

Chapter VI

A HEROIC DEFENSE: THE PHILADELPHIA CAMPAIGN, 1777–1778

General George Washington spent the spring of 1777 trying to guess William Howe's next move. Would Howe at last advance toward Philadelphia, or would he sail up the Hudson to join Burgoyne at Albany? Though the latter course seemed most likely, Washington prepared for both possibilities. For his part Howe complicated Washington's quandary by remaining unseasonably long in New York.

Finally on July 23 Howe moved out with a fleet of 260 ships and nearly fifteen thousand men. The fleet's movements perplexed Washington. First, on the 29th, it appeared off the Delaware Capes, but then it turned about and sailed for Virginia. Attempting to anticipate Howe, Washington's army was "compeld to wander about the country like the Arabs in search of corn."¹ Only in late August when Washington heard that the British fleet had been sighted in the Chesapeake Bay did he feel confident that Philadelphia was Howe's objective.

Fearing British naval strength but never expecting an attack on Philadelphia from the west, Pennsylvanians had concentrated their defenses on the Delaware River just below the city. In 1775 they established a navy and began fortifications. They strengthened an unfinished star fort on Fort Island that the British had started under the direction of John Montresor during the French and Indian War. Pennsylvania's defense plans also included sinking chevaux-de-frise in the Delaware, an operation which was begun in September 1775 and continued until the British arrived two years later. The chevaux-de-frise used in Philadelphia were large box-like containers, about thirty feet square. The bottoms were floored to hold stone ballast; the sides were covered with logs. Posts mounted with iron spears were attached to the upper parts and faced downriver. Chains stretching across the river held the structures together.

THE DELAWARE RIVER FROM PHILADELPHIA TO
CHESTER. *This map from William Faden's Atlas of the American
Revolution shows the placement of American fortifications, river
obstructions, and vessels in 1777.*

National Archives

Attention to the river defenses fluctuated between 1775 and 1777, depending on the perceived threat of British attack. By early spring 1777 the citizenry was sufficiently alarmed to renew its defensive efforts. In February work began at a site downriver at Billingsport, and in April a fort was started at Red Bank.

Until June 1777 local men without experience or training in military engineering planned and executed the Delaware River defenses. Then Maj. Gen. Philippe Charles Tronson du Coudray, the controversial Frenchman recruited by Silas Deane to command the engineers, surveyed the defenses for the Continental Congress. His report to the Supreme Executive Council of Pennsylvania was extremely critical. He found Billingsport the preferable position, but the plan "very bad" and the execution of the works "without Judgment." The principal role of Billingsport, Coudray argued, should be to defend the chevaux-de-frise, and he recommended substantial changes toward that goal.

Coudray virtually dismissed Fort Island; and while declaring Red Bank "better conceived, directed, and executed" than either of the other two forts, he considered it useless for obstructing passage up the river. Coudray's advice to preserve Red Bank, despite its shortcomings, demonstrated a noteworthy appreciation for political considerations.

1. COUDRAY'S OBSERVATIONS ON THE DELAWARE RIVER DEFENSES

To the Pennsylvania Supreme Executive Council.

July 1777²

Fort at Billingsport

1. As to the Situation, it is well-chosen, it commands the River in the narrowest Part I have seen, and is the most capable of Defence.

2. As to the Plan or Projection, it is very bad. The Object in View ought to have been to defend the Chain of Chevaux de Frize, which bar the River. For that Purpose 30 or 40 Cannon, well placed, would have been sufficient. The Edge of the Scarp would have afforded room enough; it was therefore necessary to shut the Gorge of the Battery, so that the Enemy might be obliged to land and open Trenches, in order to take Possession of it. . . .

Besides the Length of Time, which the Plan of this Work would require in the present situation of Affairs, another Inconvenience attends it, which is, that it would require for its Defense, a more numerous Garrison than could be spared from the Army. For it would require at least 2000 Men; as, from the Badness of the soil, the Enemy's Cannon would soon make great Destruction, which must be repaired every Night, to prevent the works from being stormed.

3. As to the execution of these Works, I find it to be without Judgment. The Planks and Piles to support the sand are not half thick enough. The Piles instead of being inclined to bear against the Bank, have been fixed perpendicular and are already overturned. Instead of placing the Batteries destined to fire on the River, on the Border of the Scarp, they have placed them 7 or 8 Fathoms back, which removes them farther from their Object, and exposes them to the Enemy's attempt at the Bottom of the Scarp. And suppose the Works completed, only one Piece of Cannon can do Execution. Instead of making use of the Ground which forms the Border of the Scarp and which is firm on the superficies, and supported at least for some Depth by the Roots of Trees which grew there, they have raised a great Part of the Breastwork with loose Sand in the manner before mentioned, and have taken the Trouble to sink a Ditch, which might have been spared as the Scarp answered the Purpose. . . .

To defend the Chain of Chevaux de Frize which bars the River opposite to the Fort, all dependence for the present must be on the Floating-Batteries and Gondolas which are ready, or which can soon be so. Some use, however, can be made of a Part of the Fort, of which we have been speaking: and for this Purpose there should be a Battery fixed in each of the two Demi-Bastions on the side of the River. And by cutting those two Demi-Bastions by the Gorge and the angle of the Flank, they will each be transformed into a Redoubt with four Fronts. Each of these Redoubts may be secured against a Coup de Main by covering them with a double Ditch and Pallisades in the Bottom of the Ditch. It will then be necessary to level all those Parts of the Fort which may serve to cover the Enemy. These two Works by means of 1500 or 2000 Labourers well directed may be executed in 20 Days: and in my Opinion this is all that can be done in the present situation of affairs. . . .

The Fort

The Fort [Mifflin] is badly situated; the Battery which forms its principal object is improperly directed, which renders Half the Guns useless. The Embrazures are badly constructed, too open on the inside, and not sufficiently open without: some are directed obliquely without any motive; the interior Slopings are too straight, and by this means begin already to tumble down.

This Fort cannot prevent the Passage of the Enemy, and when they have passed, it can be of no use; consequently it can answer no valuable Purpose.

Fort of Red-bank

This Fort is better conceived, directed, and executed than either of those above mentioned. It does the more Honour to Colonel Bull,³ as he

had no other assistance than natural good sense unenlightened by Theory. This is perceivable from a View of it. There are indeed Faults in the Plan, and in the Execution, but they do not render it useless as the two former Forts. If we may judge by the Proportion of the work already finished, it is reasonable to expect the whole will be in a State of Defence in the course of a Fort night. What unfortunately renders this Fort of little or no Consequence is this; its object is, and can be, no other than to prevent the Enemy from taking possession of the Highth upon which it is placed, in order to establish Batteries and thereby oblige the Gallies and Floating Batteries employed in supporting the Chain of Chevaux de Frize, to retreat. But this case could never happen, unless the Enemy should be exposed to a Fire from the Floating Batteries and Gallies, which they could not silence with their ships. . . . But the situation of the Place will not permit such an idea; for the River is here so wide that if the States had four times as many Gallies, Ships and Batteries as they have at this place and above it, the Enemy, we must think, would still have a superior Fire, as the width of the River would allow them to employ a greater number of Ships. . . . Therefore I look upon this Fort as useless with respect to the Object for which it was intended, viz., to contribute in obstructing the Passage of the River, and preventing the Enemy from possessing the Highth it commands. This Passage is much too wide to be defended by the present means. I would therefore advise to carry all the means of Defense to the Passage at Billingsport. This place is incomparably more capable of support, and it is better to make a respectable stand in one place than to defend two in an indifferent manner. . . . The River [is] much narrower in this place than in that of which we have been speaking. The Gallies and Batteries may more easily make Head against the Enemy who will not be able to make so great a Fire, and will be obliged to bear a much nearer one, and better supported, than could be opposed to them at Red Bank. The Cannon at this Fort might partly serve for the Batteries at Billingsport. I would not, however, advise to demolish the Battery at Red Bank, but to leave there two or three of the poorest of the Cannon.

I would also advise to remove from this Line no more Chevaux de Frize than would be judged necessary to secure by three Rows, the Passage of Billingsport.

I also advise to preserve Colonel Bull's Fort [Red Bank]. Thereby you may induce the Enemy to believe they would have a second Line of obstacles to encounter, after they had surmounted the first; and besides for another Reason, which appears to me a very important one especially in the present Circumstances of Affairs, the Government would escape the Censure inconsideration and mistakes, which the evil-minded are always ready to pass, and the People to adopt, when they see Works which have been erected with much Labour and Expense pulled down. . . .

—*Pennsylvania Magazine*
24:343–47.

After reviewing Coudray's plans, the Continental Board of War recommended that the Pennsylvania council adopt them. But as Howe's designs on Philadelphia became clearer, Washington directly entered the picture. He required opinions on the river defenses from several officers, the majority of whom acknowledged that Billingsport and its line of chevaux-de-frise could not withstand attack. Washington's advisors felt the chevaux-de-frise at Fort Island, despite the fort's weakness, could be more easily defended than the line at Billingsport.

In a statement to Washington, Coudray held firm in his preference for Billingsport and, with some exasperation, again urged speedy action by the "Civil and Military administration" to supply the needed manpower and tools. He offered his services and those of his men to ready Billingsport, Red Bank, and Fort Island, which he began calling Fort Mifflin in honor of his friend and associate, Thomas Mifflin of Pennsylvania.

2. COUDRAY CALLS FOR ACCELERATION OF THE DELAWARE RIVER FORTIFICATIONS

August 6, 1777

. . . It is necessary to procure some remedy for the present weakness of the first line, by putting ourselves in a State of protecting the second and of giving thereby time to the army to arrive.

I offer to continue in this respect my care and that of the commissioned and non Commissioned Officers who attend me; but if his Excellency intends that their care should not be useless, and that an invincible disgust should not succeed the most ardent zeal, it is absolutely necessary to cause a change in the conduct, which has been observed hitherto, and to accelerate the slowness of the Civil and Military administration, to which the Congress addressed us, to procure the means of execution.

It is necessary . . . that the Honourable Congress themselves order without delay. *1st.* A Thousand *effective* Workmen every day for Billingsport who are to work on holy days, and Sundays, under the proper direction of the Engineers whom I have there. *2nd.* The necessary tools, as well for these Workmen, as for my Artillery Workmen, whom I shall employ to construct the Batteries, and to repair the Carriages intended either for this or Mifflin Fort in the actual circumstances; those that I keep at Billingsport and here for this purpose having not yet been able in spite of my repeated solicitations to obtain this month past neither all the tools they want nor even Clothes. *3rd.* 200 other Workmen every day at Fort Mifflin and an hundred at Red bank under the same conditions with the former. Provided this request be granted, I engage to put these three places in a State of defence in the course of this Month. Viz., to be defended Billingsport with 400 Men and 80 Cannoniers; Fort Mifflin with 600 and 500 [50?] Cannoniers, Red bank with 200 Men and 20 Cannoniers.

During the same time, I shall employ the rest of my Engineers to execute suitably to the examination of the five places of encampment to be taken between Marcus Hook and Philadelphia

I ask for these Engineers no other assistance, besides the horses, and a Man to serve them and carry their instruments. . . .

—Washington Papers, roll 25.

After personally inspecting the fortifications and sifting the advice of his staff, Washington concluded in early August that the most effective defense could be made at Fort Island. He recommended defending Billingsport only “as a secondary object” and rightly maintained, as had Coudray, that the army should focus its defense “at one point, rather than risk its being weak and ineffectual every where, by dividing our attention and force to different objects.”⁴ On the other hand, Washington rejected Coudray’s argument that the narrowness of the river at Billingsport was a crucial consideration. Washington agreed that the existing works on Fort Island were inadequate and accordingly recommended immediate alteration. Though their views differed, Washington entrusted Coudray with superintending the work.

The day after Washington reported to Congress, Coudray wrote him: “It is beyond all dispute, that the situation of Fort Island is more advantageous than that of Billingsport.”⁵ Very likely Coudray backed down purposely to conform to Washington’s views. The Frenchman still emphasized the need for speed and insisted that Howe would approach Philadelphia from the Delaware River. Without orders from Washington, Coudray and four engineers surveyed and mapped Fort Island and then volunteered to do the same at potential British landing sites between Marcus Hook and Philadelphia, a task Coudray later completed.

That Coudray never really accepted the arguments favoring Fort Mifflin was apparent in a memoir he prepared on 30 August 1777. His soundings of the river had convinced him that the claim Fort Mifflin could only be attacked by three frigates at a time was erroneous. The figure was more like fifteen. Such a flotilla, the Frenchman warned, could demolish the fort in a matter of hours unless it was strengthened. He believed the improvements and supplements to Fort Mifflin that were required to defend the *chevaux-de-frise* adequately would be too costly and time-consuming. “Unless . . . some reasons regarding particularly the State of Pennsylvania or the future operations of the Army” required lengthy resistance to enemy attack, Coudray maintained, no thought should be given to defending the river passage at Fort Mifflin.

If Congress would support his plan to finish Billingsport, Coudray would hire workmen rather than militiamen on a daily basis. The move would cut costs, he argued, because workmen “will work a great deal more and not consume such an immense quantity of tools of all kinds.”⁶

As a consequence of the debate over defending Fort Mifflin or Billingsport, the army made little progress in fortifying either site during the summer of 1777. Attention shifted temporarily away from the Delaware on August 25 when Howe landed at Head of Elk on the Chesapeake. Philadelphia lay fifty-seven miles away. The road there would not be an easy one, for Washington was determined that Howe would not take Philadelphia without a struggle.

Coudray and his French officers were eager for some action that might gain them recognition from Congress and demonstrate their zeal for the American cause. They were particularly concerned lest Congress show favoritism toward the rival group of French engineers headed by Col. Louis Lebègue Duportail. Tension had existed between the two groups ever since Duportail first reported to Washington on July 19. Although Washington used Duportail's engineering skills in the Philadelphia area, he was careful at this point not to allow Coudray to be upstaged.

Coudray's proposals for defense against the approaching enemy centered on the need for a fortified camp between Philadelphia and Wilmington, Delaware, where Washington had based his operations. He viewed the new position as security for the army in case Wilmington had to be abandoned or Philadelphia was lost. Coudray's experience as an artillery and ordnance officer was evidenced in lengthy comments (not included in the following excerpts) backing up his contention that "artillery is the foundation of all defensive war."

3. "THE OBJECT THE LEAST PRESSING IS THE DEFENSE OF THE DELAWARE"

Tronson du Coudray to Congress.

Philadelphia, 7 September 1777

. . . It is evident that from the part which the ennemy have taken of making a descent in Cesepeak bay, the object the least pressing is the defense of the Delaware.

This being supposed, it is clear that the greatest attention ought to be directed to defend as well as possible, the Route which the Enemy have determined upon, by their landing in Chesapeak.

It is certain that fixing on this spot to land [Head of Elk], instead of Mark's hook (which General Gates, Mifflin, and myself thought they would chuse) will encrease considerably the Posts, which in proportion as they advance in the Country, they will be oblig'd to establish to keep up a Communication with their fleet. But the greatest disadvantage attending this, gives not however an entire certainly against the success of their march to Philadelphia, which I always judged and declared, since my arrival here, to be the true object of their Campaign.

To ensure, as much as possible, the success of this Campaign, it is necessary not to be merely contented with securing the Position of Wilmington, where his Excellency has very wisely thought proper to collect his first Efforts.

However strong this position may be supposed by nature, or may be rendered by Art; it appears to me, after what I have heard, that it will be possible for the enemy to pass it on the flank, or perhaps force it; considering especially the small number of Artillery belonging to his Excellency's army.

It appears to me then prudent for Congress to think of providing beforehand for their army, another fortified Position, which may secure the army in case they are obliged to abandon the first, and where they may collect new force against an enemy, whom the first success may render more audacious; more especially as Schuylkill is the only considerable river that impedes their March to Philadelphia; and that this River offers at Grays-ferry a Passage which no officer can (I should think) propose to defend.

For this purpose, I offer again my service and that of my officers; in hopes that there will result from it an opportunity of our being in action, which the delay of Congress in pronouncing definitively upon our existence in the service of the United States, always removes at a distance, and which probably we might wait for in vain at the forts on the Delaware; at least before our return in France, should this take place. If the Congress consent to the proposition which I make, to prepare a fortified Camp between Wilmington and Philadelphia, I beg them [*First*] to communicate this proposition to his Excellency General Washington.

[*Second*] To give me, as a principal cooperator, General Mifflin, who knows perfectly well this country; who has a very great ascendant over the Inhabitants, by whom the works would be executed and whose great activity and penetration I have had occasion to observe.

[*Third*] To bring forward, as soon as possible, the remainder of the fifty two pieces brought in the *Amphitrite*, of which twelve alone are in the northern army, ten, within these few weeks, at the army of his Excellency General Washington; the rest in Springfield, and, at other Places on the east side of Hudson's River.

These thirty remaining pieces of the said fifty two, will be so much the more necessary, as artillery is the foundation of all defensive war; and that of these thirty pieces, there are twenty one which being of a greater length than the others, and even any pieces in the army, are for that reason better for defending the intrenchments. . . .

—Ford, "Defences of Philadelphia," *Pennsylvania Magazine* 18:334–37.

Coudray, a keen and competent observer of the Delaware River defenses at a time when sound engineering advice was at a premium, died in mid-September, his plans largely ignored. Later that year, when the British finally did attack these defenses, few remembered his constant insistence that something be done before time ran out.

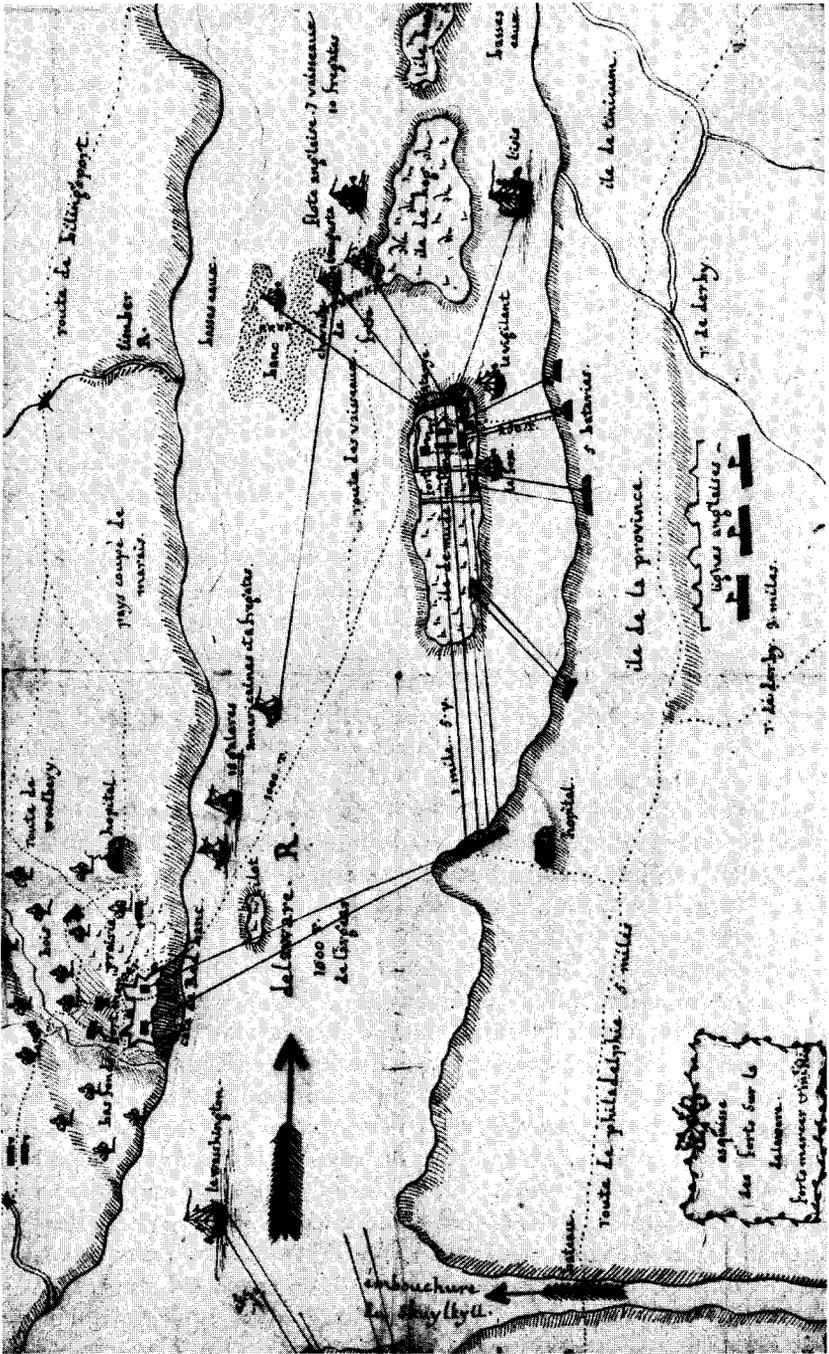
Howe's army took a month to get from Head of Elk to Philadelphia. At the Battle of Brandywine on September 11, Howe employed a turning movement reminiscent of Long Island to defeat the rebels. An important factor in the American loss was Washington's failure to order necessary reconnaissance. He did have a map of roads in the Brandywine River area, compiled earlier by James Brown, a surveyor employed by Robert Erskine, geographer of the Army; but more detailed information was required.⁷ Still the enemy failed once again to destroy Washington's army, which was soon ready to take on the invaders.

After Brandywine the eventual British takeover of Philadelphia appeared certain, but the timing was hardly sure. In fact, through a series of maneuvers and skirmishes, Washington made the last twenty-six miles to the capital city exceedingly difficult ones for the British.

Washington spent little time erecting field fortifications during this part of the Philadelphia campaign; but, attempting to delay the British, he planned works at the fords of the Schuylkill River. Washington placed Brig. Gen. John Armstrong of the Pennsylvania militia in charge of the operation and on September 14 ordered Duportail and his officers to assist Armstrong as engineers. Washington did not need works that could withstand a long defense, he needed works that could be completed quickly and with little labor. "Only that part of them which is opposed to cannon, need be of any considerable thickness," he cautioned Armstrong, "and the whole of them should be rather calculated for dispatch than any unnecessary Decorations or Regularity which Engineer's are frequently too fond of."⁸ Often fretful over the lack of competent engineers, Washington now complained that at least some engineers were too thorough!

Howe finally took Philadelphia on September 26 not by defeating Washington in battle but by outmaneuvering him. However, capture of the Quaker City was hardly a decisive blow to the patriots: far fewer Loyalists than expected came out in support of the British, Congress continued to meet in relative safety at Lancaster, valuable supplies had already been evacuated, and Washington's army remained intact. Less than a year earlier, Washington had envisioned that the loss of Philadelphia would have "the most fatal consequences to the cause of America,"⁹ but now he accepted it as inevitable. News of Gates's success against Burgoyne at the First Battle of Saratoga (September 19) heartened Washington's men and lifted considerable pressure from them to rush to the defense of the Hudson.

The British quickly found that their occupation of Philadelphia was nearly meaningless without control of the Delaware River. Otherwise Howe



had to rely on transporting supplies overland from Head of Elk, a perilous prospect indeed so long as Washington's army remained outside Philadelphia. Howe detached troops to clear the patriot defenses along the Delaware, but the task proved a long and difficult one.

Meanwhile, for the first time, Army regulars took over defense of the river forts from the militia. On September 23 troops under the command of Col. Heinrich d'Arendt, an officer in the German Battalion, garrisoned Fort Mifflin. Early the next month Washington placed Col. Christopher Greene of the 1st Rhode Island Regiment in command of Fort Mercer at Red Bank and assigned Captain Thomas-Antoine de Mauduit du Plessis, an artillery officer and engineer, to assist him.

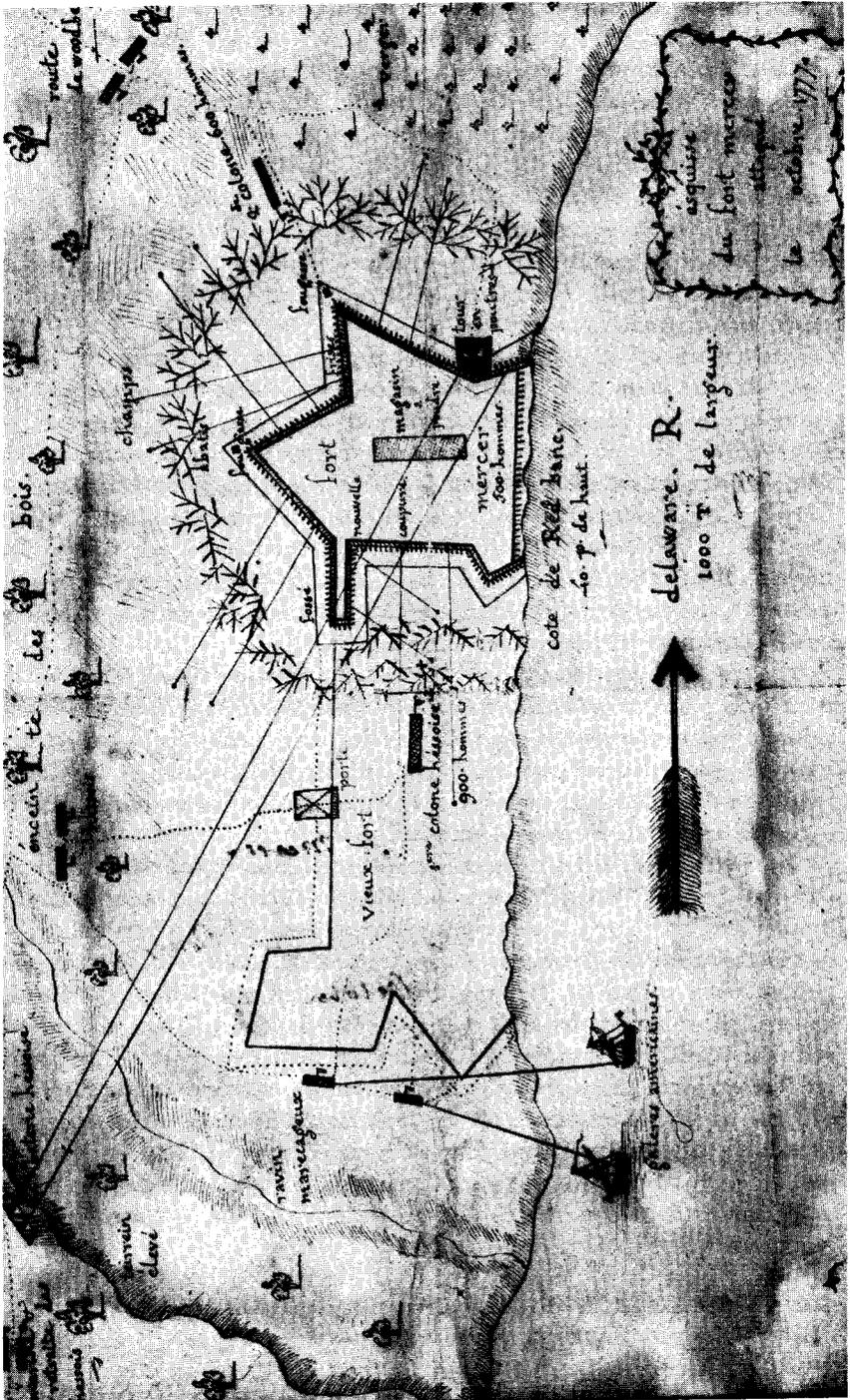
On October 2 the British took undermanned Billingsport without a fight. At that point "the Delaware defenses were there for the taking," but Howe proceeded cautiously after his near defeat at Germantown on the 4th.¹⁰ Again his inaction bought more time for the rebels, who tried valiantly to strengthen their remaining defenses and maintain control of the Delaware. But conditions at Fort Mifflin, for example, had genuinely shocked Lt. Col. Samuel Smith, the second in command, when he arrived there on September 27. In the words of John W. Jackson, one modern-day authority, the works "reflected the lack of military engineering, and resulted in a fort more suited for frontier defense."¹¹

Only a few days after Smith's arrival the British pressed forward with their own plans to reduce Fort Mifflin. They found that Province Island, situated just to the west of the fort, was not, as the Americans believed, an impossible location for batteries. Though the island could be flooded by removing dikes, enough high ground would remain for batteries. Accordingly the British placed several batteries on the island.

Across the river at Fort Mercer engineer Mauduit scaled the existing fort down to the size of the garrison by building a double-board fence filled with lumber and hay across the fort from east to west. This change helped the patriots turn back a Hessian attack on October 22. As a result of murderous gunfire from within the fort that day, Col. Carl von Donop, the Hessian leader, fell wounded and later died. Afterward, John Laurens, an aide-de-camp of Washington, praised Mauduit's labors at Red Bank: "[He] acquitted himself so well as to obtain panegyrics approaching to rapture from the officers who were witnesses of his conduct." Laurens maintained that Mauduit's alterations to Fort Mercer revealed that he "had not confined himself to one branch of military knowledge but had extended his studies with success to one which is generally held as a mystery apart [engineering]."¹²

DELAWARE RIVER DEFENSES. *This view of Forts Mifflin and Mercer and surrounding enemy positions was probably drawn by Fleury.*

Historical Society of Pennsylvania



On 14 October 1777 François Louis Teissède de Fleury, a French volunteer and engineer captain in the Continental Army, arrived at Fort Mifflin as the post's engineer. His first assessment of conditions laid particular stress on what might have been accomplished before his arrival had there been enough men. Examination of the enemy's recently erected artillery positions convinced Fleury that Fort Mifflin was in grave danger.

4. "WE MUST HAVE MEN, WORKS, AND BE ENABLED TO MAKE VIGOROUS SALLIES"

François Fleury to Alexander Hamilton.

Oct. 16, 1777

The whole Front of the Fort now attacked is surrounded by Palisadoes, the Bank which ought to mask it is too low to cover it from the Battery placed on the opposite bank at the distance of 500 Yards—we might when the Enemy were quiet have raised this Causeway, clear'd the Ditch of the . . . Earth, and have secured our Inclosure if not from Ricochet at least from horizontal Shot—we might have arm'd our Battery (assailable in all points) by a sloped fraise work placed in a Ditch dug at low water in the Gravel—we might have added to the Fort an interior Inclosure of Earth and Blinds, in order to renew the Conflict with the Enemy in case they should possess themselves of the first—we might have made Loop-holes in the Barracks and Windows—Fougasses constructed in the manner of double Coffers or Lodgements—we might have raised Epaulements against the Cannon which might rake our place of Arms—and have formed Blinds to shelter us from Bombs and smaller shells—All this might have been done while the Enemy were intent upon their works which should have been destroy'd . . . but hands were wanting and now that we could have more to execute the same works under the Enemys Cannon, we have none—for what are 150 Men tired out with watching and Labours—had not this extreme Weakness prevented you might have heard of night Sallies in armed Boats to ruin the Enemys Works and spike their Cannon.

Since my arrival I have seconded as much as possible the zeal of Colonel [Samuel] Smith. We have raised three Traverses upon the grand Battery to guard against the Enemys Ricochet that he has cover'd the

FORT MERCER, OCTOBER 1777. This plan, made at the time of the Hessian attack, is attributed to François Fleury (1749-?). The fort was fraised and surrounded by abatis and a ditch. The solid line continuing to the left from the fort indicates the extent of the works as originally proposed.

Historical Society of Pennsylvania

Powder Magasin with Blinds, and if we can to night we shall raise the Bank on the front attack'd to mask our Pallisadoes with this kind of a cover'd way.

Our greatest Uneasiness is occasioned by the dread of Surprise—the Channel between Pennsylvania and the Fort is altogether clear; the Galleys have removed the Jersey Side out of all distance for annoying the Enemy and seconding us. The nights are darken'd by Fogs and all our Garrison must be on the watch to avoid being carried by Storm—I am ignorant of the Plans of His Excellency [Washington]. I scarcely allow myself to form conjectures but if the thing required be to hinder the Enemy from reaching Philadelphia to cut off their Communication altogether, even in flat bottom Boats,—which might pass the Chevaux de frise and in a Channel at 1400 yds. dist. from Redbank (which Place is a mile and a quarter and five perches from Fort Island) our Battery alone can answer . . . what can you expect from Shot thrown at the distance of 1400 Yards against a moveable object? Red Bank . . . is to serve as a Retreat for our Garrison—but it wants no Retreat—its Refuge is in its Pallisades and its Courage. Let it be reinforced—let it be [?] put out of the reach of Storms—and the Enemy will not be so soon Masters of the River—but we must have men—works—and be enabled to make vigorous Sallies.

Position of the enemy—16 Octob: at noon—The Enemy have raised 4 Batteries—*One* a little behind the Fort upon the Bank which extends along the River at about 500 yards distance from us—a *second* at the Pest-House still more in our rear and at the distance of 2000 Yds.—*a third* at the Brick House (of which I spoke to His Excellency) situated on the rising ground opposite the Fort at 1 mile 28 perches from us. *A fourth* a little lower than the Fort—upon the Bank abovementioned there are besides two Batteries at the Mouth of Schuylkil which have made our Ships remove to a greater distance—there are 2 or 3 Mortars and some large Canon in these batteries—the Direction of their Fire was at first uncertain, but they have rectified it, and it appears to be . . . intended for our Powder Magasin.

—Washington Papers, roll 44.

Fortunately Fleury kept an informative and often moving account of his experiences at Fort Mifflin. The journal reveals his frantic efforts to upgrade the fort's defenses, a desperate need for more men, and a frustrating lack of materiel, including much that was essential to fortification. Enclosed in correspondence to Washington, Fleury's journal apparently served the Commander in Chief as an important source of information on developments along the Delaware.

5. "THE GREATEST PART OF THE BOMBS . . . OCCASION MORE FEAR THAN DAMAGE"

From François Fleury's journal.

Oct. 15 [1777]. At 8 in the morning, the Enemy unmask'd the two Superior Batteries of the Bank, and House. They produced no other effect than break[ing] three of our Palisades in half—battering down the Coping of the Buttress Work, and oversetting two Merlons. The greatest part of the Bombs extinguish'd by the humidity do not burst, and occasion more Fear than Damage—at noon they open'd the lower Battery on the bank.

15, night. Night pretty quiet except a slight Alarm caused by some Boats of the Enemys Fleet, which had reachd the point of [Hog] Island, and retired after firing upon the boats of our Galleys—a great Noise of Oars heard behind the Island. The cause of it unknown.

16, the day. The Enemy renew'd their firing this morning with Canon, and continued with Flourishes—their Design seems to be to make their shells burst in the air, on account of the little effect which the humidity of the Soil suffers them to produce. The few bombs which have been thrown for an hour past are intended to fall on our Roofs—some have gone through the two Floorings of our grand Barracks on the right and opposite as you enter, but destroy'd no Life—the Burst[in]g a Shell just now drives me from my Table. . . .

17, day. The Enemy fir'd upon our Barracks a part of the morning and unhappily about 9 oClock a Bomb kill'd two men and slightly wounded three others—The direction of the shells is not against the magasin in particular, but towards the middle of the Fort—the Bombs fall there, and the fires extinguish or they [go?] off without any mischief. . . .

18, the day. Fire renew'd deliberately but without Success—a few bombs upon our Barracks—some Shot from the pest House have broken two Palisades—they fire at 15 degrees elevation or thereabouts for their Shot fall in the manner of bombs. . . .

19, day. A little firing 'till noon—a large bomb from the pest House¹³ Crush'd and set fire to a Ba[rrack]. It was extinguished immediately. So much for the Enemy.

Our own Transactions—

1. We have raised our Bank in the night time—an[d] our Pallisades on the Front attacked, are shelter'd from Cannon.

2. We have staged our Wall in order to flank the Side which the Galleys ought to defend.

3. We have join'd our Barracks by Ditches before the parapet in order to make a Second Inclosure.

4. We have raised a flank'd work in the middle of the Fort, made of Earth and Timber, and barrels fill'd with Sand, surrounded by a Ditch—to defend the Ground inch by inch.

5. We have raised some of the Embrasures.

N.B. Part of these works can only be carried on by night. The fire of the Enemy harrassing our Workmen by day.

The Battery is our vulnerable part, I would fraise it with Palisades—Col. Smith says we have neither materials nor hands—and he is partly right—but in its present Situation if it be attack'd, it will be carr[ied?] and our own Cannon may be turn'd against us.

The Galleys are on the Jersey Side. . . .

20. We repair'd 10 Palisadoes that had been destroyed by the Bombs—the elevation of the Bank defending them from Cannon Shot. The square work in the middle of the Fort is finished.

The Enemy appear to be raising a work at near a mile and a half from us at the point of Tinicum, in the direction of Hog Island—there are a great many people there—The Commodore [Hazelwood] who has been inform'd of it has not approached the Shore, but is gone to make a fruitless Cannonade against the Fleet.

The Enemy have kept up a heavy Fire, but happily have kill'd only two of our men and wounded one.

Evening. For want of Pickets, we have begun a Ditch to surround the Battery—to morrow night we shall endeavor to make a double Chain of floating Timber, or of Iron Chains taken from the Fire-Ships to hinder the Enemys Landing.

21. Scarce any Fire from the Enemy—I suppose there are few men in their Lines.

We stop't up all the old Loop-holes which were too low, and would have served the enemy as well as ourselves. We have made others too high for the Enemy to reach without, and have raised a Banquete for our men within.

The Enemy appear no longer in the direction of Hog Island at Tinicum point. The number of men seen there yesterday must have been a Disembarkation from their Fleet.

Night. No fire from the Enemy. We have driven down large Pickets in the bed of the River, at the distance of 20 feet from the Battery, and at the distance of 15 feet from each other—they are intended to support the double Chain spoken of above.

Part of the Chain is stretcht. The high Tide and Coldness of the night have hinder'd us from stretching the whole. We shall close the remaining Interval with floating Beams fasten'd together by their ends.

22. Firing from the Enemy—their Bombs have destroy'd some of our Palisades and we are employed in repairing them.

Night. The Chain which we have got is fix'd. The work is very difficult, on account of the necessity of performing it in the water. The Enemys

Vessels have got beyond the Bilingsport Chevaux de frise. Red bank is attacked.

23. Cannonade and incessant Bombardment from Day break—an Officer wounded—A large Vessel of the Enemy perforated with our Shots and those from the Galleys blew up. I know not by what accident. A second ran aground near the Jersey Shoar—The Enemy's Vessels retreat. We are employed in making Traverses behind the Wall, to cover our Troops from their Fire. The East north East Block House blew up and render'd useless a Flank.

Night. I have traced a Ravelin for the defence of the outline flank'd by the Blockhouse—it will cover the Entrance and be of more use than the work which was there before. We have cover'd the left Flank of the Battery with two Parapets and two Ditches. We are deficient in wood, pickets and Earth.

24. We continue the Ravelin—make deepe Gaps in the Bank on the right and left to prevent the Enemy from advancing to the Attack in good order. Our Garrison is still very weak for so great an extent of Works.

The Enemy are silent on the land side, and in the River

The Enemy are employed this morning on a Work opposite the old Ferry. It appears to us to be a Battery and design'd to cover their passage to the Island—they have made but little progress with it as yet, and the Galleys might interrupt these if they pleased.

26. No Firing from the Enemy—we discover men carrying fascines at the old Ferry—I can't form a Judgement whether their Design to erect some work there or prepare for a Descent here—The Commodore says he knows of several Boats being prepared on the Schuylkil. . . .

29. . . . in the morning the Tide added to the Storm and Rain broke our bank in several Places, especially near . . . the three half ditches which Baron Arendt order'd me to have made, near the house of the Barrack Master. This prodigious Inundation it is true puts us out of the reach of a Coup de main, the whole Island being under water, but it interrupts our Communications in the fort and causes among other Inconveniences, that of covering the ground adjacent to the Wall behind which we used to shelter our men from Bombs and Ricochet Shot.

Yesterday at 3 O'Clock we had a mind to make some Attempt upon the Enemy's Batteries overflow'd and unfit for Service—3 Galleys came to help us but the want of concert or deficiency of boats disappointed our Enterprise. The Result of which was only a few Cannon Shot from us and some Bombs thrown into the Fort. The firing ceased by mutual Consent.

The night has been quiet and the Tide more moderate. The same Tide which troubled us produced greater Derangement in the projects of the Enemy—Their Bridge over the Schuylkil was broke by it, and 12 of their Boats six of them large ones, with a number of Plank drifted to us. Their works on province Island appear but little Injur'd—except that they are in the water as we are.

I wish the Banks on province Island could be cut. I think the Enemy could not continue there.

30. No firing from the Enemy—they have strengthen'd their Bank Guards, and we observe frequent Patroles on the Banks. I have proposed to remove all the Earth which forms the old ferry bank, to render it impracticable as a Landing Place.

—Washington Papers, rolls 44
and 45.

In a letter to Washington, written October 28, Fleury poignantly expressed little hope of defending the fort against almost certain British assault. While lamenting the futility of works insufficiently manned, he assured the Commander in Chief, “we shall do all that can be expected of brave men.”

6. “OF WHAT AVAIL ARE FORTIFICATIONS UNDEFENDED BY MEN”

François Fleury to George Washington.

28th October 1777

I have already written to you upon the Subject of my Fears respecting this Post.¹⁴ I repeat that if the Enemy attempt it by way of storm and come provided with Fascines, Plank, Ladders, etc., 300 Men lost in a circumference of 1200 Paces cannot hinder them from penetrating, especially if they make false Attacks, and a real one in silence—You know this language is not dictated by Fear, but arises from a Sense of the importance of this Post. It is in vain to multiply works—of what avail are Fortifications undefended by Men.

The Galleys¹⁵ which ought to be a Security to us are absolutely useless—they have withdrawn to the Jersey Shore—the Channel between us and Province Island is perfectly clear and if the Enemy choose to make a descent here as I have no doubt they do. We cannot hinder them. They may have two Projects one to take us by Storm and the other to open Trenches in the Island itself at the Extremity of Old ferry bank . . . we can hinder neither, but I am most afraid of the first. You know that the Fort has only weak Ditches and Palisades. The former are soon fill'd with Fascines, the latter easily cut away, and the Fort laid open. The Bombs have destroyed one of our Block houses. We depend upon a few Militia for the management of our Artillery, and the greatest part of it is useless for want of hands. Notwithstand such weakness we shall do all that can be ex-

pected of brave men—I have proposed to set fire to the Magasine in case they should penetrate and blow up altogether—but this is a desperate Resolution.

—Washington Papers, roll 145.

Writing his memoirs long after the war, Joseph Plumb Martin, who served as a private at Fort Mifflin in 1777 and later joined the sappers and miners, recalled the fort's condition upon his arrival late that October. As described in the passages below, the extremely muddy ground caused great hardships, and the enemy's incessant shelling made deathtraps of the barracks. As the siege progressed, the garrison was obliged to spend the nights repairing—under constant fire—damages the British cannonade inflicted by day. Fleury, the vigilant taskmaster, kept the garrison continuously at work.

7. "WE WERE, LIKE THE BEAVER, OBLIGED TO REPAIR OUR DAMS IN THE NIGHT"

From the narrative of Joseph Plumb Martin.

Well, the island, [Mud or Fort Island] as it is called, is nothing more than a mud flat in the Delaware, lying upon the west side of the channel. It is diked around the fort, with sluices so constructed that the fort can be laid under water at pleasure, (at least, it was so when I was there, and I presume it has not grown much higher since.) On the eastern side, next the main river, was a zigzag wall built of hewn stone, built, as I was informed, before the Revolution at the king's cost. At the southeastern part of the fortification (for fort it could not with propriety be called) was a battery of several long eighteen-pounders. At the southwestern angle was another battery with four or five twelve- and eighteen-pounders and one thirty-two-pounder. At the northwestern corner was another small battery with three twelve-pounders. There were also three blockhouses in different parts of the enclosure, but no cannon mounted upon them, nor were they of any use whatever to us while I was there. On the western side, between the batteries, was a high embankment, within which was a tier of palisadoes. In front of the stone wall, for about half its length, was another embankment, with palisadoes on the inside of it, and a narrow ditch between them and the stone wall. On the western side of the fortification was a row of barracks, extending from the northern part of the works to about half the length of the fort. On the northern end was another block of barracks which reached nearly across the fort from east to west.

In front of these was a large square two-story house, for the accomodation of the officers of the garrison. Neither this house nor the barracks were of much use at this time, for it was as much as a man's life was worth to enter them, the enemy often directing their shot at them in particular. In front of the barracks and other necessary places were parades and walks; the rest of the ground was soft mud. I have seen the enemy's shells fall upon it and sink so low that their report could not be heard when they burst, and I could only feel a tremulous motion of the earth at the time. At other times, when they burst near the surface of the ground, they would throw the mud fifty feet in the air. . . .

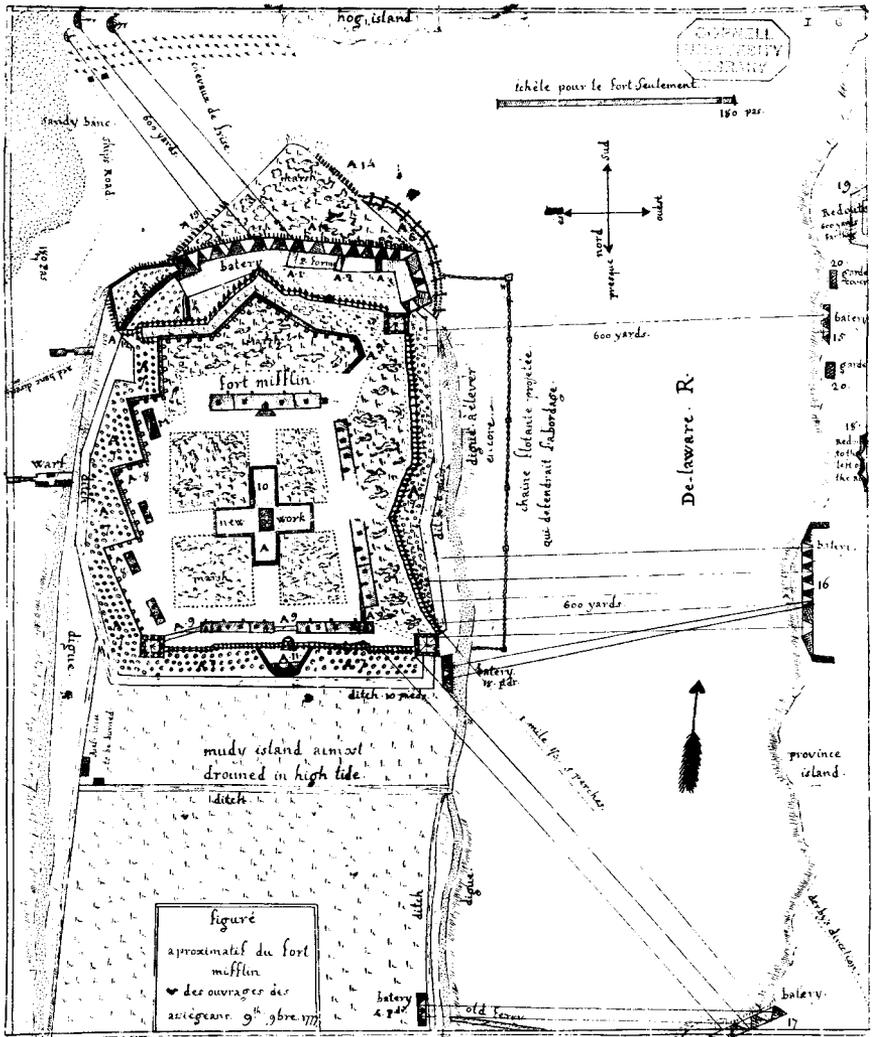
Our batteries were nothing more than old spars and timber laid up in parallel lines and filled between with mud and dirt. The British batteries in the course of the day would nearly level our works, and we were, like the beaver, obliged to repair our dams in the night. During the whole night, at intervals of a quarter or half an hour, the enemy would let off all their pieces, and although we had sentinels to watch them and at every flash of their guns to cry, "a shot," upon hearing which everyone endeavored to take care of himself, yet they would ever and anon, in spite of all our precautions, cut up some of us.

The engineer in the fort [Fleury] was a very austere man and kept us constantly employed day and night; there was no chance of escaping from his vigilance.

Between the stone wall and the palisadoes was a kind of yard or pen, at the southern end of which was a narrow entrance not more than eight or

FORT MIFFLIN, 9 NOVEMBER 1777. *Fleury, chief engineer at the fort, drew this plan on the eve of the enemy's full-scale attack. He denoted improvements made since his arrival with the letter A. Fleury included enemy batteries on the western shore of the Delaware, the chevaux-de-frise, upper left, and a projected floating chain, center. On the reverse side Fleury scribbled: "The engineer author of this imperfect draught begg indulgence for it; considering that he has not paper, pen, rule, neither Circel, and being disturbed by good many shells, or cannon's balls, flying in the fort." The plan's key, in Fleury's own words, is as follows: A1,2,3 — Traverses to defend the Battery from Ricochet Shot; A4,5 — Ditches to close the Left of the Battery which was open; A6 — A double Iron Chain which incloses the right of the battery; A7 — Pits with sharp upright Stakes, to defend the approaches to our Inclosure; A8 — Banquet raised round the Wall; A9 — Ditches and Parapet of Reunion between our Barracks, which will make a second Inclosure, and be furnished with loop-holes; A10 — Last Retreat in the middle of the Fort made when we had only 120 Men in the Garrison; All — Demilune to flank the front, substituted to the Blockhouse which was blown up; A12,13,14 — Fraise-work.*

Sparks Collection, Cornell University Libraries



ten feet wide, with a ditch about four feet wide in the middle, extending the whole length of the pen. Here, on the eastern side of the wall, was the only place in the fort that anyone could be in any degree of safety. Into this place we used to gather the splinters broken off the palisades by the enemy's shot and make a little fire, just enough to keep from suffering. We would watch an opportunity to escape from the vigilance of Colonel Fleury, and run into this place for a minute or two's respite from fatigue and cold. When the engineer found that the workmen began to grow scarce, he would come to the entrance and call us out. He had always his cane in his hand, and woe betided him he could get a stroke at. At his approach I always jumped over the ditch and ran down on the other side, so that he could not reach me, but he often noticed me and as often threatened me, but threatening was all, he could never get a stroke at me, and I cared but little for his threats.

It was utterly impossible to lie down to get any rest or sleep on account of the mud, if the enemy's shot would have suffered us to do so. Sometimes some of the men, when overcome with fatigue and want of sleep, would slip away into the barracks to catch a nap of sleep, but it seldom happened that they all came out again alive. I was in this place a fortnight and can say in sincerity that I never lay down to sleep a minute in all that time.

The British knew the situation of the place as well as we did. And as their point-blank shot would not reach us behind the wall, they would throw elevated grapeshot from their mortar, and when the sentries had cried "a shot," and the soldiers, seeing no shot arrive, had become careless, the grapeshot would come down like a shower of hail about our ears.

—Martin, *Private Yankee Doodle*, pp. 86–89.

Fleury's own account of the siege of Fort Mifflin demonstrates the cumulative damage of the enemy's artillery, the mounting crisis of supply, and the continuing shortage of men. One day flying brick fragments wounded Fleury; another time a timber knocked him unconscious and killed a companion. Although the garrison was extremely fatigued and at times nearly one-half incapacitated, Fleury insisted that the fort could hold out if only he could get more manpower and supplies. That never happened. On November 15 Fort Mifflin's garrison withdrew across the river to Fort Mercer.

As reflected in the excerpts below, Fleury encountered some difficulty working with the headstrong Colonel Smith. After reading Fleury's journal entry for November 3, Washington recognized the problem and quickly sought to remedy it. Washington's advice to Smith contained a rare commentary on the scope of an engineer officer's authority vis-à-vis that of the commanding officer:

. . . His [Fleury's] authority at the same time that it is subordinate to yours must be sufficient for putting into practice what his knowledge of Fortification points out as necessary for defending the post, and his Department, tho inferior, being of a distinct and separate nature requires that his orders should be in a great degree discretionary, and that he should be suffered to exercise his judgment.¹⁶

Washington went on to describe Fleury as "a Young Man of Talents" who "has made this branch of Military Science [engineering] his particular study," and concluded, "I place a confidence in him."

8. "OUR RUINS WILL SERVE US AS BREAST WORKS, WE WILL DEFEND THE GROUND INCH BY INCH"

From François Fleury's journal.

3 [November 1777]. For two days past we had suspected that the Enemys Vessels made different turns in the course of the night to the Augusta's wreck¹⁷—either to carry off the Cannon which the Galleys had neglected throwing into the water, or taking possession of, or to tow off the Hulk—but they had a more important object which they have been permitted to execute without interruption—and this morning's daylight discover'd to us their two nights' labour—they are raising a battery of heavy Cannon upon the hulk which is aground on the sand bank, the Galleys do not disturb them in their work, which if they finish it, will do great injury to our Fort—where you know there is no Shelter for the Troops—it is important to drive them from that particular spot of the River, and thirteen Galleys with two floating Batteries may do it if they please.

As we are in want here of Joist, Pickets, Palisades, and even Earth, and as it is impossible to fortify a place with water unless one has means to stop it—I went yesterday with 20 men to endeavour to get wood on the Jersey Shore, but I could get only a few Pickets, of which I shall make palisades, if I am permitted to use them according to my Ideas.

When His Excellency approved my Zeal and my remaining at Fort Mifflin in quality of Engineer, he did not give me an order to act in that capacity, and I can only advise without being heard. While Baron Arendt was present he understands the Military Art, and my Opinions in point of fortification were his—but he is absent,¹⁸ and you know there are persons who know a great deal without having ever learnt—and whose obstinancy is equal to their Insufficiency. However I do not complain of any one, I confine myself only to observing that my Zeal for your Cause cannot be useful unless I am permitted to display it, in a branch which I have studied, on a spot with which I am well acquainted, by my own Remarks, and those of many other Engineers skilful and accurate men.

Honour commands me to do everything in my power. I hope to do my Duty in whatever way I am made use of—and to die in the breach if necessary—but I will observe only that I thought myself employ'd in a different capacity from that of a Grenadier.

3d. night. A considerable number of the Enemy's boats pass'd and repass'd in the course of the night, near the Shore of Province Island—it appears that this Communication between their Fleet and Philadelphia is established, and what will surprise you perhaps, is that it is a sure one, there being no Interruption on our part—we cannot cannonade them from the Fort, the shade of Trees prevents our being informed of their passage otherwise than by the noise of oars, and firing at sounds would be wasting pretious Ammunition. . . .

Novem. 5th, 6th. . . . The Enemy seem determin'd to Winter in Province Island if they can't take Fort Mifflin. . . . If His Excellency would form some Enterprise on their Rear, I believe we might make a useful diversion—as I know the Island I offer to serve as Guide to any party that shall be order'd there, in concert with Col. Smith I intend this night to reconnoitre in an arm'd boat the position of their Sentinels, and the safest Landing places, of which I shall make a Report. . . .

8th. The Enemy have enlarged the upper Battery opposite the Fort, we this morning discover 5 Embrasures, masked as yet with Fascines—it is probable they will all open at once—their project seems to be, to knock down our palisades, and storm our west front between the two block houses. To cover our palisades on this side we have apply'd to General Varnum¹⁹ to furnish us with fascines which we shall place on the Summit of the bank to serve instead of Earth, which is not to be had—I don't know whether we shall be able to procure the Fascines.

10. It is probable that the Enemy will undertake to carry this place by storm, and I should not fear them if we could fix the floating Chain . . . it would cover the Front which is likely to be attacked, and by delivering us from our uneasiness for this side, would enable us to post the men destined for its defence, at the Wall of Masonry which is ten feet high and is not out of the reach of an Escalade, notwithstanding the Ditches, Pits and Stakes, etc., with which we have endeavour'd to surround it.

The Commodore, Master of the *incomparable* Chain in question, proposes to stretch it by means of Buoys, between our Island and Province Island. I believe this obstacle to the communication between the Enemy's Fleet and Army will be of little consequence, and if he would spare us the Chain, the Enemy would pay dear for their Hardiness if they dared attack us. Colonel Smith wrote this morning to ask this favour, but I am afraid that public Interest will suffer by private misunderstandings. I am interrupted by the Bombs and Balls which fall thick. . . .

Novem. 11th. The Enemy keep up a heavy fire . . . Our block houses tho' fac'd with fascines, Joist and well rammed Earth, have not been able

to hold out—they are laid open and all their Cannon dismounted except two—I have endeavour'd to cover them in order to flank us in case of Assault—but they are not secure and I have no more Joist, Fascines or Palisades—I have written to Red bank for Supplies in these Articles, but am rather neglected. . . .

13th. The Enemy have open'd a Battery on old-Ferry-wharf—the Walk of our Rounds is destroyed—the Block-houses ruined—Some men Kill'd and wounded each day.

I forgot to inform you that a Ball struck against some Bricks the fragments of which slightly wounded Col. Smith, Capt. George and myself—those two Gentlemen cross'd immediately to Red-bank—I have heard that Col. Smith is recover'd but don't know when he'll return.

Our Garrison is exhausted with Fatigue and ill-health, is extremely discouraged and I fear would make but an indifferent Defence in case of Storm. At the last Alarm, one half were incapable of Duty.²⁰

Nov. 13th at night. The Enemy have kept up a firing part of the night—their shells greatly disturb our workmen, and as the moon rises opposite to us, her light discovers to the Enemy where we are. As long as my Workmen would remain with me, I employed them in covering the two western Blockhouses with Joist within and without and filling the interstices with rammed Earth. I have closed the breaches made in our Palisades, with Planks, Centry-boxes, Rafters, and strengthen'd the whole with earth—General Varnum has sent me neither Ax, Fascine, Gabion nor Palisade, altho he promised me all these Articles, I suppose it has not been in his power—it is impossible however with watry mud alone to make works capable of resisting the Enemy's 32 Pounders.

14th. . . . Fort Mifflin is certainly capable of defence if the means be furnished—if they supply us from Red-bank with Tools, Fascines, Palisades, etc., all which they may do in abundance—the Fire of the Enemy will never take the Fort, it may kill us men but this is the Fortune of War. And all their bullets will never render them masters of the Island, if we have courage enough to remain on it . . . Fort Mifflin is the important Object, it must be maintained and furnish'd with means of defence. Men, Earth and Fascines to cover them—Our new Garrison consists of 450 Men—what can they do in a circumference of works so extensive as ours—being weak everywhere, they could make a defence nowhere and the Fort would be carried—The apparent Project of the Enemy is to debark on the Island; either to risque a Storm, or to establish a battery on the old ferry wharf, or nearer if they can—what means have we of hindering them—with a Garrison so feeble, can I make any advantageous Sallies—can I dislodge the Enemy—if I raise a battery against their will it not serve against ourselves in case of attack—for without a sufficient number to defend it, it must be given up—our grand Battery has 19 Embrasures and 8 cannon, two of which are dismounted—we must have Ar-

tificers to make Wheels—Fascines and Palisades for breaches. General Varnum supplies us scantily—We must have men to defend the Ruins of the Fort—our Ruins will serve us as breast works, we will defend the Ground inch by inch, and the Enemy shall pay dearly for every step—but we want commanding Officer, ours is absent and forms projects for our defence at a distance. . . .

14th at 7 oClock. The Enemy keep up a great Fire from their Floating Battery and the shore. . . .

Our blockhouses are in a pitiful condition, but with fascines I hope to cover two pieces in each lower story which will be sufficient to flank us. I say again the Enemys fire will not take our fort. If they attempt a storm we shall still have a little parapet to oppose to them, but we must have men to defend it.

Novem. 14th at noon. We have silenced the Enemy's floating Battery, I know not whether we have dismounted her Cannon, or whether her present Station exposes her too much, but the firing from her has ceased. I suspect that she is destined to land men on this Island.

Their grand battery is in little better condition than our blockhouses—We have open'd an embrasure at the Corner of the Battery, and two pieces here joined to two others on the left which we have reinstated, throw the Enemy into disorder. . . .

Tonight an Attempt is to be made on the floating battery of the Enemy.

Novem. 15. [*This last entry was evidently not written by Fleury.*] At day break the Enemys batteries began a vigorous fire upon the Fort, and the Fleet set Sail to come up with the Tide. One of their Vessels . . . and two Sloops . . . advanced between Hog Island and the Northern point of Tinicum near 1000 yards from the grand Battery.

The Six other Vessels and the Galley carrying a 36 pounder approached the Chevaux de frise at the distance of 600 yards from the Fort. We fired upon them with red hot bullets.

At 8 OClock their Fire began *responded* [to?] by that of the Land batteries, and a quarter of an hour after many successive broad sides ruined our parapet, and dismounted one of our Guns, there being only two Embrasures in that side. The Musquetry . . . hindered the canoniers from remaining on the Platform; and the land batteries making a cross-fire with the Vessels render'd the right of the battery untenable. However Capt. Lee who commanded the Artillery, and Major Fleury who commanded the Infantry appointed for firing . . . did not abandon this part of the right of the battery. All their men were either kill'd or wounded and the Cannon broken to pieces. . . .

At 11 OClock, Ammunition began to fail, and Major Thayer order'd the blue Flag to be hoisted as a Signal of distress to the Fleet—Major Fleury the Commissary and some Volunteers ran to the Magasine and after

searching found a 32 pounder Cartridge and Several 18 pounder Cartridges and the Fire was renewed.

In conformity to Major Thayers order they were lowering the Flag in order to hoist the Signal of Distress, but Capt. Lee and Major Fleury ran to hinder it, entreating Major Thayer rather to send off boats from the wharfs than make a Signal which would discover our weakness to the Enemy—The Major approved and the Flag was hoisted again—The Enemy had slacken'd their Fire a moment doubtless thinking that we were prepared to surrender but our Cannon undeceived them. It was one OClock. Our Ammunition was exhausted—and we had only two Guns fit for use. The rest were dismonated, some even shattered to pieces—our parapet was destroyed—one of the Sloops station'd towards the middle of the Fort, demolished [a?] Bank and level'd our Palisades—a Body of troops appeared on the opposite Shore ready to embark—our Garrison was [*illegible*].

The Major call'd a Council of War at 2 OClock, composed of Major Talbot, Major Fleury, Capt. Lee, Captain Dickinson, and another Captain—The Result was —*Supplies of Amunition or Boats.*

The Enemy's Fire continued furiously and ours [languidly ?] from two Pieces of Cannon—the Wall was half demolished—The Blockhouses flew about in splinters—a Piece of Timber torn from the Block house on the right, struck down Capt. Lee and Major Fleury who were standing near a Gun, the former was kill'd and the latter remain'd Senseless.

Major Talbot who ran to their Assistance was wounded with two Grape Shot in the thigh and Arm.

The Fire continued till Night, and Ferry boats arriving instead of a Reinforcement—The Ammunition, Provisions and Arms were carried off. The Cannon spiked. The carriages broke. The Barracks set on fire—and at half after eleven the Garrison evacuated the Fort, and at the same time the Oars of the Enemys boats were heard—bringing on Troops to attack our ruined Palisades.

—Ford, "Defences of Philadelphia," *Pennsylvania Magazine* 18:472–73, 478; 19:72–73, 80–82, 244–46; *Washington Papers*, rolls 44 and 45.

As usual, Joseph Martin recounted with dramatic flair the details of the final day's siege. No fewer than ten British vessels trained their guns on the fort and met with but feeble response from the American batteries. "When the firing had in some measure subsided and I could look about me," he recalled, "I found . . . the fort was as completely ploughed as a field."

9. "IF EVER DESTRUCTION WAS COMPLETE, IT WAS HERE"

From the narrative of Joseph Plumb Martin.

We continued here, suffering cold, hunger and other miseries, till the fourteenth day of November [1777]. On that day, at the dawn, we discovered six ships of the line, all sixty-fours, a frigate of thirty-six guns, and a galley in a line just below the *chevaux-de-frise*; a twenty-four-gun ship (being an old ship cut down,) her guns said to be all brass twenty-four-pounders, and a sloop of six guns in company with her, both within pistol shot of the fort, on the western side. We immediately opened our batteries upon them, but they appeared to take very little notice of us. We heated some shot, but by mistake twenty-four-pound shot were heated instead of eighteen, which was the caliber of the guns in that part of the fort. The enemy soon began their firing upon us and there was music indeed. The soldiers were all ordered to take their posts at the palisadoes, which they were ordered to defend to the last extremity, as it was expected the British would land under the fire of their cannon and attempt to storm the fort. The cannonade was severe, as well it might be, six sixty-four-gun ships, a thirty-six-gun frigate, a twenty-four-gun ship, a galley and a sloop of six guns, together with six batteries of six guns each and a bomb battery of three mortars, all playing at once upon our poor little fort, if fort it might be called.

Some of our officers endeavored to ascertain how many guns were fired in a minute by the enemy, but it was impossible, the fire was incessant. . . . The enemy's shot cut us up. I saw five artillerists belonging to one gun cut down by a single shot, and I saw men who were stooping to be protected by the works, but not stooping low enough, split like fish to be broiled.

About the middle of the day some of our galleys and floating batteries, with a frigate, fell down and engaged the British with their long guns, which in some measure took off the enemy's fire from the fort. The cannonade continued without interruption on the side of the British throughout the day. Nearly every gun in the fort was silenced by midday. Our men were cut up like cornstalks. . . .

The cannonade continued, directed mostly at the fort, till the dusk of the evening. As soon as it was dark we began to make preparations for evacuating the fort and endeavoring to escape to the Jersey shore. When the firing had in some measure subsided and I could look about me, I found the fort exhibited a picture of desolation. The whole area of the fort was as completely ploughed as a field. The buildings of every kind [were] hanging in broken fragments, and the guns all dismantled, and how many of the garrison sent to the world of spirits, I knew not. If ever destruction was complete, it was here.

—Martin, *Private Yankee Doodle*, pp. 90–92.

The next morning, November 16, British sailors landed on Fort Island, raised their flag, and immediately began a battery to cover the removal of the chevaux-de-frise, the final phase of their reduction of the Delaware defenses. Four days later the rebels evacuated Fort Mercer. Nearly two months after the British first entered Philadelphia, and at a tremendous cost to them in men and ammunition, they controlled the river.

While Fleury directed the defense of Fort Mifflin, Duportail was at Washington's side. At the end of October he reconnoitered near Whitemarsh, Pennsylvania, fourteen miles outside Philadelphia, and pronounced the area very satisfactory for an encampment. Once Washington decided to move his headquarters to the new location he assigned Duportail, as Chief Engineer, to fortify the position. Much to Howe's distress, this base still placed Washington within striking distance of Philadelphia.

Atop a hill near Whitemarsh, Duportail constructed a fort consisting of breastworks lined and faced with logs. Redoubts held down the corners. The engineer designed the position for 300 men and surrounded it with abatis. Hills in three directions completed the defenses. The camp was so strong that in December Howe abandoned plans for an attack.

From Whitemarsh on November 12 Duportail provided French War Minister St. Germain with the following masterful analysis of Howe's position and the American potential for success. The patriots, Duportail wrote, benefited greatly from British mistakes, particularly the Burgoyne campaign; from Howe's sluggishness and timidity; and from the enemy's failure to supply the twenty thousand men needed to win the war.

Duportail's view of the Americans was skewed; he found them "soft, without energy, without vigor, without passion" for their cause. He observed that they were accustomed to "an abundance of everything necessary for a comfortable and agreeable life." They were idle, loathed war, and disliked being "reduced to lead a hard and an irregular life." Worth noting is Duportail's certainty that a treaty of alliance between France and the United States "would be the best way to ruin everything." His own experiences had attested to an American hatred and fear of the French that far exceeded American hatred of the English.

**10. "THERE IS A HUNDRED TIMES MORE ENTHUSIASM
FOR THIS REVOLUTION IN A SINGLE CAFE IN PARIS
THAN IN ALL THE UNITED COLONIES"**

Louis Duportail to St. Germain.

12 November 1777

Monsieur:

. . . Now it is quite natural, after the experience of this campaign, to ask oneself: "Will the Americans succeed in gaining their freedom, or not?" In France, without doubt, one can hardly judge only by that which

has happened. They will decide in the affirmative, but as for us, who have witnessed everything it is another affair. It is necessary to speak plainly. It is not the good conduct of the Americans which won for them a campaign which on the whole has been so happy; it is rather the mistakes of the English. It was an enormous error for the British government to order General Burgoyne to traverse more than 200 leagues of a country bristling with obstacles, almost desert, and consequently of no use to take, and that merely in order to join Generals Howe and Clinton in the center of the country. This project might seem very magnificent in the bureaus of London, but for those who know the country, it was very defective. This opinion of mine does not come after the event; you remember perhaps, Monseigneur, that I was greatly pleased with the English for opposing us here with only 10,000 men; that I greatly hoped that General Burgoyne would only arrive here when the campaign would be possible no longer; that his army would be cut in half by hunger, misery, desertion, daily losses on the journey, and our militia, scattered in the woods on his route, and fighting thus in the fashion which is peculiar to them. The result was more successful than I had hoped.

If the English, instead of making so many diversions, which were all to the detriment of the principal action, had opposed General Washington with about 20,000 men, I do not know exactly what would have become of us. Because, for us, in doubling our army we do not double its strength by a great deal, rather do we triple our difficulty. So much for the plan of this campaign.

If we consider next the conduct of General Howe, we shall see that he has not done that which he could have done, as I had the honor of informing you after the battle of Brandywine. If the English had followed up their advantage, there would no longer be any question of the army of Washington; and since then, General Howe has conducted all his operations with a slugginess, a timidity, which astonishes me every day. But it is necessary to bethink oneself—they can send another general, and then we shall not find ourselves so well off.

However, events which depend on the ability of generals (a thing impossible to anticipate) must not be considered in our speculations for the future. Having regard only to the number of troops, I believe that if the English could have 30,000 effectives here, they would reduce the country. A second thing that could hasten this reduction, and even bring it about almost alone, is the lack of munitions of war. They are in want of nearly everything here. Another thing, they must have cloth, sheets, leather, rope, salt, brandy, and sugar, etc. These last articles are more important than one would at first suppose.

Before the war, the Americans, although ignorant of luxury, had an abundance of everything necessary for a comfortable and agreeable life. Not having much to do they passed a great deal of the day in smoking and

drinking spiritous liquors or tea; that is the fashion of the people here. It is, therefore, much against its will that this people finds itself transformed suddenly into a warlike people and reduced to lead a hard and an irregular life. Moreover, they generally detest war. Also it is easy to see that if their privations increase to a certain point, they will prefer the yoke of England to a liberty which costs them the comforts of life.

This language astonishes you, Monseigneur—such is, however, this people. It is soft, without energy, without vigor, without passion for a cause that it sustains only because it is natural for it to follow for a long time a movement which one has given it. There is a hundred times more enthusiasm for this revolution in a single cafe in Paris than in all the united colonies.

It is necessary, therefore, that France, if she wishes to assist this revolution, furnish the people with everything that they need and not experience too great privations—it will cost France several millions, but it will be amply repaid by the destruction of the maritime power of England, which having no more colonies, will soon have no marine. Her commerce in consequence will pass to France, which will no longer have a rival among the European powers. . . .

One might ask, that in order to terminate the American Revolution sooner, would it not be better for France to make a treaty with the United States, and by mutual consent with them send 12 or 15,000 men? This would be the best way to ruin everything. This people here, although at war with England, hate the French more than they do the English, (we prove it every day), and in spite of all that France has done and will do for them, they would prefer to become reconciled with their former brothers, than to have among them crowds of men that they fear more. For if they would consent in a moment, the natural antipathy soon breaking out would hatch the most fatal quarrels. . . .

P.S. Congress has just raised me to the rank of Brig. Gen.

—Watts, “A Newly Discovered Letter,” pp. 103–06.

Duportail’s promotion to brigadier general on 17 November 1777 gave him new importance not just within the engineer department but also within the whole Army. He became an active participant in councils of war; his role as staff advisor to the Commander in Chief on engineering matters was now a major part of his duties as Chief Engineer. At Whitemarsh on November 24 Duportail attended his first council of war. Washington sought his generals’ advice on “the expediency of an attack on Philadelphia,” and the Chief Engineer joined the majority in recommending against such an attack.

Duportail’s opinion on Philadelphia derived from his fear that failure might spell destruction for the main Army. “Does it become it [the Army] to

stake the fate of America upon a single Action?" he asked. Duportail outlined the necessary dispositions for an attack and concluded that success required great harmony, "presence of mind in the Superior officers," and "firmness in the troops." He apparently doubted that all three requirements could be achieved simultaneously. Moreover, an attack was extremely risky without more information on the enemy's defenses.

11. "TO JUSTIFY SUCH AN ENTERPRISE THE SUCCESS MUST BE ALMOST CERTAIN"

Louis Duportail's first opinion as chief engineer in council of war.

November 25, 1777

To attack the Enemy in their Lines appears to me a difficult and dangerous Project; it has especially this very considerable Inconvenience, the exposing our Army, in case it does not succeed, to a total Defeat. This is easily demonstrated, one of the principal means proposed, is to throw two thousand men in the rear of the Enemy; if we do not succeed, these are so many men absolutely lost; as to the main body of the Army which is to attack in front, it must pass through the intervals left between the Abattis and Redoubts, which they say, form very narrow passages. If after penetrating, we should be repulsed, can Troops in disorder return easily by the passages through which they were introduced? Will it not be very easy for the English to cut off their Retreat? Our whole Army may then be destroyed or made prisoners. Now does it become this Army, which is the principal one, to run such Risques? *Does it become it to stake the fate of America upon a single Action?* I think not, for my part I never would place this Army in a situation where its Rear was not perfectly free, much less where it will be inclosed on all sides without means of retreat, to justify such an enterprise the success must be almost certain. To judge of this, we have only to take a view of the dispositions which must be made for this attack. This view will render the difficulties evident. Ist: two thousand Men are to be introduced by a River, of which the Enemy are wholly Masters. If we embark them near the Enemy, the noise may alarm them; if at a distance, the cold which they will undergo will render the use of their Arms exceedingly difficult in the morning. Besides, can we flatter ourselves that the River side is unguarded; let us reflect that a single man is sufficient to make this project miscarry and cause us the loss of two thousand men.

As to the attack in front, these are nearly the dispositions which would be followed. We should march upon as many Columns as there are Roads leading to the Enemy; upon our arrival in their presence, each commanding officer of a Column, according to the size of the Works before him and the number of Men which he judges are contained in them, divides his Troops in two parts, one of which surrounds his Works and attacks them vigorously, while the other marches boldly through the intervals and falls

upon the Troops in the rear; but every one sees how much harmony is required in all these dispositions, how much presence of mind in the Superior officers, how much firmness in the troops who have to execute all their manoeuvres under the fire of an Enemy who are in a great measure covered.

If the enemy Works are not inclosed, the enterprise would be much less dangerous; if they are, the Enterprise is too hardy.

His Excellency, I think, desired us to say a word respecting the operations in Jersey; in general it seems to me, that we can do nothing better than to endeavour to attack the Enemys force there with superior numbers; but there is a very important observation to be made, which is, that we should not weaken ourselves too much here, for we are to consider that the Enemy may recross their Troops in one night and attack us by daybreak with their whole force. . . . If however an attack be determined upon, the Enemy's works should be more particularly reconnoitred.²¹

—Washington Papers, roll 25.

Together Washington and Duportail inspected the enemy's works. Duportail found them so strong that were he in command of such works with five thousand men "he would bid defiance to any force that should be brought against him."²² That clinched the argument: there would be no attack on Philadelphia.

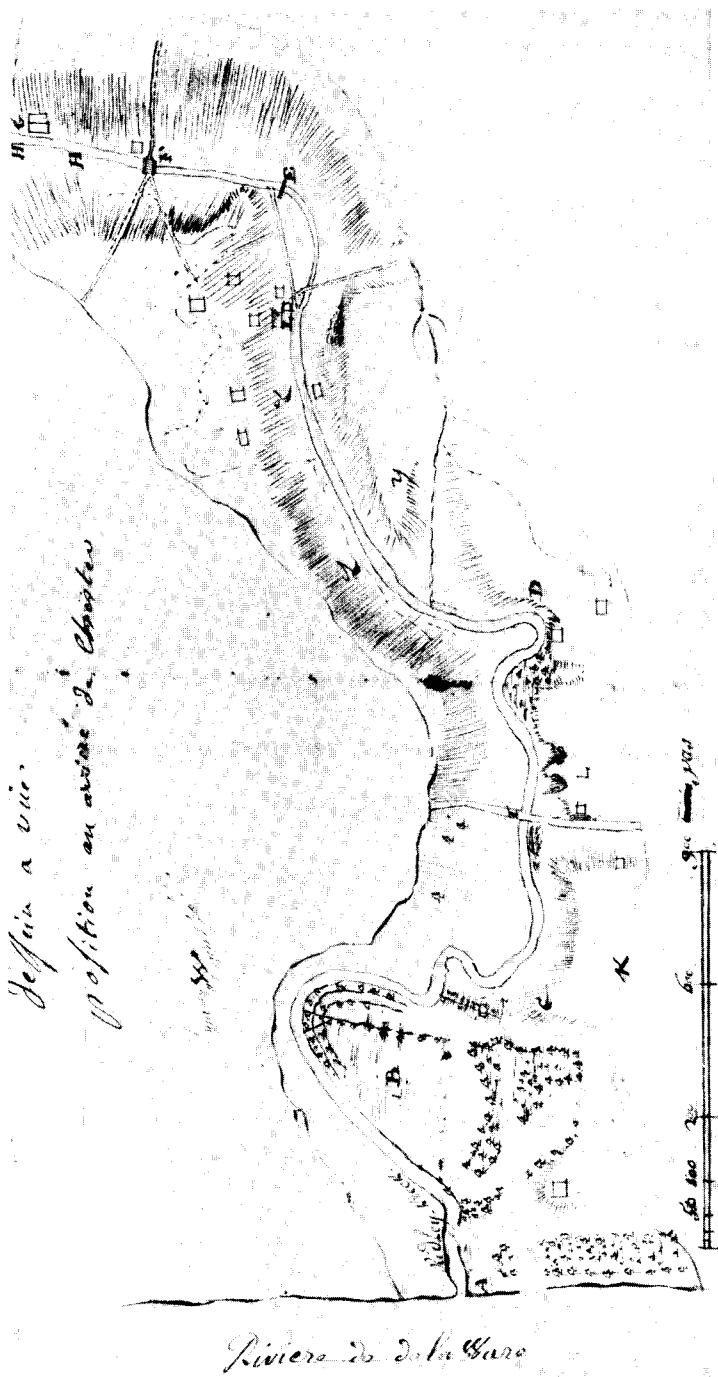
Next Washington turned his thoughts to a suitable location for winter quarters and asked the council of war for recommendations. Duportail favored Wilmington, while other officers suggested the Pennsylvania towns of Chester, Darby, Lancaster, and Reading. The one drawback Duportail found in Wilmington was that the position was so advantageous the enemy would feel compelled to attack. The Chief Engineer saw the upcoming winter as a time to recondition the army for a fresh start, and "we ought not to have its Repose preceeded by a Defeat," he counseled. Of particular importance in choosing between Lancaster and Wilmington, Duportail wisely pointed out, was the availability of supplies, for "it is much better to lose Soldiers in Combats . . . than to lose them by Disorders, and Desertion arising from their Misery."

12. "WILMINGTON ANSWERS THE END OF MAKING THE SUBSISTANCE VERY DIFFICULT TO GENERAL HOWE"

Louis Duportail to George Washington.

December 1, 1777

By taking Winter Quarters from Lancaster to Reading we abandon to the Enemy Jersey and all the Country adjacent to Darby, Chester and Wilmington, one of the richest Tracts in this part of the Continent—By



CHESTER, PENNSYLVANIA. Chief Engineer Duportail made this sketch, probably in autumn 1777, to accompany a reconnaissance report on the area for General Washington.
 Washington Papers, Library of Congress

establishing them at Wilmington we cover the Country, and do not so completely abandon that part of it which is before Philadelphia, nor even Jersey because our proximity to the Enemy and the ease with which we could throw ourselves upon the Rear of their Lines in case the Schuylkill should be frozen, will keep them in respect, and put it out of their power to send considerable Detachments on the other side of the Delaware from the fear of weakening themselves too much—and the small detachments which they may send will be greatly restrained by the Jersey Militia—The Position then of Wilmington answers the end of making the subsistence very difficult to Genl. Howe, who has not only his Army to feed but likewise the Inhabitants of the Town, and who must besides furnish Provisions for the Army of Genl. Burgoyne if he means that they should embark for England—This position further deprives him of the means of recruiting in the Country, extending himself in it, adding to the number of his Partisans, in a word, gaining the Country—It has besides the advantage of rendering his Communication with his fleet difficult, for I imagine the Vessels will not be able to approach Philadelphia when the Ice prevails—I should not omit mentioning a case in which this Inconvenience would be very considerable. If War should be declared between France and England, and Genl. How from a dread of finding himself blocked up in the Spring by a French Fleet should wish to quit Philadelphia, we shall be within distance at Wilmington for hindering his Embarkation of which we should have timely notice.

This Position then unites great Military Advantages—but it must be confessed at the same time that these very advantages ought perhaps to prevent our taking it—because the Enemy probably will not suffer us there, and will march out against us—Thus to ask whether the Position of Wilmington is eligible, is to ask at the same time whether it is eligible to expose ourselves to an Action, and perhaps more than one.

If the Season were less advanced, I don't see why we should avoid them—but at present, what end would be answer'd—if we should gain an advantage we should be unable to pursue it—if we experience a Check we run the risque of seeing our Army dissipated in the rude marches consequent on a defeat—Consistently with the plan which we ought to form of putting our Army in good condition this winter and preparing it for a good Campaign, we ought not to have its Repose preceded by a Defeat.

As to the other points to be consider'd in this Question, whether Wilmington or Lancaster will be the most proper Situation for furnishing the Army with every necessary—I cannot decide being ignorant of the Country, but it appears to me in general that this point deserves our most serious attention—it is much better to lose Soldiers in Combats with the Enemy to whom we cause a loss at the same time—than to lose them by Disorders, and Desertion arising from their Misery. Misery destroys part of an Army and leaves the other without Vigour, without Courage, and

without good Will—we should find ourselves then in the Spring with a Body of an Army incapable of any thing, and consequently have no right to expect a successful campaign.²³

—Washington Papers, roll 25.

Meanwhile, having considerable militia at his disposal, Washington in early December reconsidered an attack on Philadelphia. He found Duportail still strongly opposed, unless the Schuylkill River were frozen and would permit a rear assault in combination with a frontal attack. The key for Duportail, who appreciated the significance of the Germantown defeat, was not the number of troops but their quality. With an engineer's keen insights he observed that Washington needed "troops that are not astonished at suffering a considerable loss in the first onset, without causing any to the Enemy, for this must be the case in an attack of Intrenchments."

13. "THE BATTLE OF GERMAN TOWN OUGHT TO BE A LESSON TO US"

Louis Duportail to George Washington.

Decr. 3d, 1777

Sir

I have examined anew with all the attention of which I am capable, the project of attacking the English, and it still appears to me too dangerous; the great body of Militia with which we might be reinforced for this purpose, does not give me any additional hope of succeeding. It is not the number of Troops which is of importance in this case, but it is the quality, or rather, their nature and manner of fighting. The Troops wanted are such as are capable of attacking with the greatest vivacity, the greatest firmness. Troops that are not astonished at suffering a considerable loss in the first onset, without causing any to the Enemy, for this must be the case in an attack of Intrenchments, although when the Works are carried the chance turns and the loss is on the side of the intrenched. Now, are the Militia or even the Continentals capable of undergoing this Trial, in which the best Troops in the World cannot always support themselves. I am very sorry, in giving the motives for my opinion, to be obliged to speak so unfavorably of our Army; but the Battle of German Town ought to be a Lesson to us: if our Army had proceeded with vigour on that occasion, would not the English have been completely defeated. The disposition was excellent. Your Excellency in that instance really conquered General Howe, but his Troops conquered yours, if then notwithstanding the advantage of a complete surprise, notwithstanding the advantages of ground, we were repulsed. What would happen before a Line of Redoubts well

disposed in all appearance, and the intervals of which are closed with Abbatis.

There is, however, a case in which I think we might attack the Enemy with Success. I mean if the Schuylkill should be sufficiently frozen below their left to admit of our throwing our greatest force on their Rear, at the same time that we should make an attack in front. Gentlemen acquainted with the Country must decide this point, if indeed the Schuylkill is sufficiently frozen every year to afford a passage for Columns of Troops with Artillery. My opinion is fixed, I think the Army ought to be marched to the other side of Schuylkill to be reinforced with all the Militia that can be collected, while we wait for the favourable moment.

I would go more minutely into the subject, if your Excellency did not order me to send my Answer this Morning. I did not receive your Excellency's letter until half after twelve and it is now half after one.²⁴

—Washington Papers, roll 45.

Washington finally rejected both the Lancaster-Reading corridor and Wilmington as winter quarters because the former involved dividing the army among several posts while the latter placed the army outside Pennsylvania, an outrageous prospect to Pennsylvania and New Jersey authorities. Following the advice of Brig. Gen. Anthony Wayne, Washington compromised on Valley Forge. On December 19 Washington's men—worn, in rags, and starving—reached their new encampment.

Some generals were horrified at the choice. Maj. Gen. Johann "Baron de" Kalb, for example, called Valley Forge a desert that "can only have been put into the head of a commanding general by an interested speculator or a disaffected man."²⁵ But the site was easily defended. Moreover, it lay twenty miles from Philadelphia and even nearer Congress's temporary seat at York. Again, Washington entrusted Duportail with the critical task of fortifying the site. As an enemy attack seemed certain come spring, Duportail had to complete the works quickly despite frozen ground, a shortage of men and tools, and "the general misery of the troops from which the workers had to be chosen."²⁶

By late March the Chief Engineer assured the president of Congress that the encampment was "tenable against the enemy's utmost efforts by their present powers."²⁷ The defenses included a line of entrenchments fronted with abatis on the eastern side, nearest Philadelphia; fortifications on Mount Joy along the western flank; and a star redoubt on a bluff overlooking a bridge built on the Schuylkill by Maj. Gen. John Sullivan's men. The works on Mount Joy consisted of an infantry redoubt (Fort Washington), several redans, and entrenchments that extended to the eastern face of the mount as well as along its northern face to the heights above the Schuylkill.²⁸ Washington seems to have preferred an enclosed work on the



summit of Mount Joy; but, citing the lack of space to build a new work and insufficient troops to man it, Duportail recommended against the idea.²⁹

To be sure, Valley Forge was not impregnable, but Howe never attacked it. To the British, an assault on the American camp, which only remotely threatened Philadelphia, might prove too costly. Howe later recalled: "Having good information in the spring that the enemy had strengthened the camp by additional works, and being certain of moving him from thence when the campaign should open, I dropped all thoughts of an attack."³⁰

While the army dug in at Valley Forge, two plans were advanced to destroy British shipping in the Delaware. In December David Bushnell set afloat above Philadelphia kegs of powder designed to explode on contact. Unfortunately Bushnell released his floating mines too far from the British vessels for the ebb tide to carry them to their intended targets. Instead most of the kegs caught in the ice or drifted far afield. Eventually one boat did blow up, with many casualties resulting; other kegs discharged harmlessly in the water. Alarmed, the British left nothing to chance. They positioned themselves along the city's waterfront and fired at everything seen floating in the river. Thus ensued the celebrated "Battle of the Kegs." The affair inspired writer Francis Hopkinson, chairman of the Continental Navy Board and a friend of Bushnell, to immortalize the "battle" in humorous verse.

14. "BATTLE OF THE KEGS"

A poem by Francis Hopkinson, 1778.

Gallants, attend, and hear a friend
Trill forth harmonious ditty.
Strange things I'll tell, which late befell
In Philadelphia city.

'Twas early day, as poets say,
Just when the sun was rising.
A soldier stood on a log of wood
And saw a thing surprising.

As in amaze he stood to gaze—
The truth can't be denied, sir—
He spied a score of kegs or more
Come floating down the tide, sir.

THE CAMP AT VALLEY FORGE. *This sketch in Duportail's hand shows the entrenchments he planned.*

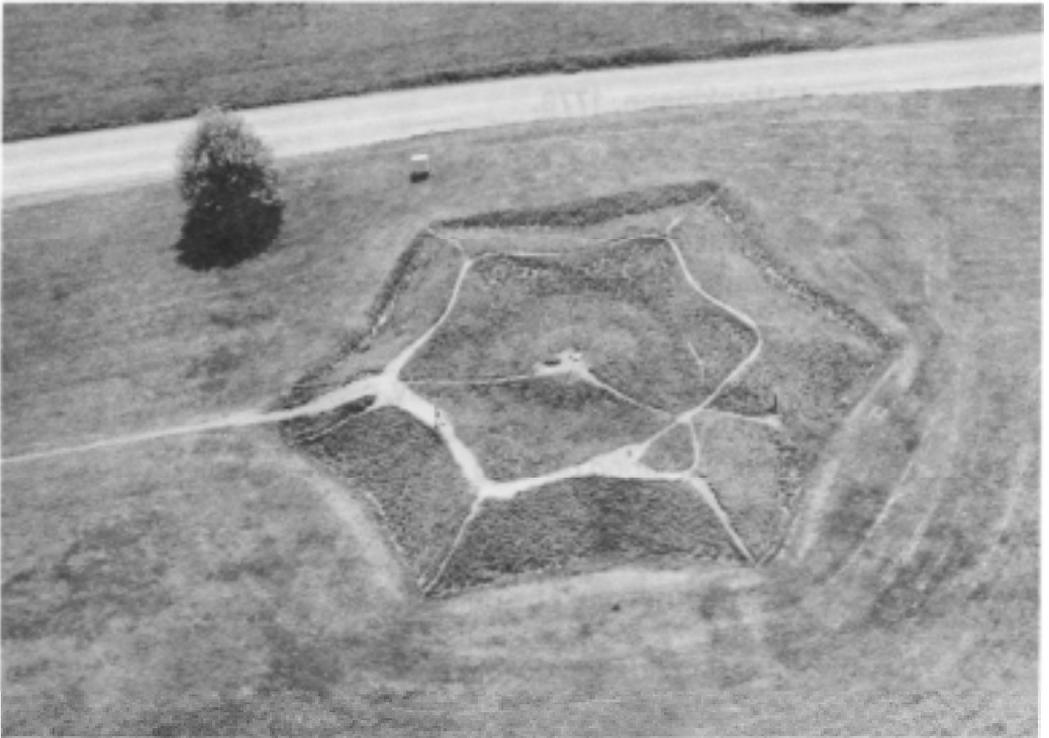
Historical Society of Pennsylvania

A sailor, too, in jerkin blue,
This strange appearance viewing,
First damned his eyes, in great surprise,
Then said, "Some mischief's brewing.

"These kegs, I'm told, the rebels hold,
Packed up like pickled herring,
And they're come down t'attack the town
In this new way of ferrying."

The soldier flew, the sailor too
And scared almost to death, sir,
Wore out their shoes to spread the news,
And ran till out of breath, sir. ...

Sir William, he, snug as a flea,
Lay all this time a-snoring;
Nor dreamed of harm, as he lay warm
In bed with Mrs. [Loring].



VALLEY FORGE STAR REDOUBT. *This aerial photograph shows the remains of the star redoubt designed by Duportail as part of the Valley Forge defenses.*

Courtesy Valley Forge National Historical Park

Now in a fright, he starts upright,
Awaked by such a clatter;
He rubs his eyes and boldly cries,
“For God’s sake, what’s the matter?”

At his bedside, he then espied
Sir Erskine at command, sir;
Upon one foot he had one boot,
And t’other in his hand, sir.

“Arise! arise!” Sir Erskine cries.
“The rebels—more’s the pity—
Without a boat are all afloat
And ranged before the city.

“The motley crew, in vessels new,
With Satan for their guide, sir,
Packed up in bags, or wooden kegs,
Come driving down the tide, sir.

“Therefore prepare for bloody war;
These kegs must all be routed,
Or surely we despised shall be,
And British courage doubted.”

The royal band now ready stand,
All ranged in dread array, sir,
With stomach stout, to see it out
And make a bloody day, sir.

The cannons roar from shore to shore,
The small arms make a rattle;
Since wars began, I’m sure no man
Ere saw so strange a battle. . . .

The kegs, ‘tis said, though strongly made
Of rebel staves and hoops, sir,
Could not oppose their powerful foes,
The conquering British troops, sir.

From morn till night, these men of might
Displayed amazing courage;
And when the sun was fairly down,
Retired to sup their porridge.

An hundred men, with each a pen,
Or more, upon my word, sir,
It is most true would be too few
Their valor to record, sir.

Such feats did they perform that day
Against those wicked kegs, sir,
That years to come, if they get home,
They'll make their boasts and brags, sir.

—Moore, *Songs and Ballads*,
pp. 209–16.

Still serving as an Army engineer but working independent of Bushnell, François Fleury spent January 1778 below Trenton observing the enemy and planning a way to set fire to British ships on the Delaware. He first proposed to approach the ships by crossing the river on the ice, but he found the river was not frozen solid. Next he hit upon the idea, detailed below, of using batteries and unmanned fire boats to accomplish his purpose.³¹

15. FLEURY DESCRIBES HIS PLAN FOR FIRE BOATS

18 January 1778

. . . Two kinds of fire Boats may be employed. The first, would be Loaden, with tuns powder; and burst in the midle of the fleet . . . they could be surely directed, by one strong Racket filled with particular Composition; and fasten'd in the very midle of the head of the boat, to give him direction and velocity . . . One mast sunk in the stern of the boat horison- tally under the water and to which one sail would be cicularly bound, would hinder the Current to drive it out the way.—The head of the boat armed with a strong sharp point of iron would Remain fixed . . . till its bursting up. N. B. . . . the expences will be small. Every flat bottom boat answer the purpose. . . .

The Commodore haselwood offers to help me by his knowledge in their Construction, and Rectify my idea. . . . He promises to come at trenton, where we Could try, by one boat, before executing by several.

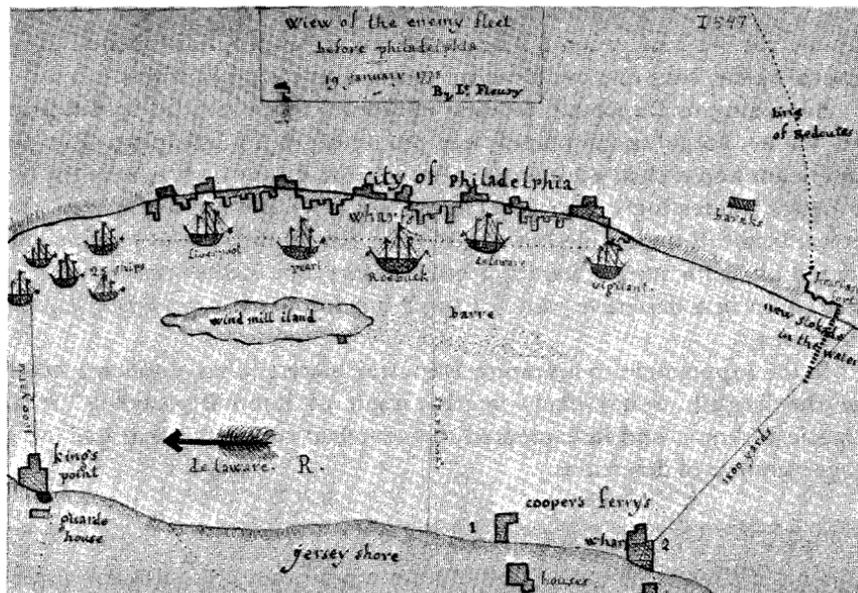
The galleys have salpeter, and powder; i can make the Composition; and one turner will do. . . . i suppose that the park of artillery h[as] some quick maches already done.

2d. Kind of fire boat. That second kind is not to be used so soon. The nord est wind blows very often and very hard in the month of february and march, and according to the instruction that i have Received of the ferry men several boats filled with tarr [and] other [Combustibles ?] could be leaded in the night, over the barr below Coopers ferry, and philadelphia,—and after the wind and tide would surely drive them . . . to the wharf of the city where the ships lay.

If his excellency aproves the above schemes, i begg to send me positive orders. . . . The commodore will be glad to Receive the same and

we will work friendly and cordyally together; nor day nor night will be from our part to justify the truth of his excellency.

-Washington Papers, roll 46.



THE ENEMY FLEET AT PHILADELPHIA. Fleury drew this sketch to accompany his report to Washington on fireboats in January 1778. Sparks Collection, Cornell University Libraries

Though skeptical, Washington on January 20 gave Fleury permission for a test. The Frenchman's technique compared interestingly with Bushnell's submarine, which sought to use an underwater device for the same end. As no references to Fleury's fire boat scheme after the test permission have been found, it is uncertain why the plan was never adopted.

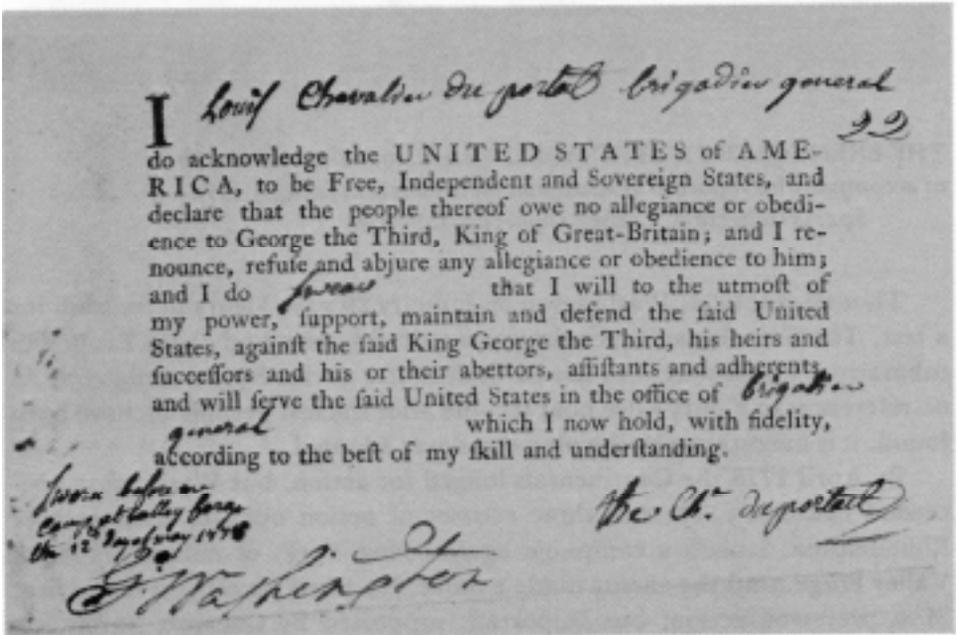
By April 1778 the Continentals longed for action, but Washington proceeded cautiously. He saw three courses of action open to him: recover Philadelphia, launch a campaign against New York, or remain secure at Valley Forge until the enemy made a move. He asked his officers for advice. Most preferred action; but Duportail, supported by Generals Baron von Steuben and the Marquis de Lafayette, advised restraint. They thought the enemy position in Philadelphia was simply too strong.

Duportail's response contains a great deal more than mere answers to Washington's questions. The Chief Engineer's remarks on the strength and condition of the Continental Army (its troops were too new to be called

regulars) are almost as significant as his ardent support for waging a defensive war of posts. It was dangerous, Duportail contended, to consider the Americans equal to the British militarily or to insist on waging war as European armies did. He warned against assuming that because the patriots had successfully attacked enemy lines at Saratoga they could do it again in Philadelphia. The circumstances were just not the same. In the tactics of Fabius, the Roman general, Duportail saw an appropriate model: avoid general battle, keep on the defensive, and occupy strong positions.

According to Duportail, to most effectively draw out the British, even the Valley Forge encampment was too close to Philadelphia. But the Americans had a clear advantage so long as the enemy had to leave the city to fight. Interestingly, the Frenchman not only advanced the idea that retreat is not dishonorable but also stressed the importance of making considered plans for retreat should it be necessary. He further pointed out the need, even in a defensive war, for small but frequent “enterprises” against the enemy.

In the supplement to his report Duportail asserted that a military victory for the English would likely be the result of internal weakness in the American Army, and he lamented the wretched conditions that had led to large numbers of desertions.



OATH OF ALLEGIANCE. By order of Congress on 3 February 1778, all officers were to sign an oath of allegiance to the American cause. Duportail signed this oath at Valley Forge in May 1778, shortly after announcement of the French alliance.

Library of Congress

**16. "IT IS . . . A PRINCIPLE OF WAR CAUTIOUSLY TO AVOID
DOING WHAT YOUR ENEMY WOULD HAVE YOU DO"**

Louis Duportail's opinion on attacking the British at Philadelphia.

April 1778

. . . I do not see that we have established the principles which ought to guide us in war, or, to speak more frankly, it appears to me that we have adopted defective principles. Almost every one considers the American Army in the same light as the British, thinks it capable of the same things, and would have it act in the same way; thus we see from time to time bold projects formed, rash resolutions proposed, which are the better received as they flatter those to whom they are proposed, by shewing them that the Nation is judged capable of vigorous actions—but this flattery may have fatal consequences, it may ruin America. Let it be our endeavor in this important business, to consider things in their true light.

It is an Axiom among Military men, that Troops which are not what are called *Regular Troops* cannot make head against regular troops in level ground or in any Situation that does not offer them very considerable advantages. The American Army therefore cannot stand against the British who are composed with British or German troops all Regular. . . . The American Army [being] new in every respect, and not having had a foundation of formed officers and Soldiers, cannot as yet claim the Title of regular Troops, and that it is therefore incapable, as I remarked above, of resisting the Enemy on equal ground. Besides has not experience manifestly proved it? We were beaten at Brandywine—we were beaten at German Town altho' we had the immense advantage of a complete Surprise. . . . Let us therefore avoid committing ourselves in this way again—for it is farther a principle of war cautiously to avoid doing what your Enemy would have you do—Now let General Howe be asked whether he would like to meet the American Army on nearly equal ground for the issue of the present dispute, he will answer that it is the wish of his heart—that he desires only two or three such opportunities to decide the cause of America—because he is sure of beating us, and that the loss of general actions will soon have ruined our party without recourse. I know very well that many persons are not of this opinion, and that they say, that having more men than the English and greater facility of procuring them we cannot fight the Enemy too often because even if we should be beaten, the loss of the Enemy, though less in itself would be greater relatively to their whole number, and consequently they must soon be ruined—but this opinion is built upon a foundation altogether false. Our numbers are not superior to those of the English. . . . What we ought to propose to ourselves, is to defend the country inch by inch, to endeavor to hinder the enemy from rendering himself master of it, consequently never to receive

him but when we are protected by a natural or artificial fortification, in other words to carry on what is styled a *defensive War*. This is our true part and it is so obvious that in Europe, all Military men and even those who are not so, suppose this to be our Conduct—if the Americans could consult the modern daily publications, they should there find that the model offered to General Washington is principally Fabius, that wise Roman who ruined Hannibal by refusing to fight him in plain. Fabius however commanded Romans, but these Romans had been thrice defeated, they were disheartened, dreaded the Enemy, and were nearly reduced to the condition of new and unformed Troops. The Consul conducted himself accordingly, avoided general Battles, kept himself on the defensive, always occupying strong positions and where the Enemy could not attack him but with considerable disadvantage

[*First Question:*] Ought we to open the Campaign by an attack on the Enemy's lines as I hear sometimes proposed?

If the English army were out of its lines at the distance of one or two miles in front, from the reasons just mentioned we ought not to attack them for we should expose ourselves to almost certain Defeat (I suppose our army so large as in its last Campaign): and because this army is covered by lines, because it has added to its natural Strength that of Fortification we would attack it? This is manifestly unreasonable. Fortification is the means used by the weak to enable them to resist the strong. We Engineers count that a good fortified place enable those who defend it to resist ten times their own number.—Field Engineering does not afford such considerable advantages, but according as the ground is more or less judiciously chosen, as the Engineer has traced his work with more or less skill, and afterwards as the Profiles are more or less respectable, executed with more or less care, this kind of fortification renders one equal to two, three, four, and sometimes more . . . it is a principle in fortification to establish as perfect an equality as possible in the different parts, so that no one be more attackable than another; now by what I have seen of the English Lines, I judge that the defenders may at least hold them against double their numbers. . . .

I know very well that those who propose to attack the English in their lines, deduce their arguments from the American Troops having attacked and carried lines in the North, but let us take care that successes in the North do not occasion defeats here, where the circumstances are by no means the same. The Northern Troops may perhaps have attacked and carried some portion of Intrenchments, either illy made or injudiciously disposed, or not sufficiently lined with troops;—or perhaps they attacked with vastly superior numbers—but that they ever attacked with a number nearly equal to that of the enemy (which would be our case), Intrenchments such as those of the English at Philadelphia, supported on each flank by a River, secure from being turned and attackable only in front, is

what I will never believe. I will add to this by way of explaining my idea, that if I were General Howe, and the Americans should advance to attack me in my lines, I would not give myself the trouble of defending them. I would retire some four or five hundred yards in the rear to some covered place, I would only leave a few poppers to deceive them and make them think they had forced the lines, and when they had once got within and were preparing to push their imaginary advantage, I would fall upon them like a thunderbolt. . . .

Second Question: Ought we at the opening of the campaign to approach Philadelphia? No. We ought not. We are even too near already, and for this reason—would we approach the enemy in order to be more certain of fighting him? This is altogether useless—he will certainly come to seek us. The English Minister does not send Genl. Howe with his army into America, to remain inactive in Philadelphia. He must fight us—must endeavor to destroy us. He must conquer the Country; *not to do it, is to be conquered* himself. It is to give gain of cause to the Americans. Therefore General Howe will make it his business to find us. . . .

We ought . . . to keep ourselves between 30 and 40 miles distance from Philadelphia, and since we have the advantage at present of obliging the enemy to march to our own ground to fight us, it is our part always to post ourselves in such a manner as that he cannot attack us but under considerable disadvantages; and for this purpose to always choose Situations strong in themselves, and besides avail ourselves of the Succors of Art. We should farther prefer positions in which we might avoid a general Battle if we thought proper—we should esteem it an essential quality in our positions to have the Rear free and an easy Retreat in order that an unlucky action might not be attended with too extensive consequences. If we should discover in our position any capital Defect which did not at first appear, or which only became such in consequence of the movements of the Enemy, we would immediately decamp and go elsewhere.—We should be cautious not to give into the Snare, which our Enemies will not fail to lay for us, endeavoring by their Raillery on our Retreats, to make us establish it as a point of honor, rather to keep a bad position than to make a retrograde movement. We should not forget that in war, to advance or retire are neither honorable or dishonorable; that it is at the end of a Campaign that the Prize is given, and that Glory is his reward who has gained his end—besides if the Enemy in the movements which he should make to try us, to turn us, should give us an opening, should expose any of his Troops, Posts, Baggage, to be attacked with advantage; we should never fail to do it—for one must not imagine that defensive war consists in never forming any Enterprise against the Enemy, but in such war the whole army (I Confess) should not form enterprises against the whole enemy's army—enterprises are formed with Detachments, whenever you can assure yourself of attacking with greater numbers—these expeditions

even ought to be sought for, and frequently repeated, for it is thus that new Troops are by degrees enured to War.—Care must be taken, only, not to expose them to too severe marches, excessive bad weather or the want of Provisions. It appears to me that this kind of War would greatly embarrass the Enemy: for at length, as it is absolutely necessary that he attack us, he would do it; but as we are supposed to be always well fortified, and choose positions in which the whole Army cannot be attacked at once—as we support the points only as long as it can be done with advantage, and retire whenever the Enemy begins to get too great an ascendancy over us, he is always liable to suffer considerable Loss without procuring decisive Success—in fact if we retire, even if the greatest part of the Army should have been successfully employed in supporting the point attacked, it is after all no battle—it is a post forced—a particular Corps repulsed—and this has no consequence—the Retreat is peaceably conducted—another post is taken hard by, and the business is to begin again—but General Howe has not a sufficiency of Troops, to purchase ground so dearly—it is easy to see that by these means 20 miles of Country would cost him half his Army . . . he would be forced to yield the Country to us, and retire to shut himself up in his lines—and this is all that we have to desire, because it would prove to the English their inability to reduce this State, and consequently America—for what would happen in this State would in like manner happen in any other by pursuing the same Conduct. . . . If we pique ourselves upon making war as equal European Armies do, if we will engage in general Actions, attack the Enemy or receive him in any kind of ground and unprepared, we shall experience some considerable Check—the Enemy will . . . pursue us vigorously, hinder our reassembling, dissipate us, drive us from the Pennsylvania State, then availing himself of the disaffection of the majority of the inhabitants, make it declare for the King, and perhaps take arms in his favor—an event of the greatest consequence relatively to the other States of America, which would not be unshaken by such an example—relatively to the English who would be encouraged by it to make the greatest Efforts. And lastly considered with reference to foreign powers who not being near enough to estimate such Events according to their real value—and distinguishing in them only a proof of the great Superiority of the English, or inconstancy of the Americans, would not perhaps involve themselves further by giving them unavailing Succors.

Supplement. The more i reflect upon the matter above treated, the more it seems to me impossible that the English can reduce America by arms, at least so long as the Americans behave hymself properly. Provided also that the Court of france will not Change her political system and by the awe of War which she gives to England, will hinder its sending to America more troops than it has sent hytherto. If there is any cause of reducing it, we should look for that Cause in the American army itself. I

have observed just now that in three or four months our army diminished one half without doubt principally by desertion. That is very frightful for everybody sees that if it continues so all America will soon be exhausted of men. There can be certainly many Causes of that prodigious desertion, but the most Considerable and which can be Remedied is the bad situation of the Soldiers, the want of cloathing that (besides he must bear all the intemperatures of the weather) abases his profession in his own eyes and makes him disdain it—the want of provisions During many Days the more hard to be borne as when he has any he has too much—the want of Cleanliness in his tents which causes us shameful sicknesses that are the appendices of the extreme misery. . . .

[*Duportail later added:*]

It appears to me that there is a previous important point to be decided because all our operations ought to be subordinate to it—this point is to know, in case of our army suffering a check and not being able to maintain its ground here, in what direction our Retreat is to be made in preference—towards the blue mountains?—On the other side of the Susquehannah?—On the other side of the Delaware?—By determining this, we shall determine where the grand magazines of the army are to be formed—and then we shall be governed by these two considerations in the choice of our positions as well as in all our movements. . . .

—Kite, *Duportail*, pp. 60–66,
68–72.

Circumstances changed rapidly. In early May 1778 France recognized American independence and openly allied with the United States. By June the British appeared ready to make a move. Incredible as it was to the rebels, the enemy appeared to be contemplating retreat from Philadelphia. Washington's officers favored remaining on the defensive. Duportail recommended staying at Valley Forge until the enemy acted. To do otherwise might jeopardize the patriots' immense advantage. If the British left Philadelphia, he said, the Americans should pursue them, striving as always "to avoid General actions—to seek advantageous posts."

17. "HERE IS A CERTAIN AND IMMENSE ADVANTAGE"

Louis Duportail to George Washington.

June 18, 1778

I think we ought not to quit our position of Valley Forge—before the enemy has evacuated Philadelphia—he must have lost his reason, to remain in that city without being in a condition to defend it. Thus, either the

Intelligence which says there are no more than 2 or 3000 men there, is false—or the English have it in their power by the measures which they have taken, signals agreed upon, number of boats to recross in sufficient force, in case of our advancing to attack them.

The matter besides is reducible to this—Either the English are not really going away—or they are—if the former be the case all that has hitherto been done is a feint on their part, and conceals some snare into which they would draw us.

If they are really determined to go away—what can we desire more—here is a certain and immense advantage—let us not risk the loss of it, by procuring another, which even should we obtain it, would not change our affairs.

However, as we have here 12,000 men and that our position may be defended by a smaller number, I think it would be well to send 1500 men into the Jerseys, to reinforce what is there already—the whole should be commanded by a person well acquainted with the Country—they ought not in general to oppose the enemy in front, on his march—but to follow him on his left flank.

When the English shall have passed the Delaware, we ought in my opinion to move to the banks of that River—and prepare to pass it likewise—but certain precautions are necessary—if we learn that the English are advancing hastily towards N. York—we may likewise pass with celerity—but if they should halt, or appear to march slowly—in that case I think our troops ought not to pursue the Enemy, as fast as they could cross the River but post ourselves advantageously near the River, and wait till the whole army has passed in order to advance in force.

In Jerseys as well as everywhere else, I think we ought always to avoid General actions—to seek advantageous posts—to have the Roads of Retreat well reconnoitered, and to have secure communications with our magazines.

After all, I find it difficult to believe that the Enemy mean to cross the Jerseys and go to New York—unless there is deficiency of trans-

RETREAT AT BARREN HILL. Anticipating the enemy's evacuation of Philadelphia, Washington in mid-May 1778 detached a large force under the Marquis de Lafayette which took up a position on the Schuylkill River at Barren Hill, halfway between Philadelphia and Valley Forge. Having gotten word of Lafayette's advance, the British encircled him. They planned to destroy his camp on the morning of the 20th, but Lafayette learned of the scheme and escaped. Michel Capitaine du Chesnoy (1746–1804), an engineer officer who served throughout the war as Lafayette's aide-de-camp, provided this map of the action at Barren Hill.

Historical Society of Pennsylvania

ports—but we have the same conduct to observe in case the enemy should march down the left Shore of the Delaware to embark below.³²

—Washington Papers, roll 50.

On June 18 Sir Henry Clinton, Howe's replacement as British commander, led the evacuation of Philadelphia. Clinton's army made its way across New Jersey toward New York; Washington left Valley Forge, reoccupied Philadelphia, and pursued Clinton into New Jersey. At Monmouth Court House on the 28th the two sides met in what proved to be the last general engagement of the war in the north. The battle ended in a draw. Afterward Clinton once again made New York the British northern stronghold, and Washington went forward with plans for a cooperative effort with America's new ally, hoping to end the conflict for good.

Though the rebels again controlled Philadelphia, they still feared for the city's safety. Pennsylvania officials planned to sink new chevaux-de-frise and improve Fort Mifflin. Indeed, after the Battle of Monmouth Washington ordered Duportail back to Philadelphia to report on what defenses were required. Realizing that his army might not be able to prevent the enemy from retaking Philadelphia, Washington hoped Duportail could form a plan to assure American control of the river. As experience had shown, control of the city was meaningless without control of the river. Washington suggested that Duportail center his attention on Fort Mifflin.³²

Because Congress did not give Duportail the support he needed in Philadelphia, little was accomplished until the following year. Congress still lacked enthusiasm and funds for the project and directed Duportail to the governor of Pennsylvania for the necessary backing. Duportail got assistance and in February 1779 made a preliminary survey, which he followed up with proposals for a final survey.

Duportail insisted that he would plan a defense only if he personally conducted the survey and soundings of the river. He argued that he could complete the job within a few days, "whereas Persons not acquainted with Engineering will take up several Weeks to make what will be but an imperfect Report of the Situation of the River."³³

ARMY DRILL MANUAL. During the winter of 1778 Baron von Steuben, Washington's inspector general, compiled a drill manual for the Continental Army. François Fleury, an engineer officer serving then as an assistant to Steuben, helped prepare the text. Steuben engaged Pierre L'Enfant (1754–1825), another engineer officer, to illustrate it. This watercolor shows the formation of a company and a regiment. All of L'Enfant's original art work for the book was included in the gift copy of the manual presented to Washington and now in the possession of the Boston Atheneum.

Boston Atheneum

The Chief Engineer wanted the details of the survey kept secret between himself and his assistant, Col. Louis de Shaix La Radière. Although annoyed by Duportail's penchant for secrecy, the Pennsylvania council continued its support for the project. The council did claim, however, that many citizens objected to "opening the most important Secrets of our Defence to Persons who have no natural Interest in, or attachment to the Country," a direct reference to Duportail and his companions.³⁴

With the help of Radière and Maj. Jean Louis Ambroise de Genton, the Chevalier de Villefranche, Duportail completed the survey by 14 May 1779. For their services Pennsylvania awarded Duportail \$2,000, Radière \$1,000, and Villefranche \$600. In accordance with Duportail's recommendations, the state carried forward work on Forts Mifflin and Billingsport, while ignoring Fort Mercer. In a final gesture of good will toward Pennsylvania, Duportail left Radière behind for an additional two weeks to assist in laying out the principal lines of the fortifications.

In 1780 the Marquis de Chastellux, a major general in the Comte de Rochambeau's army, visited the Philadelphia fortifications and then described them in his journal. He was well impressed with the improvements to Fort Mifflin and observed that having learned by experience, "the Americans have provided in the future against the misfortunes which cost them so dear."

18. CHASTELLUX REVIEWS THE DELAWARE RIVER DEFENSES

From the journal of the Marquis de Chastellux.

[Philadelphia] December 8, 1780

. . . As the present situation of affairs does not attract attention to this locality [Billingsport], the fortifications are somewhat neglected. The entire battery consisted only of one rather good brass mortar and five eighteen-pounders . . . , which Major [John] Armstrong, who commands on the river, and who had come to receive us, fired on my arrival. When America has more money and leisure she will do well not to neglect this post, as well as all those which can serve for the defense of the river. For once this war is terminated, she will see no more European armies on this continent, and all she can have to fear from England, in case of a rupture with her, will be limited to a few maritime expeditions, the sole object of which will be to destroy shipping, to ravage the country, and even to burn the towns within reach of the sea. Unfortunately Billingsport belongs to the state of Jersey, which can reap no advantage from it; and Pennsylvania, whose safety it would defend, has no other means to employ towards fortifying it than its own request and the recommendations of Congress, which are not always attended to. However this may be, Phila-

delphia has taken other precautions for her defense, which depend only on the state of Pennsylvania, and to this advantage is united that of an excellent position, which will soon be made into an impregnable fort. I am referring to Fort Mifflin, where we went on leaving Billingsport, still ascending the river. . . .

Taught by sad experience, the Americans have provided in the future against the misfortunes which cost them so dear [in 1777]. I saw with pleasure that they were extending the fortifications of Mifflin's Island, so as to enclose the fort on every side, which will also be surrounded on all sides by the Delaware for a ditch; and as the garrison will have a safe shelter in bombproof souterrains, this fort may henceforth be considered impregnable. The plan of these works has been drawn up by M. Duportail; Major Armstrong showed it to me upon the spot, and I found that it was fully equal to the deserved reputation of the author.

—Chastellux, *Travels in North America*, 1:154–56.
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Efforts to revitalize Philadelphia's defenses lasted until the American victory at Yorktown in 1781. Afterward, Pennsylvania virtually abandoned the project.

