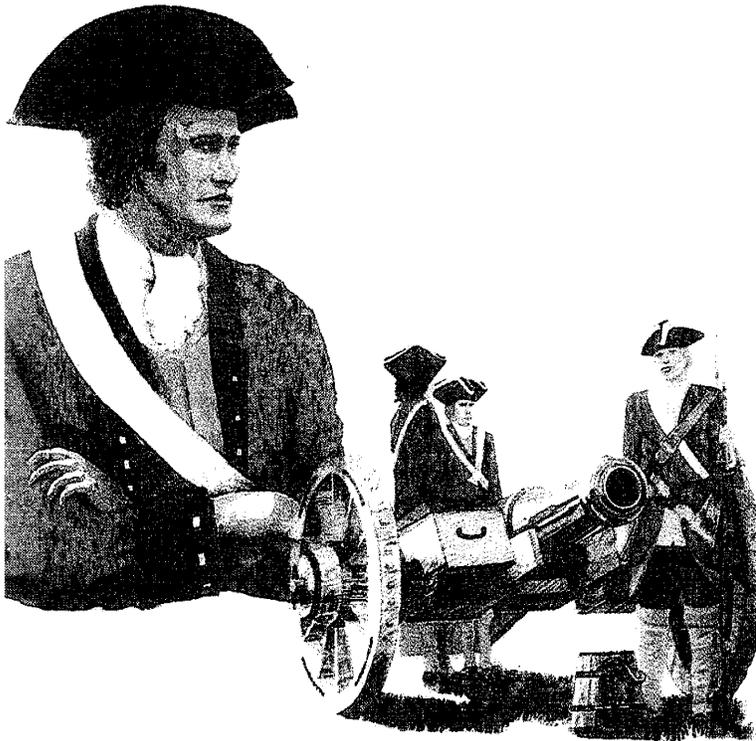


Chapter 1

ENGINEERS AT THE HEADWATERS

At sunset on June 16, 1775, Colonel Richard Gridley strode up Breed's Hill to begin work. Moving quietly to avoid alerting sentries and drawing fire from British cannon in Boston, Gridley reconnoitered the hill, determining what approaches the British might use, locating the best defensive positions on the hillcrest, and staking out a fort where the Yankees would have a clear field of fire. As the Boston church bells tolled midnight, he called up the troops, who shuffled stealthily up the hill and slushed a thousand shovels into the dirt, quickly forming the rude fortification. When the first glimmers of the sun lightened the eastern sky and the stars snuffed out, Gridley, his back aching and hands sore from the shovel, paced the hill for a final inspection and was pleased. "The British are in for quite a surprise," he thought, as he walked back of the fort to exchange his shovel for a sword.



Like most engineers of the Continental Army, Colonel Gridley learned his trade in the British Army during the French and Indian wars. He directed the Anglo-American siege of French Louisbourg at the mouth of the St. Lawrence River in 1745 and shocked the world by capturing that "Gibraltar" of America; he built fortifications throughout New England and led the troops who dragged cannon up the cliffs to the Plains of Abraham to take Quebec in 1759. For his services against the French, he was awarded a 3,000 acre landgrant, a valuable seal and cod fishery, and a pension. Some thought Gridley, because of the honors and fortunes granted him, would rejoin the service of the King in 1775 to suppress the American rebels, but, like his wealthy friend George Washington, he risked all to join the Continentals. "I shall fight for Justice and my Country!" he declared.

At daybreak on June 17, British officers gazed with astonishment at the fortifications thrown up on Breed's Hill by Gridley and the Yankees and

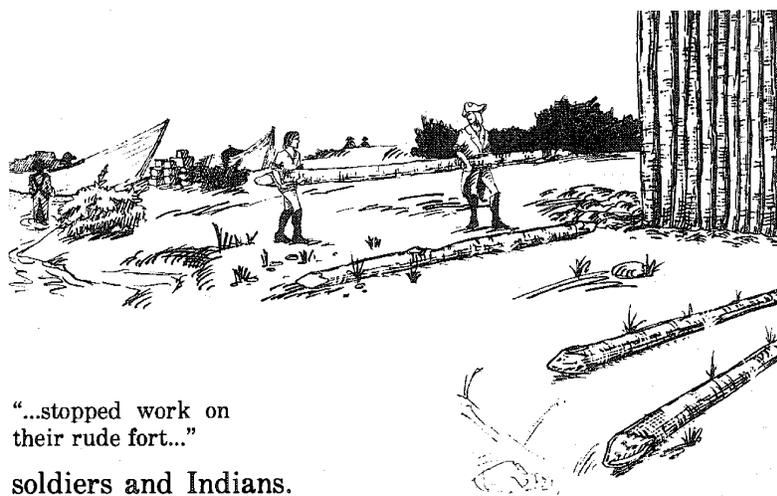


Colonel Gridley inspects the fortifications...

The Military Engineer

ordered an immediate assault to take the hill. Colonel Gridley served the guns that wreaked havoc on closely ranked British lines during the battle known to posterity as Bunker Hill until he was wounded. While recovering from his wound he learned that Congress, at the request of Washington who thought him one of the "greatest engineers of the age," had appointed him Chief Engineer of the Continental Army, the first of the vigorous and colorful officers who were to command the Corps of Engineers, United States Army.

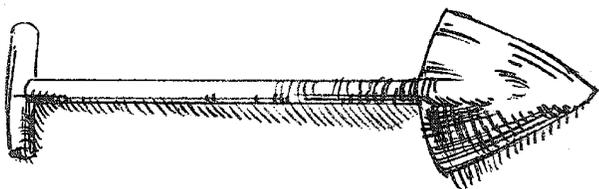
The saga of the Army Engineers at work in the Allegheny, Monongahela, and upper Ohio River basins, the headwaters of the Ohio River and in a sense the headwaters of all American inland rivers, began before Colonel Gridley built the fortifications on Breed's Hill and became the first Chief Engineer of the Corps. Army Engineers, in fact, operated in the headwaters district long before the Revolution, some serving the British and others the French king.



"...stopped work on their rude fort..."

soldiers and Indians. Ward could see the French engineer directing the landing and placement of eighteen cannon to smash the Virginians' fort to splinters.

With two drummers under a flag, the Frenchman strode up the slope to meet with Ward. He explained that he was Captain Francois Le Merçier, engineer to Captain Pierre de Contrecoeur in the service of his majesty the King of France, in whose name it was demanded that the English surrender their fort, which was clearly a trespass on French lands, and return to British territory east of the Alleghenies or suffer the consequences. Ward, with forty men and no hope of reinforcement, made the wise choice, marched his men from the fort, and trudged back toward home. Captain Le Merçier immediately destroyed the English stockade and began construction of an elaborate fortification, to be named Fort Duquesne, on the point between the forks at the confluence of the Allegheny and Monongahela.



French Engineers at the Headwaters Ensign Edward Ward and his men stopped work on their rude fort and watched in amazement as an immense French canoe and bateaux flotilla landed on the bank of the Allegheny and disgorged some 1400

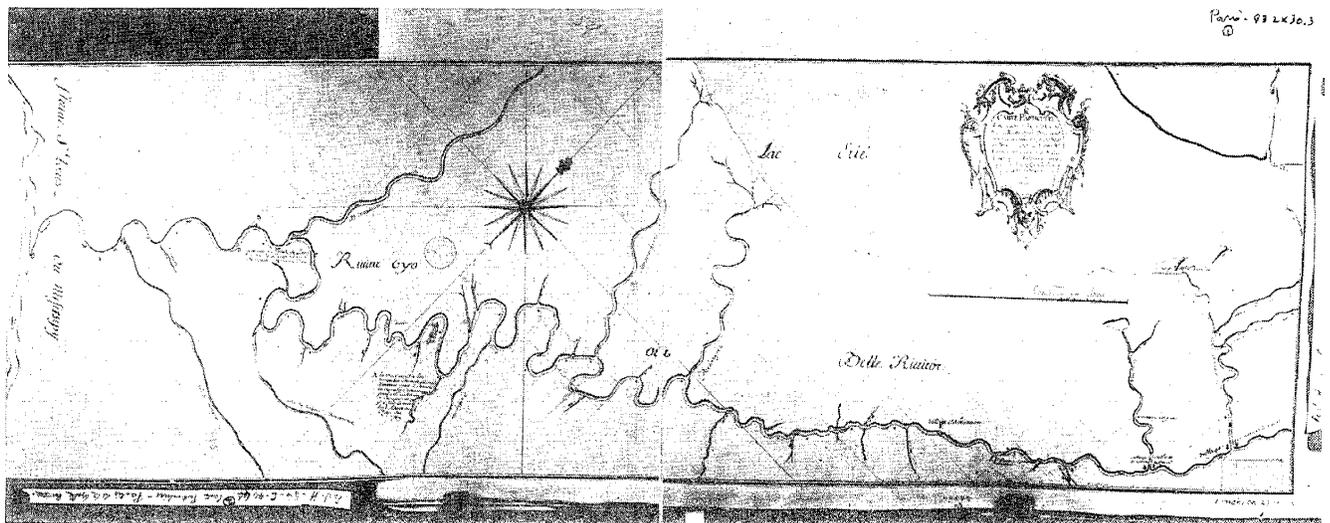
Captain Le Mercier, chief of Canadian engineers, had worked in 1753 on the forts building at Presque Isle, Le Boeuf, and Machault or Venango (at the present sites of Erie, Waterford, and Franklin, Pa., respectively), and had cleared *Riviere Le Boeuf*, later renamed French Creek, for navigation by canoes and bateaux transporting the French troops advancing into the headwaters district. In the spring of 1754, he left Montreal with 350 men and orders to build a fort near the mouth of the Monongahela and block the British advance via that river. He met Captain Contrecoeur on French Creek, and moved with the assault force in 300 canoes and 60 bateaux down the rainswollen Allegheny; his mission: to effect a landing at the Point, drive the impertinent British intruders from that strategic spot, and secure control of the headwaters district by construction of Fort Duquesne. Le Mercier accomplished his threefold task with precision, but the British were not to be so easily denied the riches of the Ohio River basin.

French engineers had been at work in the Mississippi and Ohio river basins, exploring and mapping the region and building fortifications,

throughout the 18th century. Sieur Le Blond de La Tour of the French Corps had dredged the lower Mississippi near New Orleans about 1720 and had also built the first levee for flood protection in America. Joseph Gaspard Chaussegros de Lery, engineer to Baron Longueuil's expedition of 1739 against the Chickasaws, drew the first reasonably accurate map of the headwaters district, outlining the courses of French and Conewango creeks and *La Belle Riviere*, the Allegheny and Ohio rivers. Captain Le Mercier, when he cleared snags from French Creek in 1753, became the first engineer to improve a stream for navigation in the Ohio River basin.

The Royal Engineers of France were foremost in Europe during the 18th century. The first chief of the French Corps, the Marquis de Vauban, was renowned for his expertise in fortification construction. Many forts in North America were designed on principles developed by Vauban and every modern military engineer recognizes his name. Even in an-

Map of Joseph Gaspard Chaussegros de Lery
Library of Congress

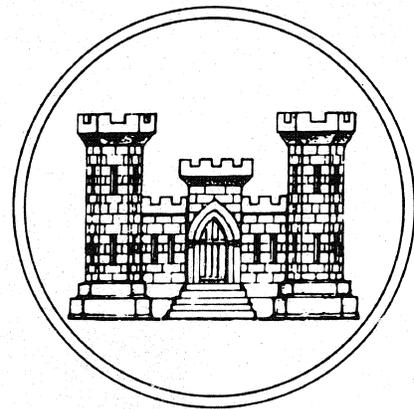


cient times, men who built engines of war were known as engineers, but Vauban was first to understand the value of an organized corps of men trained in military engineering. In 1690, he founded the "Corps de Genie."

Because of its leadership, the construction methods and technical vocabulary of the French Corps became the standard, and French influence upon the American Corps of Engineers was greater than that of the British. Benjamin Franklin sent many French engineers to America during the Revolution, and two, General Louis Du Portail and Colonel Stephen Rochefontaine, served as chief engineer to General George Washington. At the first American engineer schools, French instructors used French texts to train Americans who would be engineers. Officers of the Napoleonic army came to the United States after Waterloo, joined the American Corps of Engineers, and had a significant role in performing the first American civil works projects.

Though the first American military engineers won their laurels in service to the British king, the heritage of the Corps of Engineers has retained a distinctly French character. *Essayons*, meaning "Let us try," became the motto of the American Corps of Engineers, whose technical vocabulary also had French roots. So it happened, for instance, in 1945 that the American Navy, which has a British heritage, delivered *pontoons*, boats that support floating bridges, to the Rhine River, where the Army Corps of Engineers promptly placed them in a *ponton* bridge.

Anglo-American Engineers Advance to the Headwaters Six weeks after they seized the Forks of the Ohio from Ensign Ward, Captain Le Merçier and the French received the alarming news that Ensign Jumonville de Villiers and a detachment had been surprised and nearly wiped out by Colonel George Washington and a band of Virginians. They were already acquainted with young Washington; in 1753, he had delivered them a

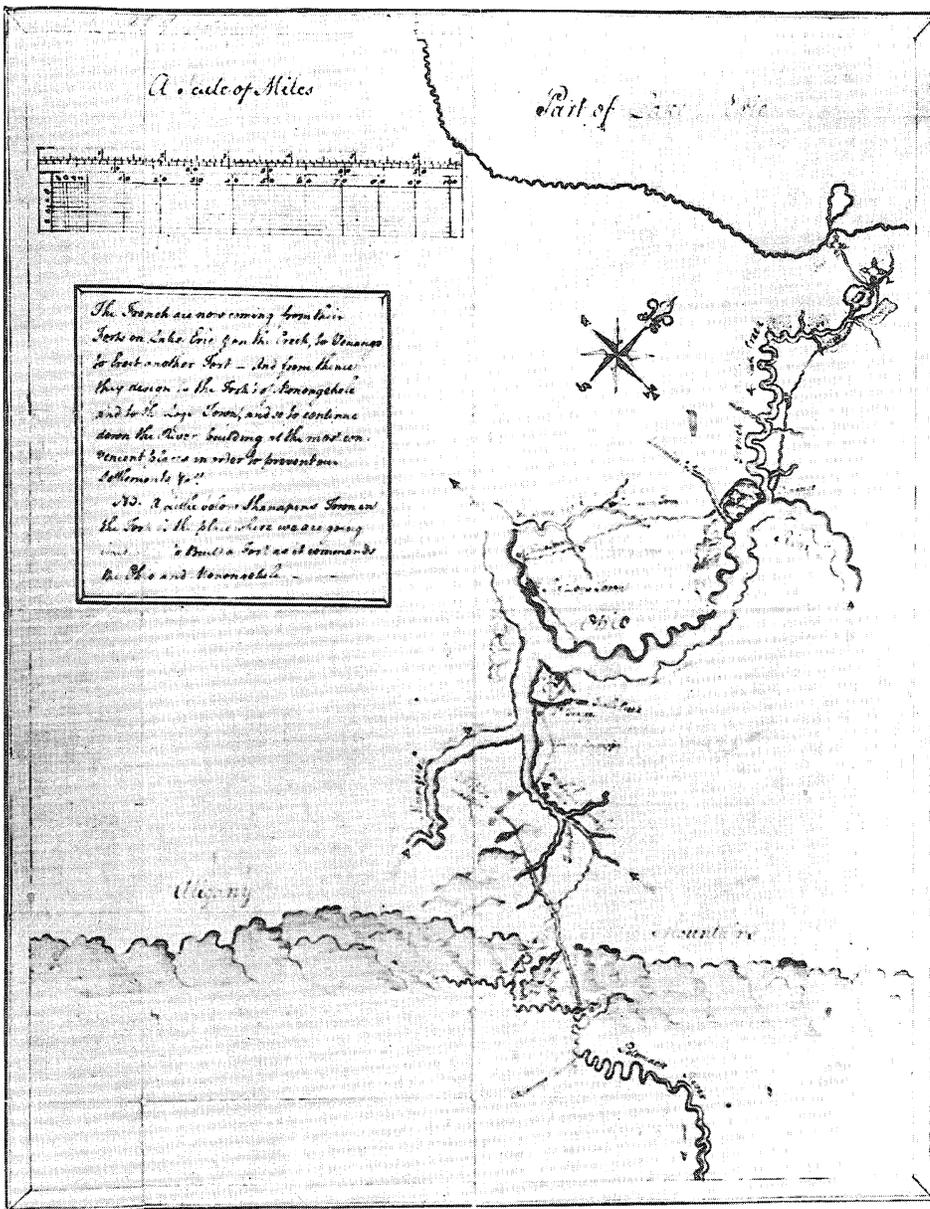


INSIGNIA OF THE U.S. ARMY
CORPS OF ENGINEERS

The Castle: Distinctive Corps insignia; symbolizes design and construction of fortifications

Early Engineer Seal: Device used on uniform buttons beginning with War of 1812

Official Seal: Adopted in 1866 and made official in 1897



George Washington's map accompanying his journal - 1754

with ice floes while ferrying the Allegheny, and produced a detailed report and superb map of the headwaters district that was printed throughout the colonies. The exceptional abilities he demonstrated during the 1753 reconnaissance won him a militia command.

Captain Le Mercier learned that Virginians were building a storehouse at Redstone (Brownsville) on the Monongahela and that Washington was erecting a square log stockade with earth embankments and rifle pits at the Great Meadows southeast of Fort Duquesne. Le Mercier planned to move troops in canoes up the Monongahela to take the storehouse at Redstone, then

protest from the Virginia Governor against their advance into the French Creek valley.

Colonel Washington was the first Anglo-American engineer to explore the headwaters district. He had learned, as a county surveyor, to take and record compass readings to the nearest degree, represent traverses on plans and plats, identify and locate trees and topographic features, design polygons to include given acreage figures, prepare accurate maps, recruit and manage survey parties, and survive in the wilderness. He used many of these engineering skills in 1753 during his reconnaissance-intelligence mission across the Monongahela, upper Ohio, Beaver, and Allegheny basins. While delivering the Governor's protest to the French, he studied the navigability of the headwater rivers, located potential sites for fortifications, collected intelligence about French forts and troop strength, survived a rugged encounter

march overland to assault Washington at Fort Necessity. Captain Coulon de Villiers, brother of the officer slain by Washington's detachment, took command of the expedition and carried it out as Le Mercier had planned. Low on ammunition and provisions, hampered by poor troop morale, Colonel Washington surrendered Fort Necessity after a day's siege on July 4, 1754, and marched his men out of the fort on the long trail home; but he returned to the headwaters again in 1755 as aide to General Edward Braddock.

General Braddock, who brought a lengthy train of supply wagons along with his army on the march toward Fort Duquesne, ordered Captain Harry Gordon and the engineer troops to cut a twelve-foot wide roadway ahead of the army. Officers were not commissioned as engineers in the British army until 1757, but men such as Harry Gordon with special talents were assigned the necessary engineering

tasks. Gordon and other officers serving as engineers were badly overworked: they prepared campaign maps, laid out roads, planned bridges and river fords, selected fortification sites, designed and supervised fort construction, and were also responsible for procurement of construction materials, accounting, and inventory. Troops detailed to road construction ahead of the marching columns were known as Pioneers; skilled soldiers assigned to construction were known as Artificers.

On the morning of July 9, 1755, Captain Gordon was ahead of Braddock's main column supervising the Pioneers building fords across the Monongahela; that is, cutting slopes through the precipitous banks for easy crossing by the troops and wagons. He finished the job at noon and, while the army forded the river near the mouth of Turtle Creek, he moved ahead in the vanguard with troops commanded by Colonel Thomas Gage, who bore the first brunt of the savage French and Indian attack that nearly annihilated Braddock's command. In the hospital at Fort Cumberland, Maryland, after the retreat, Captain Gordon dictated his afteraction report and signed it with his left hand, because, he explained:

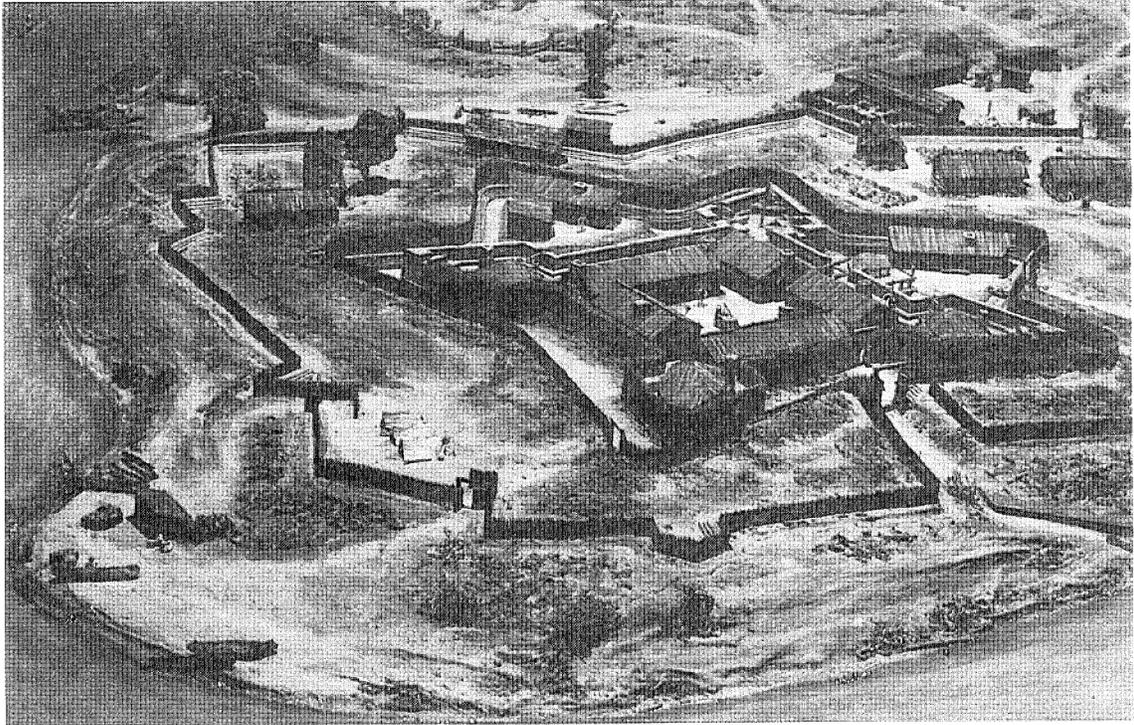
I am a Good Deal hurt in the Right Arm, having Receiv'd a Shot which went thro', & Shattered the Bone, half way Between the Elbow & the wrist; this I had Early, & altho' I felt a Good deal of pain, yet I was too Anxious to allow myself to Quit the field; at the last my horse having Receiv'd three shots, I had hardly time to Shift the Sadle on another without the Bridle, when the whole gave way. The passage that was made thro the Bank in the Morning, I found Choack'd up; I was oblig'd to tumble over the high Bank, which Luckily Being of Sand, part of it fell along with me, which kept my horse upon his feet, & I fortunately kept his Back. Before I got 40 yards in the River, I turn'd about on hearing the Indians Yell, & saw them Tomohocking Some of our women & wounded people,

others of them fir'd very Briskly on those that were then Crossing, at which time I Receiv'd another Shot thro' the Right Shoulder. But the horse I Rode Escaping, I got across the River, & Soon came up with the General, Coll. Burton, & the rest of the Officers & men that were along with them, & Continued along with them in the Utmost pain, my wounds not having Been Dress'd untill I came to Guests's [Gist's].

With General John Forbes, Colonel Washington and Captain Gordon again returned to the headwaters in November 1758 to capture Fort Duquesne. It was Washington's fourth trip west in five years. "I have the pleasure to inform you that Fort Duquesne, or rather the ground on which it stood, was possessed by his Majesty's troops on the 25th inst.," Washington informed the Governor of Virginia. "The enemy, after letting us get within a day's march of the place, burned the fort, and ran away by the light of it, going down the Ohio by water, to the number of five hundred men, according to our best information."

Captain Harry Gordon began construction in 1759 of Fort Pitt at the site of the ruins of Fort Duquesne, working the garrison from morning drum to evening gun to build an elaborate Vauban-style pentagon earthwork with brick revetments protected by a deep ditch from the Monongahela to the Allegheny. Gordon was ordered east in 1760, distinguished himself at the siege of Havana in 1762, and in 1764 became chief engineer of all British forces in America.

Among the engineers who continued the construction of Fort Pitt was Thomas Hutchins, who had been quartermaster in General Forbes' army. Hutchins reconnoitered the abandoned French forts in the French Creek valley, found that he enjoyed topographic engineering more than quartermaster duty, and left the army in 1760 to roam the wilderness trails across the northern Ohio River basin as assistant to Indian agent George Croghan.



Above: Fort Duquesne Below: Fort Pitt

Dioramas on display in Fort Pitt Museum, Pittsburgh



He improved his engineering skills during his travels, collecting intelligence and preparing maps of great value to the British command. At the recommendation of Colonel Henry Bouquet, he was appointed engineer in 1762 in the 60th Royal American Regiment stationed at Fort Pitt.

Hutchins was serving as engineer at Fort Pitt when Indians, followers of Chief Pontiac, attacked it in 1763. He built blockhouses for the fort, one of which is still preserved, and he directed road and bridge construction for Colonel Bouquet during the punitive expedition of 1764 against the Indians in central Ohio.

Opening Navigation on the Ohio Just after noon on June 18, 1766, painted Indians slashed their paddles in and out of the blue Ohio, sun-browned boatmen strained at the oars of seventeen bateaux, and the largest British fleet ever to navigate the Ohio embarked to the sound of cannon salutes from Fort Pitt reverberating from the Allegheny hills and Monongahela bluffs. Engineers Harry Gordon and Thomas Hutchins arranged their survey instruments for convenience in their bateau. They had orders to map the Ohio and Mississippi rivers. Their co-commanders were George Croghan and George Morgan.

George Croghan had negotiated a peace with Chief Pontiac in 1765. He traveled with Hutchins and Gordon in 1766 to confer with other chieftains, distribute the customary presents to the tribes, and defend the expedition with his Indian allies. Croghan had served with Gordon in the Braddock expedition and was partner with Gordon in land speculations. He was also silent partner in the Philadelphia trading firm represented by George Morgan.

George Morgan, junior partner of Baynton, Wharton and Morgan, was supervisor of the western operations of the firm. The partners hoped to supply British garrisons on the Mississippi River and enter the Indian trade. Hutchins, former assis-

tant to Croghan and deputy engineer to Captain Gordon, was a close friend of George Morgan and later became his business partner.

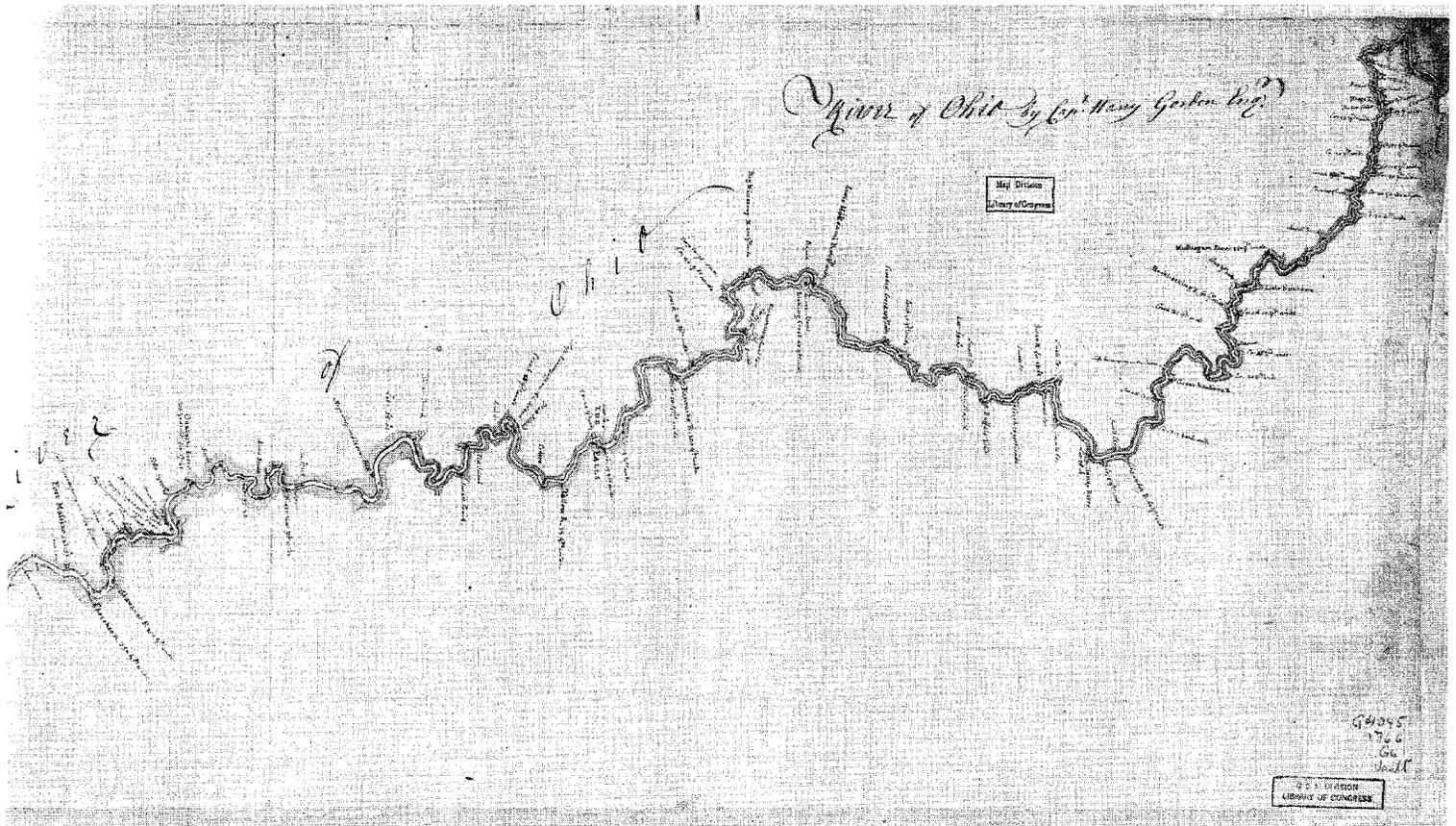
Those personal relationships suggested the multiple military and civil purposes of the 1766 expedition. Croghan was to negotiate with the tribes, defend the expedition with his warriors, and perhaps profit from the Indian trade. Morgan would develop and supervise a profitable trade via the Ohio River and also supply the army garrison. And the engineers would map the river and plan its use as a logistic line for troop supply and avenue for the Indian trade.

Because the British command had encountered obstacles to manning and supplying the forts taken from the French along the Mississippi, General Thomas Gage had ordered Gordon and Hutchins to



Colonel George Morgan

Carnegie Library of Pittsburgh



Captain Gordon's map of the Ohio River
Library of Congress

map the Ohio, noting its width, depth, velocity, channels, and surrounding topography. The engineers were also to locate camp sites for traders and troop units moving by water and to explore the Mississippi, obtaining intelligence about Spanish forts and troop strength. That is, the engineers were to gather precise information vital for policy planning and proper troop disposition.

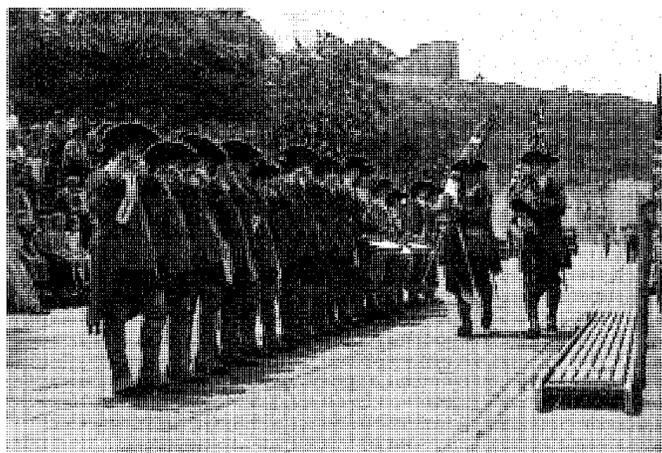
During the voyage down the Ohio in the summer of 1766, Morgan often rode in the light, maneuverable bateau used by Hutchins to crisscross the river, gathering hydraulic and topographic data; he hoped thereby to obtain more information about river navigation for his firm. Croghan met with tribes along the river, while his Indian allies hunted along the banks to supply fresh meat for the boatmen. The fleet sometimes grounded on bars—one boatman drowned trying to free a stranded bateau—and sometimes was forced to bank by violent storms, but reached the mouth of the Ohio on August 7, having averaged about forty miles a day.

Thirteen bateaux carried cargo for George Morgan, who had established a yard for bateaux construction at Fort Pitt in 1765. Indian watercraft, canoes made of tree bark and dugouts or pirogues made of hollowed tree trunks, had been used by early French and British explorers and traders, but by 1765 the bateau, because of its greater cargo capacity and stability, had largely supplanted the native vessels. Bateaux, ribbed and planked flatbottom boats, wider amidship than at the bow and stern, were somewhat similar to the skiffs still used on inland rivers.

The French had rowed bateaux up and down the inland streams since the early 18th century. The first British bateaux on the inland streams were built at Fort Pitt in May 1760 by shipwright Jehu Eyre and sixteen carpenters sent west from Philadelphia by the army. Eyre later built ships for the Continental Navy and the boats in which Washington crossed the Delaware at Christmas, 1776.

In March 1766, George Morgan sent John Jennings and the first five company bateaux--the *Ohio Packet*, *Beaver*, *Dublin*, *Good Intent*, and *Otter*--down the Ohio to the Illinois country. Morgan took the second bateaux fleet downriver in June; and a third fleet, commanded by Mathew Clarkson, who later became mayor of Philadelphia, followed late in the year.

The bateaux fleet led by Morgan, Croghan, Hutchins, and Gordon arrived at the British posts on the Mississippi in August 1766. The engineers continued their survey to the mouth of the Illinois River, then descended the Mississippi, securing the intelligence required by their orders, to New Orleans and returned by sea to the Atlantic coast to make their report. General Gage copied the Hutchins-Gordon map of the Ohio and distributed it to the appropriate field commanders. It was the first detailed hydrographic survey of the river and remained the most accurate source of information about the stream until the American Army Engineers resurveyed it in 1821.



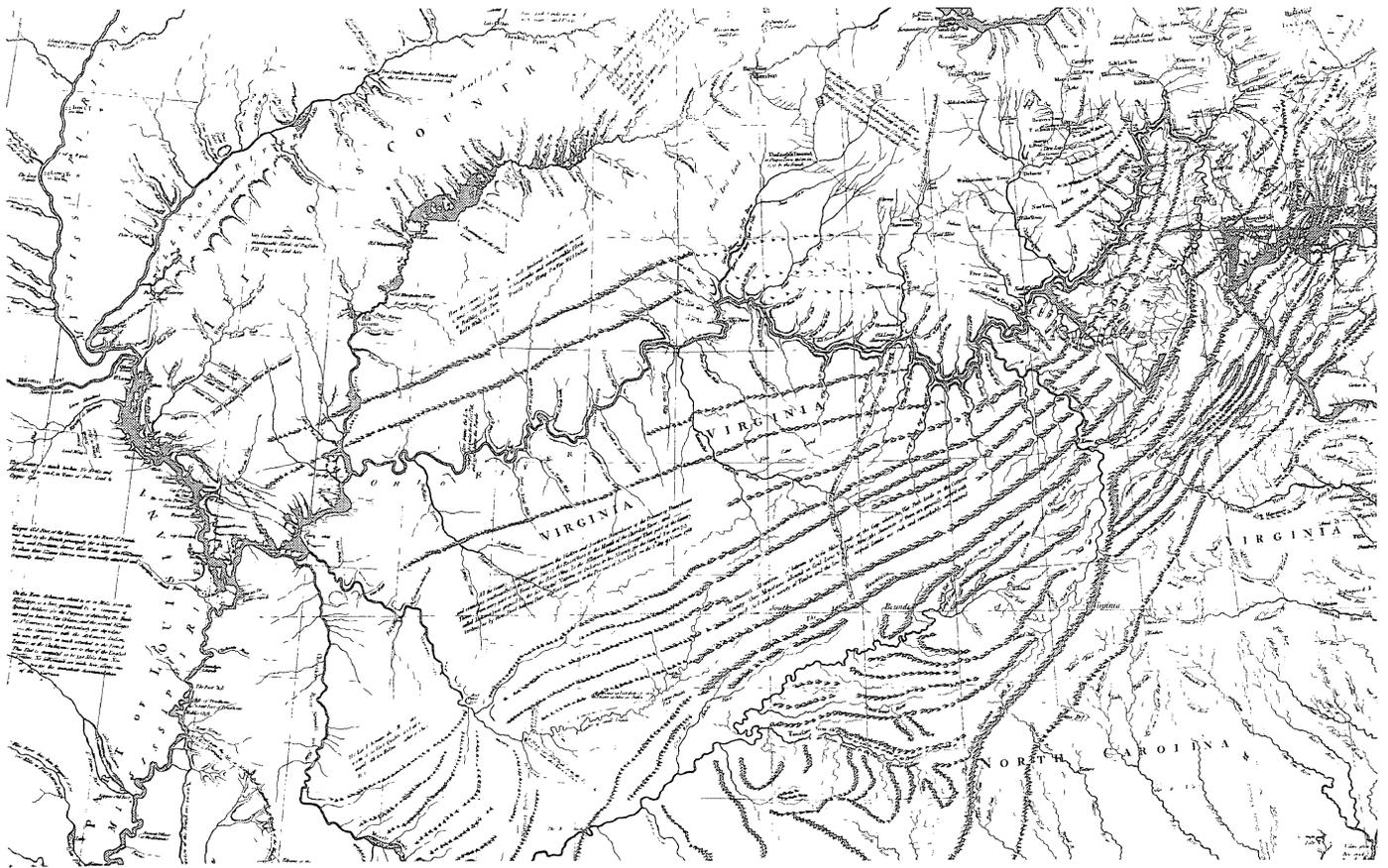
...on parade (a modern reenactment)

British troops often moved to the Mississippi River garrisons after 1766 via the Ohio. Lieutenant George Phyn, for instance, led the 21st Regiment of Foot down the Ohio in eleven bateaux in 1767, conveying a chest of silver for pay of the garrisons, 20,000 pounds of wine to make the troops' tour at the isolated posts more endurable, and a large supply of engineer stores for repair of the forts. Lieutenant Phyn chose the wrong season for the trip. He left Fort Pitt on September 29 and did not arrive at the mouth of the Ohio until November 21. "Never did any party undergo more fatigue than mine has done," Phyn complained, "through the lowness of the Ohio."

Thomas Hutchins returned to Fort Pitt in 1768 and guided five companies of his Royal American regiment down the Ohio to Fort Chartres. He informed his commanders that no army units should leave Fort Pitt after June 10 in any year, for the 981-mile trip down the Ohio could be covered in eleven



Royal American Regiment in action



Thomas Hutchins' map

days at high water but took months when low water stages bared the rocky bottom and the sandbars that obstructed the stream.

Hutchins lived with his friend George Morgan in Illinois and performed the normal duties of a frontier army engineer. In 1769 he built an immense armed bateau, mounting a cannon on its forecastle and capable of transporting 35 men with six-months' provisions. Named the *Gage*, this first warship on the inland rivers was designed for patrol of the lower Ohio and its tributaries. While on river patrol in 1771, Hutchins narrowly escaped an Indian attack. He later built fortifications at Pensacola, Florida, became a member of Benjamin Franklin's American Philosophical Society, and became captain in the British army.

Ohio River Bateaux Trade By 1767, George Morgan had 65 bateaux and 315 men in his navy plying the Ohio. He had four trading posts in the Illinois country and a two-story warehouse, said to have had the first shingle roof in Pittsburgh, at the corner of Ferry and Water streets in the village growing around Fort Pitt. Experience taught Morgan that navigating the Ohio in the summer and fall was arduous and hazardous, so he arranged for bateaux construction at Fort Pitt in the autumn, cargo loading in the winter, and departure downriver at the first moment after the ice broke.

Morgan found his trading profits were devoured by the boat crews, who were paid four pounds currency per month and all they could eat. To reduce personnel overhead, he designed a 46-foot long, 12-foot wide boat, with a 5-foot cargo hold, canvas sails, and 18-inch wide gang boards along its gunnels. He had the boat built at Fort Pitt in 1768 and named it the *Three Friends*, presumably for the three partners, Baynton, Wharton and Morgan. Morgan hoped the *Three Friends* with its large cargo capacity could supplant several bateaux and their crews. It was also designed to ascend the Ohio by sailing before prevailing winds or, when winds were unfavorable, by its crewmen, walking along the gangway and pushing on poles to force the boat upstream.

Morgan called his boat a "bark," meaning a small sailing ship with two or more masts. The *Three Friends* was either the first sailing ship or the first keelboat built on the Ohio River. It was too large for ease of handling in tortuous channels, however, and Captain Patrick Roberts wrecked the boat on the Falls of the Ohio (at present Louisville, Kentucky) in 1768 on its first trip out.

The Ohio River trade was also harrassed by Indians. In July 1767, two bateaux with cargoes worth 3,000 pounds currency were taken by Indians, who murdered the fourteen crewmen. Morgan demand-



ed that the British command build forts along the river supply route and patrol it in armed boats to chastise the Indians who "pillaged our Boats on the Ohio." No doubt one of the missions of the *Gage*, built by Thomas Hutchins in 1769, was to protect Morgan's bateaux fleet.

High overhead, losses to Indians, wrecks on the snags, shoals, and rapids of the Ohio, fierce competition from Spanish and French traders, and the loss of the army supply contract forced Morgan and his associates into bankruptcy in 1772, after eight years in the business. Morgan returned to Philadelphia, where he was elected, along with Hutchins, to the American Philosophical Society and became associated with Benjamin Franklin in a quest for landgrants in the Ohio River basin from the British crown.

Captain Thomas Hutchins was in London preparing his maps and topographic inventories for publication when Colonel Richard Gridley was fortifying Breed's Hill. While in the British capital, Hutchins continued his business correspondence with Samuel Wharton, member of the defunct Baynton, Wharton and Morgan firm and also part of Benjamin Franklin's intelligence organization. British counterintelligence learned of the correspondence, arrested Hutchins, and clapped him in irons on charges of treason; but they could not substantiate the charges and released him. He secretly fled Britain to France, and with a letter of recommendation from Franklin, sailed for America aboard the *Alliance* as secretary to John Paul Jones to become an engineer in the Continental Army.

We Must Quit this Country or Attack! Robert Benham carefully raised his rifle to avoid stirring the leaves of the fallen treetop in which he was concealed and frightening away the raccoon. Hidden in the treetop for two days after the British and Indians had ambushed Captain David Rogers and the Monongahela volunteers, Benham feared Indians might still lurk along the river but gnawing hunger forced him to risk discovery. He squeezed the trigger, cracking the wilderness silence and drop-

ping the 'coon. Food at last! Still, how was he to get to it, for each painful move reopened the wounds in his legs and blood flowed anew.

Rustling leaves warned Benham someone was approaching; he reloaded hastily, pouring powder from the horn, ramming the ball down the barrel, and aiming at the man emerging from the thicket. Just before he fired, he recognized the blood-spattered white man. "Over here, Brown," he called, and Basil Brown walked to him. Their macabre situation was grimly amusing: Benham, wounded in both legs, could not walk; Brown, wounded in both arms, could not use a rifle or feed himself. Benham kindled a fire, and Brown kicked the 'coon to the tree where Benham dressed and cooked the first meal they had eaten in two days. Nineteen days they hid on the bank of the Ohio. Brown walked the forest, driving game to Benham's rifle and kicking it to the treetop for cooking; Benham fed Brown by hand; and Brown waded into the river with a hat clenched in his teeth to get water for Benham. Together they survived and healed, finally attracting the attention of a passing boat which rescued them and eventually returning to their homes on the Monongahela with news of the grim sacrifice the people of the Monongahela had made for American victory on the frontier.

Basil Brown, of the family for whom Redstone was renamed Brownsville, and Robert Benham, who later founded the town of Newport, Kentucky, at the place where he and Brown had hidden in 1779, were volunteers in Captain David Rogers' expedition, the third of a three-phased American amphibious assault down the Ohio River against the British and their Indian allies in 1778 and 1779.

From the onset of Revolution, the tiny Engineer Corps of the Continental Army was not of sufficient size to meet the needs of Washington's army in the campaigns against British regulars along the Atlantic coast. West of the mountains, where the enemy usually were the Shawnee, Wyandot, Seneca, and Cherokee tribes led by British loyalists such as Simon Girty and Matthew Elliott, engineering

tasks, involving construction of log stockades and water craft and topographic reconnaissance, were generally performed by militia officers without professional training but with extensive exploration and Indian warfare experience. Continental regulars garrisoned Fort Pitt and built Fort McIntosh in 1778 at the mouth of the Beaver River. Virginia militia garrisons occupied Fort Fincastle at the present site of Wheeling, West Virginia, renaming it Fort Henry in honor of the Governor of Virginia, and Fort Randolph at the mouth of the Kanawha River. Other militia detachments built many small log stockade forts and blockhouses in the Ohio River basin.

But those forts could not stem the tide of Indian raiding parties. They set the frontier afire during the bloody year of three sevens, and George Rogers Clark told Governor Patrick Henry; "We must quit this country or attack!" His argument was so persuasive that the Governor issued secret orders for Clark to attack British posts on the Mississippi and Wabash river, with the ultimate goal being the



"...aiming at the man emerging from the thicket"

western headquarters of the British army at Detroit.

The American counterattack in the Ohio River basin in 1778 took place in three, perhaps four, roughly coordinated phases. First, in the spring of 1778, General Edward Hand led 500 regulars from Fort Pitt to chastise hostiles along the Mahoning River. Floods hampered the advance, however, the warriors escaped, and only a few women and children were captured. Of that "Squaw Campaign," General Hand sarcastically reported: "In performing these great exploits, I had but one man--a captain--wounded, and one drowned."

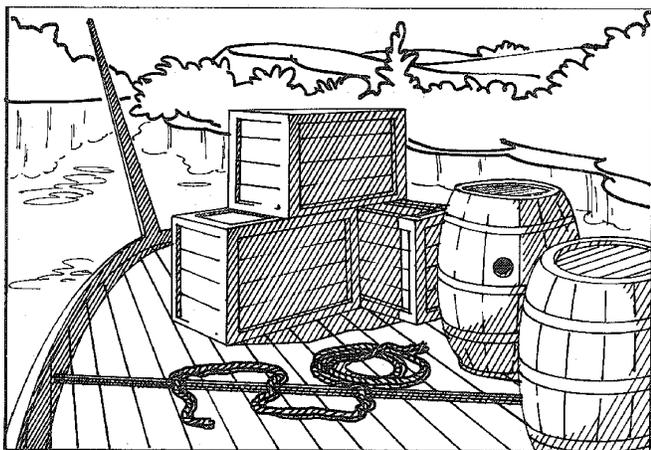
The three other phases of the counterattack of 1778 were by water, in boats built on the Monongahela and supplied at Fort Pitt by Colonel George Morgan.

Congress appointed George Morgan colonel of the Continental Army and sent him back to Fort Pitt in 1776 as commissary general. Morgan converted Fort Pitt into a massive supply depot and made the Monongahela valley the staging area for the American campaigns on western water. He built storehouses along the Forbes Road and at Redstone on the Monongahela and organized a boat department to build vessels to take the war into enemy territory. He arranged construction of thirty bateaux, each 40 feet long, 9 feet wide, with 32-inch gunwales, at the confluence of the Monongahela and Youghiogeny rivers for troop and supply transport, and in early 1778 built six large bateaux armed with small cannon to serve as gunboats.

Morgan still had business contacts in Illinois and Louisiana and in 1776 conceived the idea of obtaining gunpowder from his merchant friends at New Orleans. Carrying a letter from Morgan, Captain George Gibson, Lieutenant William Linn, and fifteen men disguised as traders left Fort Pitt in July 1776, floated down the Ohio and Mississippi and secretly obtained 4.5 tons of gunpowder at New Orleans. Since Spain was at peace with Britain in 1776, authorities at New Orleans arrested Gibson as

a cover, while Linn slipped back upriver and delivered the powder to Fort Henry on May 2, 1777.

Late in 1777, James Willing, scion of a Philadelphia merchant family who had traded at Natchez on the Mississippi before the Revolution, was commissioned captain in the Continental Navy and ordered to clear British loyalists from the Mississippi and secure munitions from the Spanish at New Orleans. Colonel Morgan supplied Willing with the armed gunboat *Rattletrap*, and Willing recruited a thirty-five man crew in the vicinity of Fort Pitt; among them was Lieutenant George Girty, brother to loyalist Simon Girty. The *Rattletrap* sailed from Fort Pitt on January 10, 1778, seized Natchez in February, raided loyalist plantations



"...munitions from the Spanish at New Orleans"

along the Mississippi, and captured the British brigs *Neptune* and *Despatch* and the 16-gun ship *Rebecca*. Willing inflicted damages amounting to more than a million dollars on the loyalists on the Mississippi and temporarily cleared the river as a supply route.

Colonel George Rogers Clark and 150 Virginia volunteers left Fort Pitt in May 1778 in bateaux supplied by Colonel Morgan and flatboats built by John Minor at the mouth of Dunkard Creek on the Monongahela. Clark established an advance base at the Falls of the Ohio (founding the city of Louisville),

then floated to old French Fort Massac near the mouth of the Ohio, from whence he made an epic march to surprise and capture British posts in the Illinois country.

The third phase of the attack via the Ohio was led by Captain David Rogers of Redstone with forty volunteers, Basil Brown and Robert Benham among them, who floated in two flatboats down the rivers to New Orleans to secure gunpowder for delivery to Clark in the Illinois country. Captain Rogers carried a letter from Governor Patrick Henry to the Spanish Governor, in which Henry explained the Americans were short of supplies because of the blockade of the British fleet. "The inland Navigation of Mississippi & Ohio, altho at present subject to many Inconveniences," Henry wrote, "has the great advantage that British Cruisers cannot infest it." Governor Henry was right, but Indians could and did infest the rivers.

Captain Rogers delivered Henry's message to New Orleans and powder to Clark, then began his return up the Ohio to the Monongahela. On October 4, 1779, Rogers saw Indians crossing the Ohio near the present site of Cincinnati and landed his boats to pursue them. The Indians were led by George Girty, together with his brother Simon and Matthew Elliott. George Girty had deserted the Willing expedition at New Orleans in May 1779, made his way to Detroit in August, and led the Indians to set an ambush for the Americans. Rogers and forty-two of his men were killed, five made prisoner, and only thirteen escaped.

In spite of Rogers' defeat, the American counterattack from their staging area in the headwaters district forestalled a British plan to seize the Kentucky and Monongahela settlements. About the same time, another American force was engaged in securing northwestern Pennsylvania and western New York State.

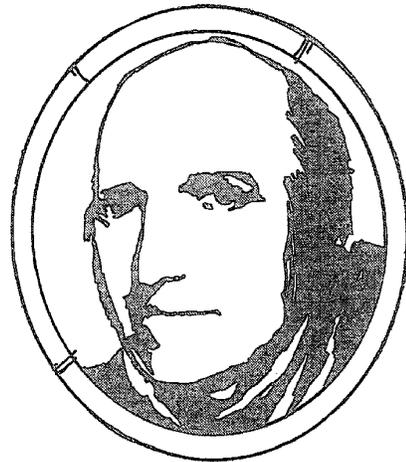
While Colonel Clark was at work in the Illinois country, General Daniel Brodhead moved against the Seneca citadel in the upper Allegheny River

basin. General Washington had learned during his reconnaissance of the Allegheny basin in 1753 that the Senecas and other tribes lived in well-organized villages, subsisting on rich corn harvest from fertile riverbottoms. He decided in 1779 to take the offensive and lay waste to Indian villages and supply sources in western New York and Pennsylvania, planning a three-pronged attack up the Mohawk, Susquehanna, and Allegheny valleys. He sent General Brodhead to command the expedition up the Allegheny.

General Brodhead loaded provisions and munitions into sixty boats and left Fort Pitt on August 11, 1779, ascending the Allegheny to the mouth of Mahoning Creek where he transferred the supplies to packhorses for the overland march, fording Clarion River at Tobys Falls, returning to the Allegheny at the mouth of Tionesta Creek, and continuing up the Allegheny into New York. Brodhead defeated forty warriors he found canoeing down the Allegheny and laid waste to the Seneca homeland in the vicinity of Kinzua and Olean without opposition, for Chief Cornplanter and the Seneca warriors had left home to meet the other American columns at the Battle of Newtown (Elmira, New York).

The Clark and Brodhead campaigns of 1778 and 1779 broke British-Indian power in the Ohio River basin. Sporadic Indian raids continued, but British hopes for victory on the frontier were blasted and the security of American settlements south of the Ohio and east of the Allegheny was greatly increased. To maintain this security, gunboats built by Colonel Morgan patrolled the upper Ohio, and in 1782 Colonel Clark built two gunboats and the *Miami*, a 73-foot galley armed with eight cannon, at the Falls of the Ohio to patrol the lower river. By 1782, the pioneers of the headwaters district felt so secure that they tried to begin a commerce with Spanish New Orleans via the inland streams.

Engineers of the Confederation The Corps of Engineers, like most of the Continental Army, was disbanded at the end of the Revolution. Engineer veterans returned to private surveying and business



Colonel George Rogers Clark

or accepted appointments from state governments, with one exception: Thomas Hutchins.

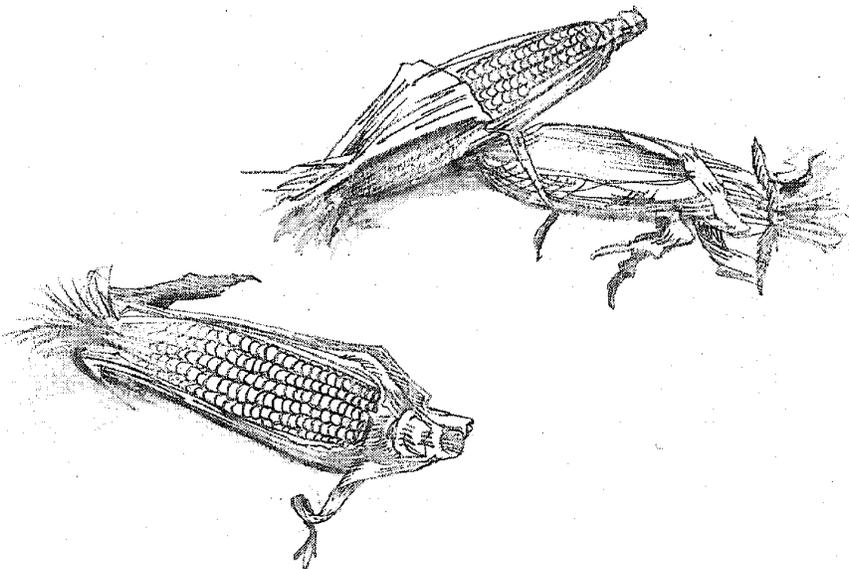
Congress appointed Hutchins "Geographer to the United States" in 1781, by which date he had become justly famed for his surveying and mapping abilities. George Rogers Clark had used Hutchins' map of the inland rivers as a guide during his expedition to Illinois; eastern newspapers printed Hutchins' reports for the benefit of readers who planned emigration to the west; and Thomas Jefferson was studying Hutchins' maps and personally corresponding with the engineer about economic resources, river navigation, and flood frequency in the Ohio River basin.

George Washington also studied Hutchins' maps in search of ways to join navigation on the Potomac or James rivers with navigation on the Monongahela and Kanawha rivers, thereby linking coastal cities to inland river commerce. The General had acquired more than 20,000 acres of land in various parcels along Chartiers Creek and the Monongahela, Ohio, and Kanawha rivers in southwestern Pennsylvania and western Virginia. In the autumn of 1784 he visited his western lands, met with Colonel John Canon of Canonsburg, Albert Gallatin of New Geneva, and Zackquill Morgan of Morgantown, and discussed business matters and



possible routes for road and canal systems linking the Potomac River with the Youghiogheny, Cheat, or Monongahela rivers. On his return to Mount Vernon, he dispatched a letter to Congress.

The Assemblies of Virginia and Maryland have now under consideration the extension of the inland navigation of the rivers Potomac and James, and opening a communication between them and the Western waters: they seem fully impressed with the political as well as the commercial advantages which would result from the accomplishment of these great objects; and I hope will embrace the present moment to put them in train for speedy execution. Would it not at the same time be worthy of the wisdom and attention of Congress, to have the western waters well explored, and the navigation of them fully ascertained, accurately laid down, and a complete and perfect map made of the country...?





Through personal exploration of the terrain and information obtained from Thomas Hutchins and others, George Washington had concluded that it might be feasible to connect the Potomac with the Youghiogheny River and the James with the Kanawha River by canals. Improvement of navigation on the rivers named and construction of a canal up the Beaver River valley to Lake Erie could open a complete national waterways system. But such projects would require cooperation among the states, for the federal government under the Articles of Confederation had no interest and certainly not the necessary financial resources for such massive projects.

Virginia and Maryland sent commissioners to Mount Vernon in 1785 to discuss the proposed canal from the Potomac to the Youghiogheny. The commissioners recognized that Pennsylvania should also be consulted and that some uniform commercial regulations should be devised. Thus, planning for waterway transportation improvements led to recognition of the need for closer cooperation among the states.

A second convention on the subject met at Annapolis in 1786, and a third met at Philadelphia in 1787, where it wrote the Constitution of the United States. Historians have sometimes argued that Washington's interest, indeed it has been called an obsession, in the construction of improved waterways to bind the nation together as a political and economic unit led directly to the writing of the Constitution.

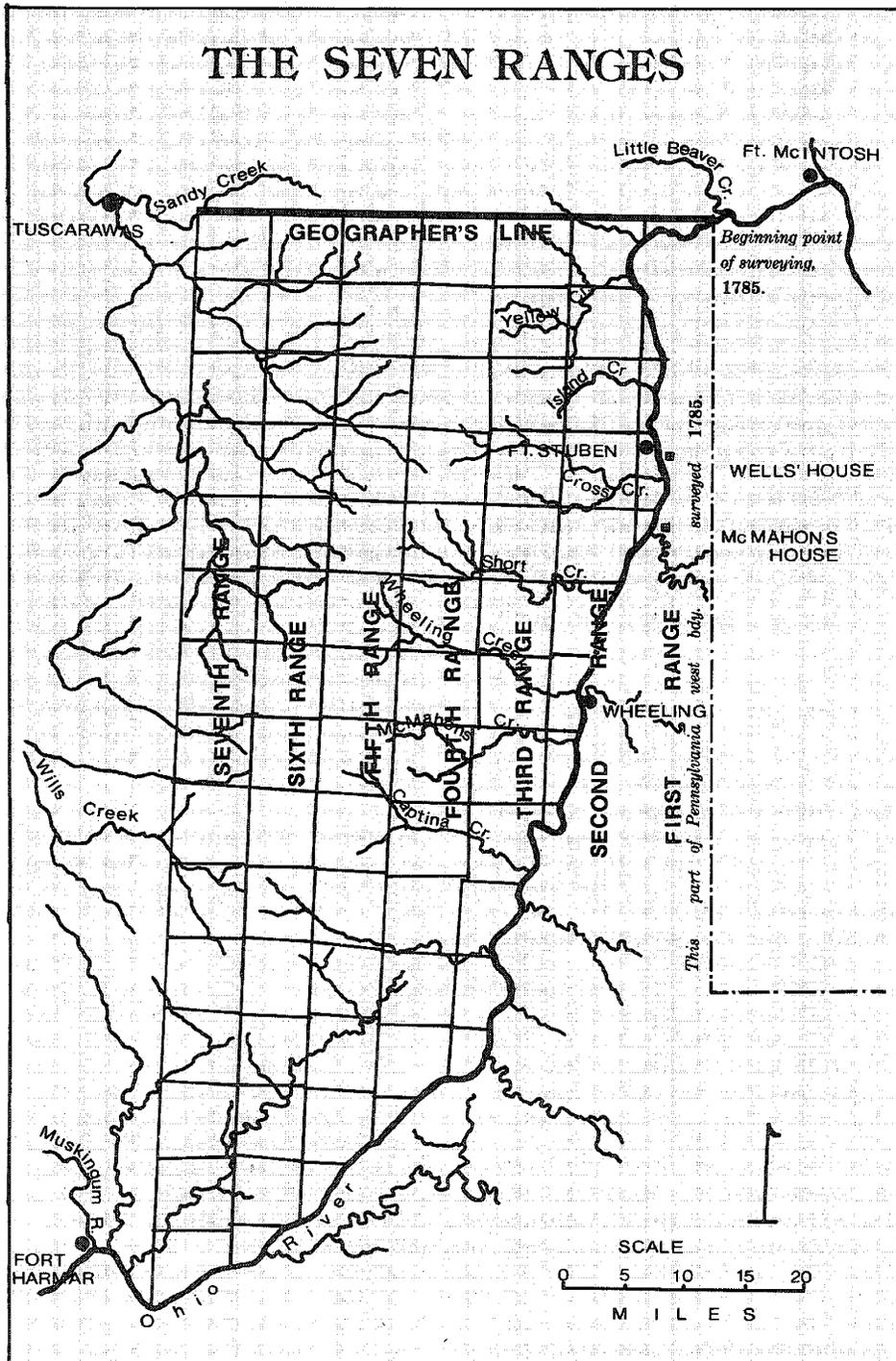
The Confederation Congress loaned the services of Geographer Hutchins to Pennsylvania in 1784. He

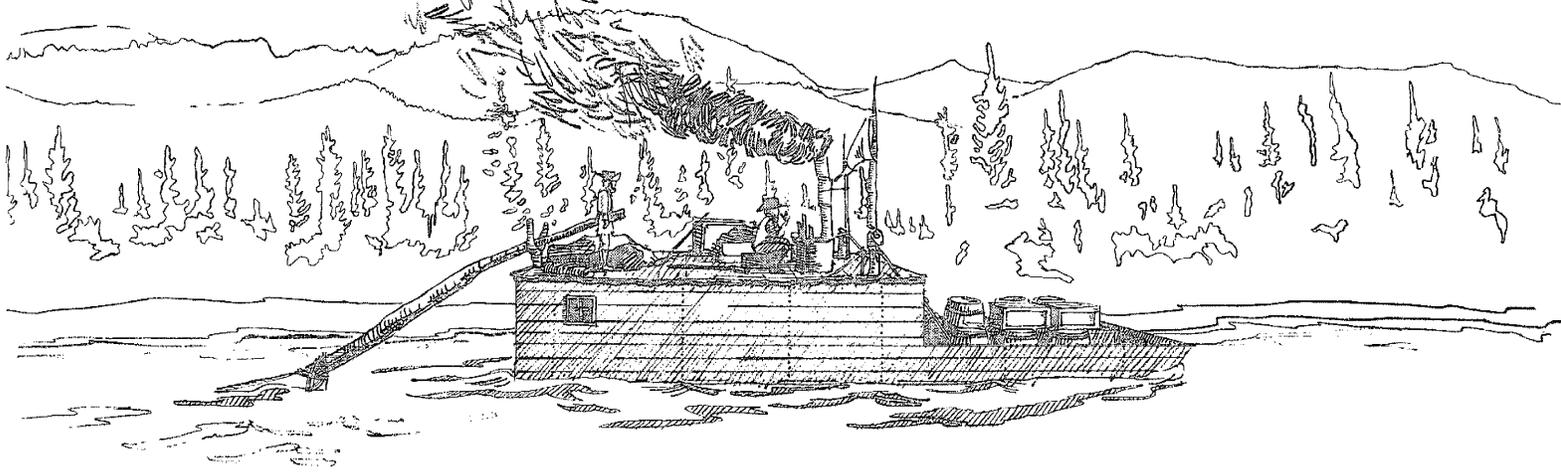
joined the survey party that continued the Mason-Dixon line, southern boundary of Pennsylvania, to the west. Thomas Jefferson, in the meantime, using Hutchins' map as guide, drew up plans for survey of the lands northwest of the Ohio. The Land Ordinance of 1785, as the legislation which established the unique American rectangular survey system became known, directed the Geographer to survey the Seven Ranges in southeast Ohio with the assistance of thirteen gentlemen surveyors, one from each state.

Hutchins arrived at Pittsburgh, old Fort Pitt, in September 1785 and organized his survey party, securing provisions and horses, employing chain carriers and rodmen, and seeking troop protection for the surveyors from General Josiah Harmar. Among the thirteen gentlemen surveyors who joined Hutchins at Pittsburgh were Absalom Martin, who founded Martin's Ferry, Ohio, Israel Ludlow, a founder of Cincinnati, and Ebenezer Sproat and Benjamin Tupper, founders of Marietta, Ohio, who later built ships for the Ohio River trade. General Rufus Putnam, second Chief Engineer of the Continental Army, was also appointed to the survey, but was surveying in Maine at the time and sent his nephew in his stead.

Hacking straight lines through the wilderness was rugged business and Indians still posed a threat; the surveyors found the scalped heads of two







men fastened to a tree as a warning of what might happen to all. Troop detachments from Fort McIntosh furnished some protection, and General Harmar built Fort Steuben at the present site of Steubenville, Ohio, in 1786 as additional protection for surveyors, but they still were frequently forced to cross the Ohio to safety, usually to the fortified homes of William McMahan, Charles Wells, William Greathouse, and Ebenezer Zane near the present sites of Wellsburg and Wheeling, West Virginia. Scalpings and horsethieving in the vicinity of the surveyors continued, but they persevered and completed their survey of the Seven Ranges on July 10, 1787.

Thomas Hutchins did not find hacking lines through the forests without adequate troop protection to his liking; he yearned to resume his single-handed exploration of the West. Funding by the Confederation Congress was also insufficient, so he had to use his personal credit to finance the surveys and then threaten legal action to get reimbursement from the government. Twice he asked Congress to allow him to do what General Washington had suggested, prepare complete and accurate maps of the inland rivers; twice he was rejected. Concerned by the weaknesses of the Confederation government, he became convinced, he said in 1788, that "the political salvation of this country inevitably depends on the adoption of our new constitution." He was also worried by the failure of the Confederation government to secure free navigation for Ohio River basin commerce via the Mississippi. The British ceded free navigation on the Mississippi to the United States in the treaty ending the Revolution, but Spain was not party to that treaty and refused the right. Hutchins was certain that if Congress did not act the pioneers across the mountains would attack the Spanish at New Orleans to secure the right as their own, "be the consequence what it may."

Hutchins joined Colonel George Morgan and New Jersey veterans led by Colonel Israel Shreve in 1788 in planning a settlement at New Madrid on the Mississippi in Spanish territory, where they would be free to trade down the rivers to New Orleans.

Hutchins hoped to secure an engineer commission from the Spanish government to continue his exploration, navigation, and mapping of the inland rivers west of the Mississippi.

Early Engineers and the Waterways Rivers of the headwaters district and connecting portages served both Indians and early explorers as avenues through the wilderness into the Ohio River basin and the interior of America. Canoes, dugouts, and bateaux moved French and British troops to the frontier via the inland rivers; the first significant waterborne commerce on inland streams was largely in support of the frontier military garrison; and the earliest navigation by Americans on the inland rivers had military purposes. Military engineers were therefore interested in waterways navigation at an early date.

French engineers mapped the Ohio River basin, built a chain of fortifications from Lake Erie to the Monongahela, and first improved inland river navigation. Though the French lost the struggle for empire in America, their engineers and technology had such influence that the American Corps of Engineers remains proud of its French heritage.

Anglo-American engineers--George Washington, Harry Gordon, and Thomas Hutchins--made significant contributions to British success in the headwaters district before the Revolution. Their surveying and mapping activities, their continuing interest in waterways navigation for military transport and internal commerce, and their support for increased federal responsibility for interstate commerce were formative during the critical years between the end of the Revolution and the beginning of government under the Constitution.

The early work of military engineers in the Allegheny, Monongahela, and Ohio River basins was, as it was to be throughout the history of the American West, of central importance to the settlement and early development of the headwaters district.