trying to find knees. But by 2 May almost every ship-carpenter in the province except those in Somerset County had been engaged for work on the frigate, and once the work got under way no time was lost, for on 12 August *Virginia* was launched.⁶³ A mere glance at the plans of *Virginia* drawn at Chatham, England, in 1782 and at the Wharton & Humphreys draft shows clearly that *Virginia* and *Randolph* were built from the same basic design.

Such was the story of the designing of the vessels of our first naval construction program. In it are to be found all the elements of almost every wartime shipbuilding adventure on which we as a nation have embarked: boundless enthusiasm and energy; exasperating delays and lack of experience; waste and labor troubles; and then the final emergence of men of war which even our enemies admit are more than adequate for the business in hand. On the basis of the known evidence credit for the designs of these first frigates should be given to three men: that of *Raleigh* to an unknown, probably William Hackett; those of *Warren* and *Providence* to Sylvester Bowers; and those of the other ten to Joshua Humphreys.

APPENDIX A.

Contract to build the Continental Frigates *Hancock* and *Boston*

ARTICLES of Agreement made this First day of march 1776. Between the Honble Thomas Cushing Esqr. of Dedham. on the one part and Jonathn Greenleaf, Stephen Cross, and Ralph Cross of Newbury port shipwrights on the Other part. "Witnesseth, That the Said Jonathan Stephen & Ralph hath Agreed with the Said Thomas to build with the utmost dispatch in Newbury port Aforesaid two Ships for the Ac-

⁶² Humphreys, 11,1; USNI, 62, 991-994. The building of these vessels seems to have aroused more popular enthusiasm than any of the other vessels did. On several occasions as many as one hundred and fifty private citizens plus local militia companies voluntarily went to the shipyards and helped the workmen in such work a' getting in the deck beams. See Historical Society of Pennsylvania, Christopher Marshall's Diary, 5, 6, 11, and 27 April 1776.

⁶³ Maryland Archives, XI, 295; XII, 200; Maryland Journal, 10 April 1776; Duke University Library, Samuel Purviance to General Lee.

count of the Thirteen United Colonies. Agreeable to the Draughts & Directions which the Said Thomas hath Deliver'd them, viz. The Length of the keel of the one Ship About Ninety six feet. Breadth of Beam About Thirty three feet Depth in the Hold About Ten feet six Inches. Between decks about four feet Six Inches. the Waist five feet. The Length of the keel of the other Ship About One hundred & eleven feet Breadth of Beam About thirty five feet, depth in the Hold about Eleven feet, depth Between Decks About five feet & five feet waist, the Said Ships to be built as near as possible to the draughts & directions Above mentioned & Referr'd to And the timber and plank to be of the best white oak, and free of Rots and defects. except in the bottom where they have Liberty to put some black Oak timber Only, And the decks which are to be Laid with good pine plank the Scantlens of timber and thickness of plank to be agreeable to the Directions Above Referr'd to, To find and make a Compleat Set of masts, Yards, Bowsprit. Topmasts and top gallant masts The main and fore mast of each ship to be Cheek'd with Oak in a good and workmanlike manner, to build a head & Galleries to each Ship. to find and make two Capstans to each Ship to fix & Step two pumps which work by hand in each Ship to find and fix a Sufficient number of Belaying Bits, To find and fix Suitable pillars to all the Beams above and Below To find and fix a Rudder and Tiller to each Ship. to find & fix five Anchor Stocks for each Ship. To find Sufficient Stuff for the Companions & all the gangway and Other Ladders. To Caulk the Ships. To find & fix all the Stocks for the Swivel Guns. To find & Fix Seven pair Standards between decks and pointers over the transoms Abaft in a word to do and find all the Carpenters work in the finishing them off as a Ship of War Ought to be finished in a Good and Workmanlike manner, And to Launch Said Ships Safely a float the Small Ship in May the Large Ship in June 1776 And the said Jonathan, Stephen & Ralph Agree Allso to Stop all the Worm holes to Clear the timbers and hold of all the Chips, to pay both Ships with Turpentine to Grave both Ships After Launching., to Water both ships on the Stocks, to find Rum for the Labourers and to Launch Said Ships at their own Risque and Expence, And the Said Thomas Cushing Esqr. on his part doth also Agree with the Said Jonathan Stephen & Ralph that he will find for building the two Ships Afresaid and in Season. Iron work of every kind. pitch. Tar, turpentine, Oackum Joiners Work proper tackles to Assist them and all such Articles as are Customary of the owners to find and do, And pay to the Said Jonathan. Stephen & Ralph at the Rate of Six pounds ten shillg L Money p tun for each & every tun the Large Ship shall measure And Six pounds of Lake money for each & every tun the smaller Ship may measure, the payments to be made in the following manner viz one fourth part When the keel is Laid, one fourth when shut in under the Whale one fourth when the Gun Deck Beams are Carried in one eight part when Launch'd the Remaining Eight part when finished. To the true and faithfull performance of each and every Article before mentioned the parties bind and Oblige themselves each to the Other in the penal sum of Two Thousand pounds Law money. In Wittness whereof we have hereunto interchangably set our hands and Seals the day & year first above written

Signed Sealed & delivered in presence of	Jonath Greenleaf Stepn Cross	[Seal] [Seal]
John Bradford Gibbins Sharp	Ralph Cross Junr Thomas Cushing	[Seal]. [Seall]

APPENDIX B.

It is not the intention of this article to follow the careers of each of the frigates, but because their launching dates and their fates, neither of which has been correctly stated as a whole before, may lead to the identification of materials not presently recognized, the data are appended.

Raleigh. Launched 21 May 1776. See *New Hampshire Gazette*, 25 May 1776. Run aground 27 September 1778 and captured by H.M.S. *Experiment* and H.M.S. *Unicorn*. She was floated off, condemned at the Admiralty Court in New York and purchased into the Royal Navy under the same name. See William Bell Clark: *Gallant John Barry*, 167-182; *THE AMERICAN NEPTUNE I* (1941), 168-170; *The Remembrancer*, VII, 154. Lines and deck plans in the Admiralty Collection. (Plates 5, 6)

Hancock. Launched 10 July 1776. Greenwood, *John Manley*, 59. Captured in action by H.M.S. *Rainbow* on 6 July 1777. Purchased into the Royal Navy as H.M.S. *Iris*. See *London Chronicle*, 26 August 1777; *The Remembrancer*, V, 263. Lines and deck plans in the Admiralty Collection. (Plates 3, 4)

Boston. Launched 10 June 1776. See *Pennsylvania Gazette*, 19 June 1776. Captured at the fall of Charleston, South Carolina on 11 May 1780. Purchased into the Royal Navy as H.M.S. *Charleston*. See John Sheppard, *Life of Samuel Tucker*, 140; *The Remembrancer*, X, 45, 142. Her lines have not been found.

Warren. Launched 15 May 1776. See *Providence Gazette*, 18 May 1776. Blown up on 14 August 1779 in the Penobscot River to prevent capture. See *London Public Advertiser*, 25 September 1779. No plans known.

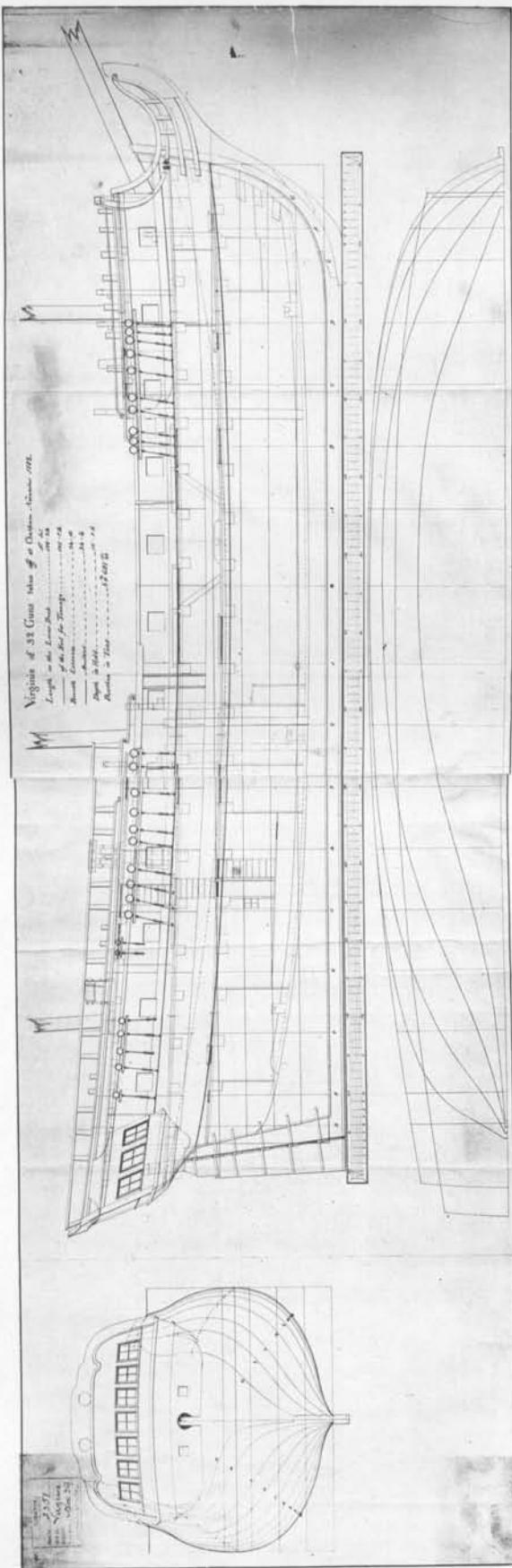
Providence. Launched 18 May 1776. See *Providence Gazette*, 18 May 1776. Captured along with *Boston*, 11 May 1780. See *The Remembrancer*, X, 45, 142. She became H.M.S. *Providence*. Her lines have not been found, those in the Admiralty Collection being of another vessel.

Trumbull. Launched 5 September 1776. See *Pennsylvania Evening Post*, 7 September 1776; L. C. Middlebrook, *Maritime Connecticut*, II, 265. Captured by H.M.S. *Iris* and H.M.S. *General Monk* on 9 August 1781. See *London Public Advertiser*, 26 September 1781. She was in such bad condition she was not purchased into the Royal Navy. Plans not found.

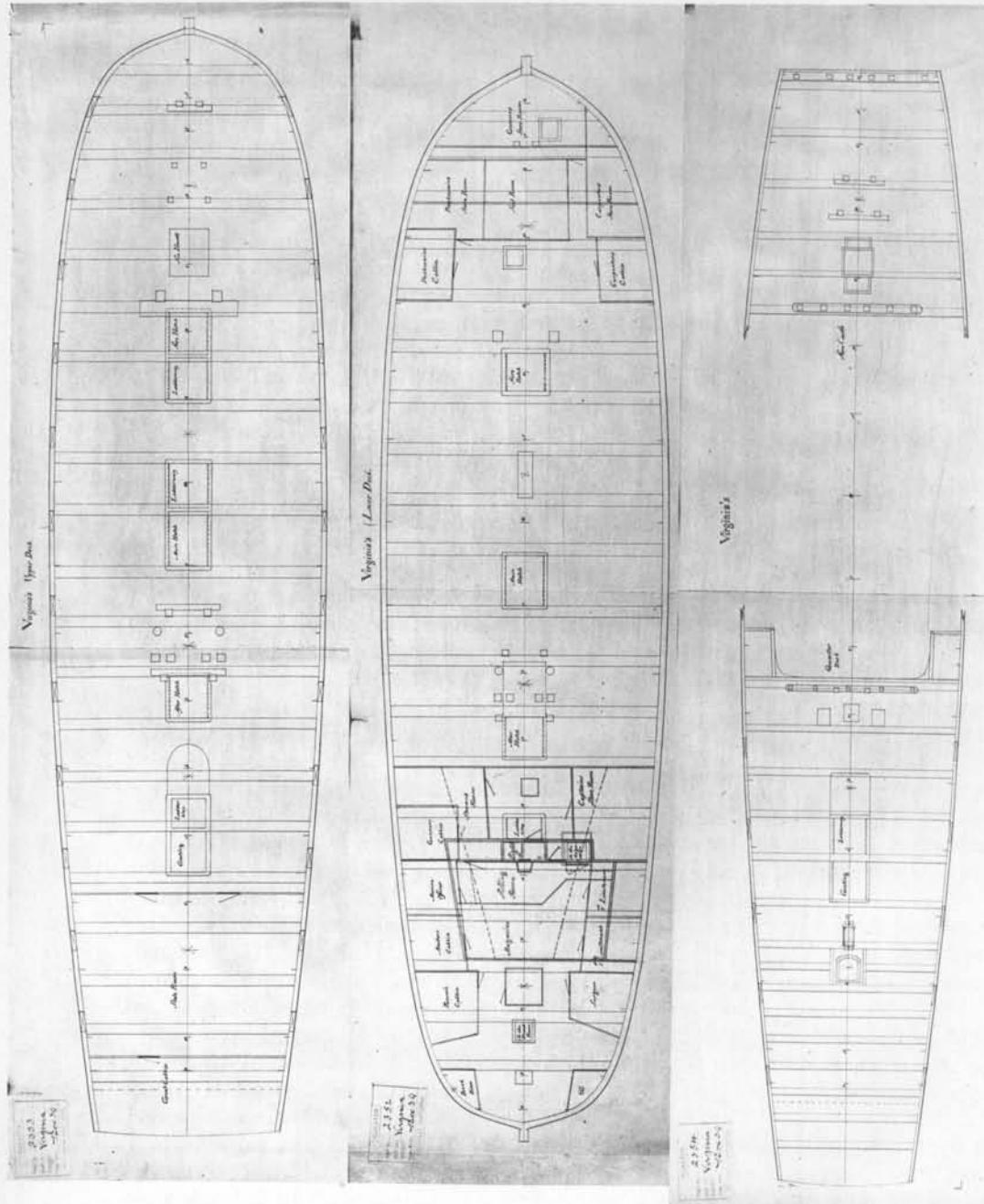
Congress and *Montgomery*. Both launched soon after 29 October 1776. See Force, *Archives* 5, III, 275. Both were burned on 6 October 1777 near Esopus, New York to prevent capture. No plans of either have been found. See John Sparks, *Washington*, V, 472; *The Remembrancer*, V, 425.

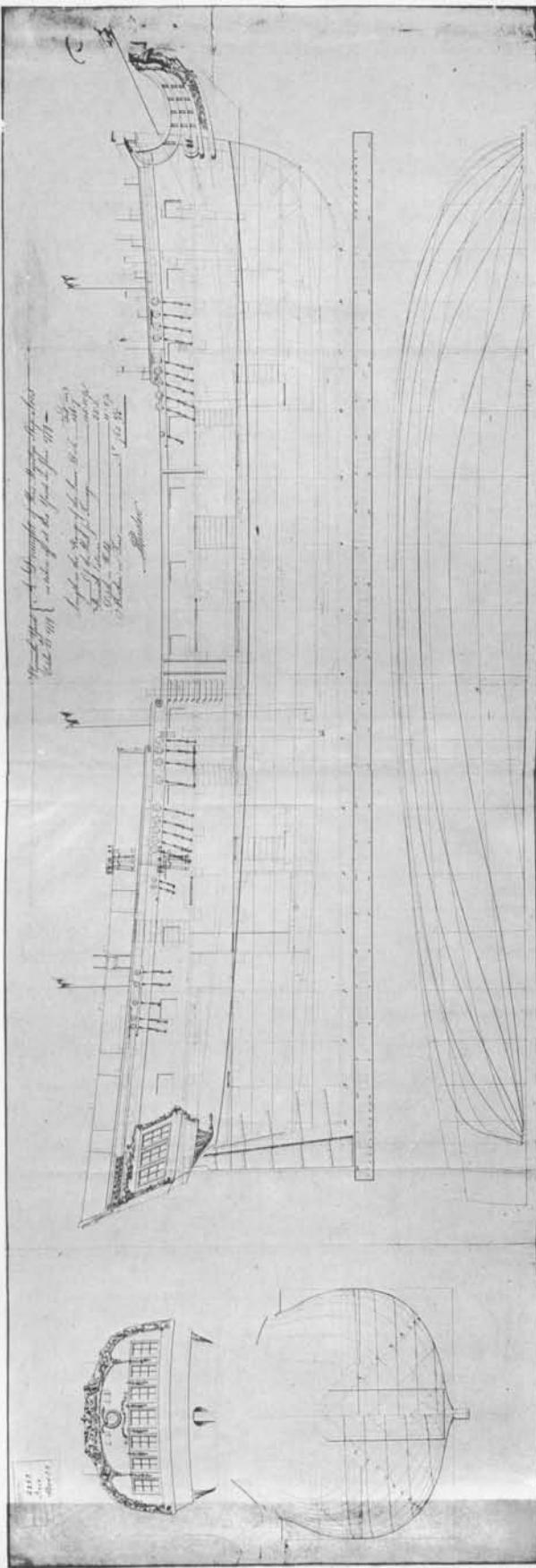
Randolph. Launched 10 July 1776. See Author's Collection, Humphreys MSS. Blown up in action on 8 March 1778 while engaged with H.M.S. *Yarmouth*. See Public Records Office, London, Captain's Log 31/1091, *Yarmouth*, 8 March 1778. Her lines are in the National Archives. (Plate 7)

Washington and *Effingham*. Launched 7 August 1776 and 7 November 1776 respectively. See *Philadelphia Evening Post*, 13 August and 12 November 1776. Both were scuttled by Captains Barry and Read on 2 November 1777 near Whitehall, New Jersey to prevent capture. See Clark, *John Barry*, 130-133, 154-155; *Pennsylvania Magazine of History*, XIX, 82. The hulls were burned to the low tide mark by Captain

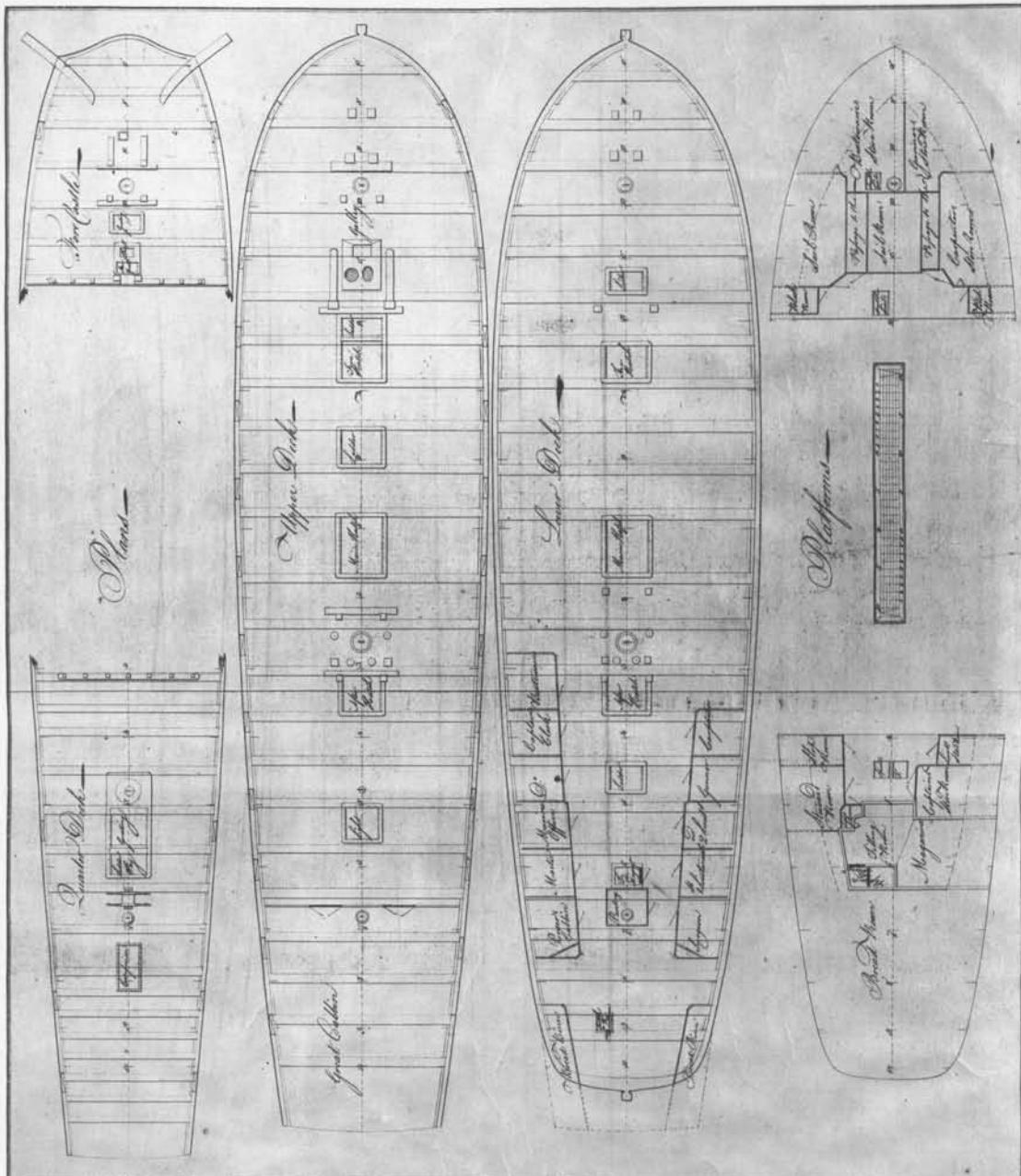


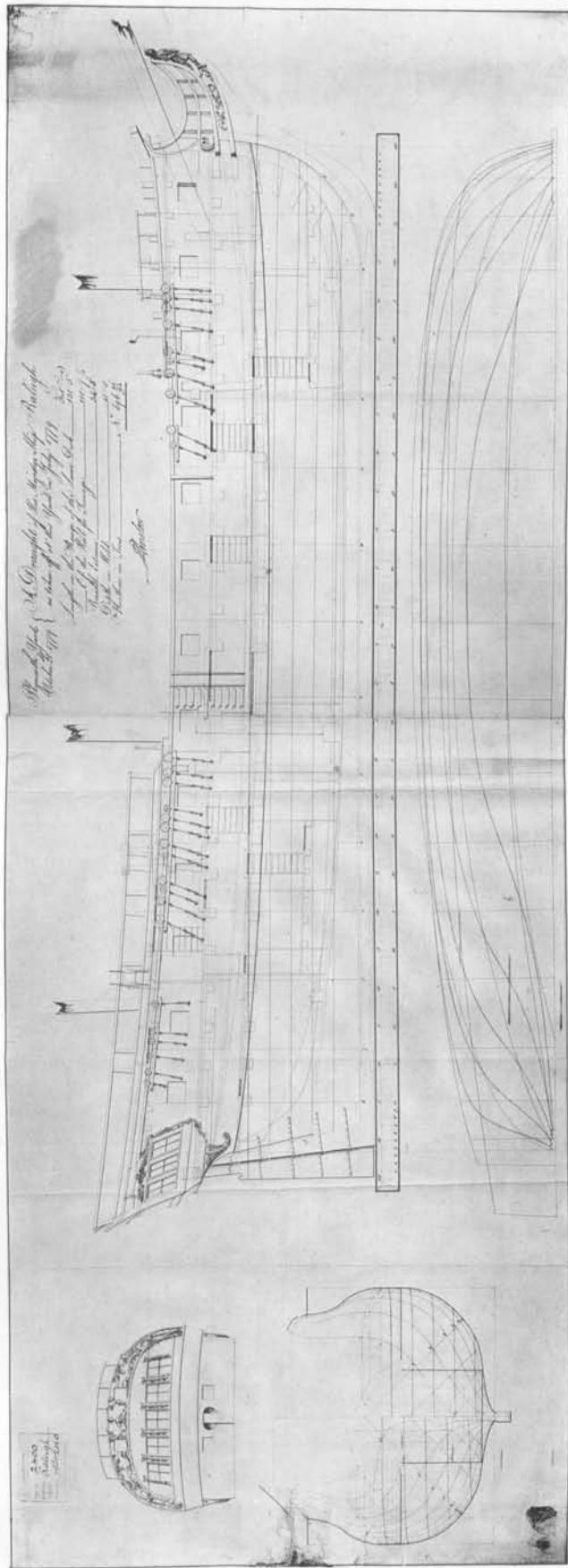
Continental Frigate *Virginia* — Lines
From the Admiralty Collection, National Maritime Museum, Greenwich

Continental Frigate *Virginia*—Deck Plans

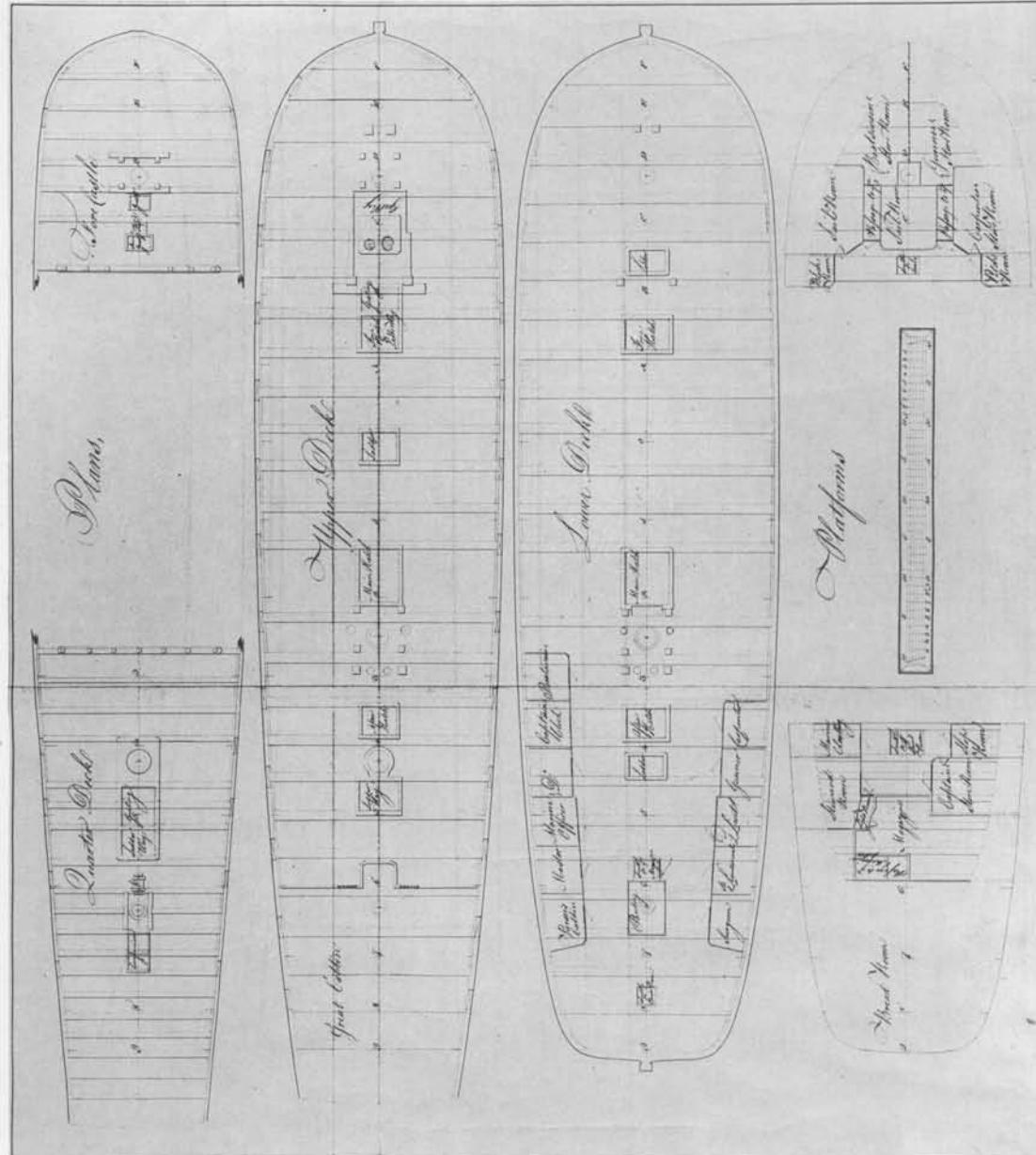


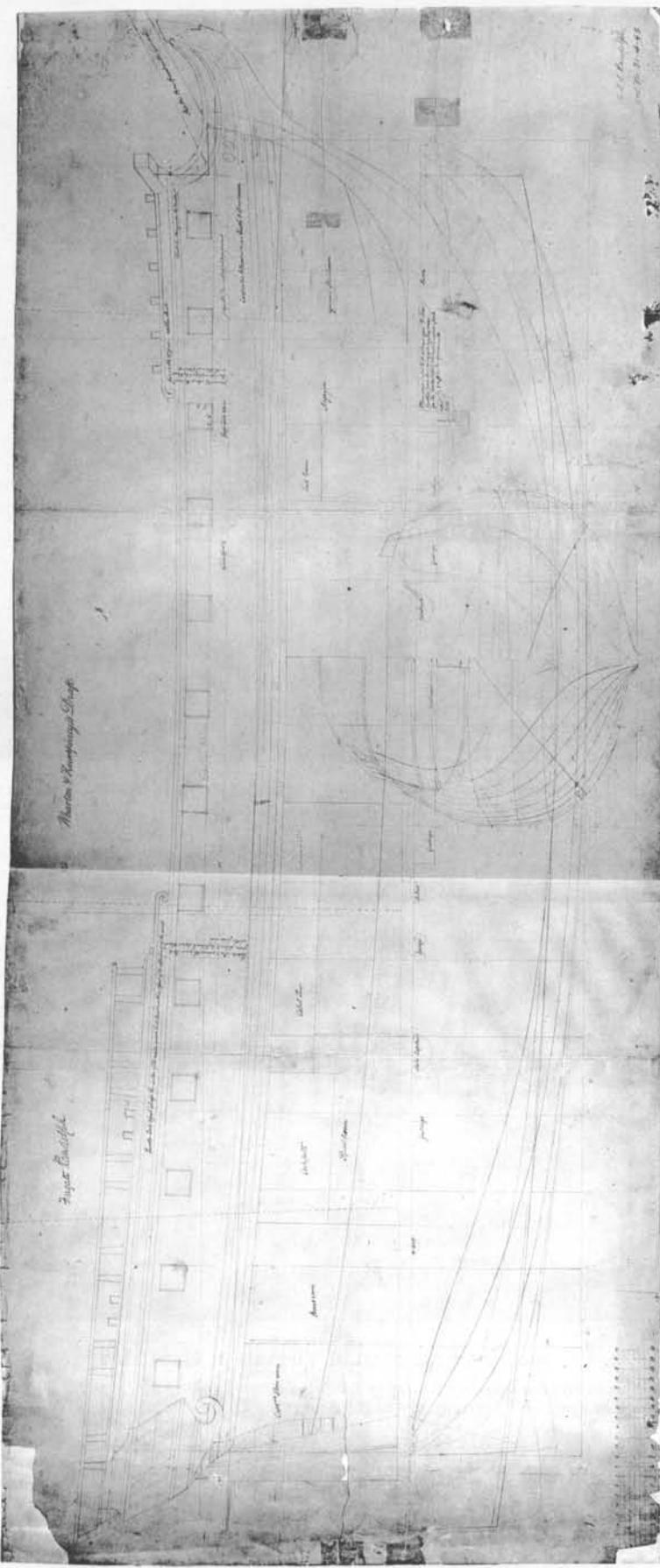
Continental Frigate *Hancock*—Lines
From the Admiralty Collection, National Maritime Museum, Greenwich





Continental Frigate *Raleigh*—Lines
From the Admiralty Collection, National Maritime Museum, Greenwich





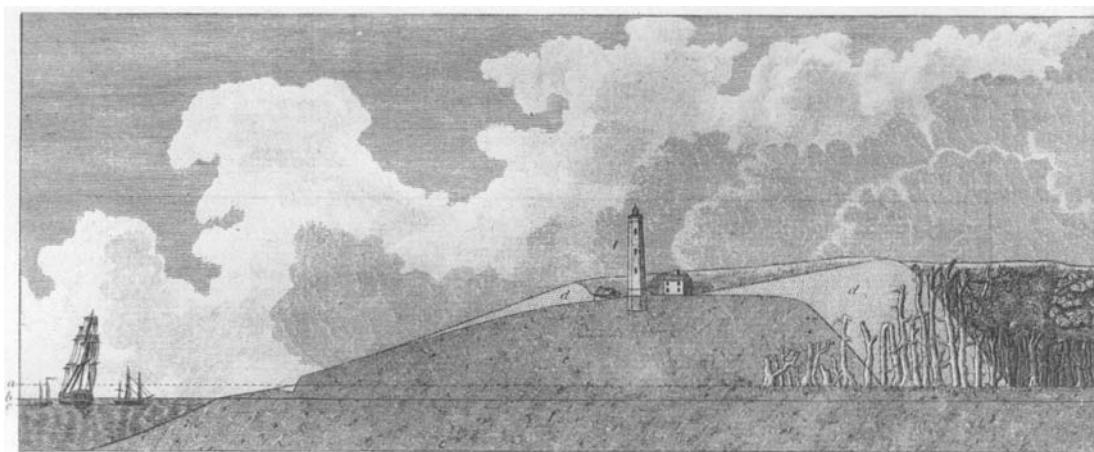
Continental Frigate Randolph—Lines of Construction and Repair Plans, *The National*

From the Navy Department, Bureau of Construction and Repair Plans, The National Archives, Washington, D. C.



A nineteenth-century view of the Cape Henlopen Lighthouse, designed by John Palmer and built in 1763, the plan of which was used for the unfinished Cape Henry Lighthouse, 1773-1775.

Reproduced by courtesy of The Mariners' Museum, Newport News



Section of the coast of Virginia at Cape Henry

Reproduced from an engraving by B. Henry Latrobe, accompanying his 'Memoir on the Sand-hills of Cape Henry in Virginia,' Transactions of the American Philosophical Society, IV (1799), 439-444.

John Henry when he raided the upper Delaware valley 7-9 May 1778. See *The Remembrancer*, VI, 148. Later the hulks were raised and although the Marine Committee expressed the intention to rebuild them, they were sold at Philadelphia. See C. O. Paullin, *Marine Committee Letter Book*, I, 275; *Pennsylvania Packet*, 14 April 1777. No plans of either vessel have been found.

Delaware. Launched between 8 and 13 July 1776, probably on the twelfth since Jacob Howell was paid £5 for 'Limes & Lime Juice for her launch' on that day. See *Magazine of History*, IX, 262; Historical Society of Pennsylvania, Woodhouse Collection, Commissioners of Naval Stores Account, 'Delaware.' Accidentally ran aground in the Delaware River on 27 September 1777 and was captured by Sir William Howe's force. Purchased into the Royal Navy as H.M.S. *Delaware*. See *The Remembrancer*, V, 413. Her plans have not been found.

Virginia. Launched 12 August 1776. See *Maryland Archives*, XII, 200-201. Ran aground between Capes of Chesapeake on 31 March 1778 and taken by H.M.S. *Emerald*. Purchased into the Royal Navy as H.M.S. *Virginia*. See *Pennsylvania Packet*, 15 April 1778. Lines and deck plans in the Admiralty Collection. (Plates 1,2)