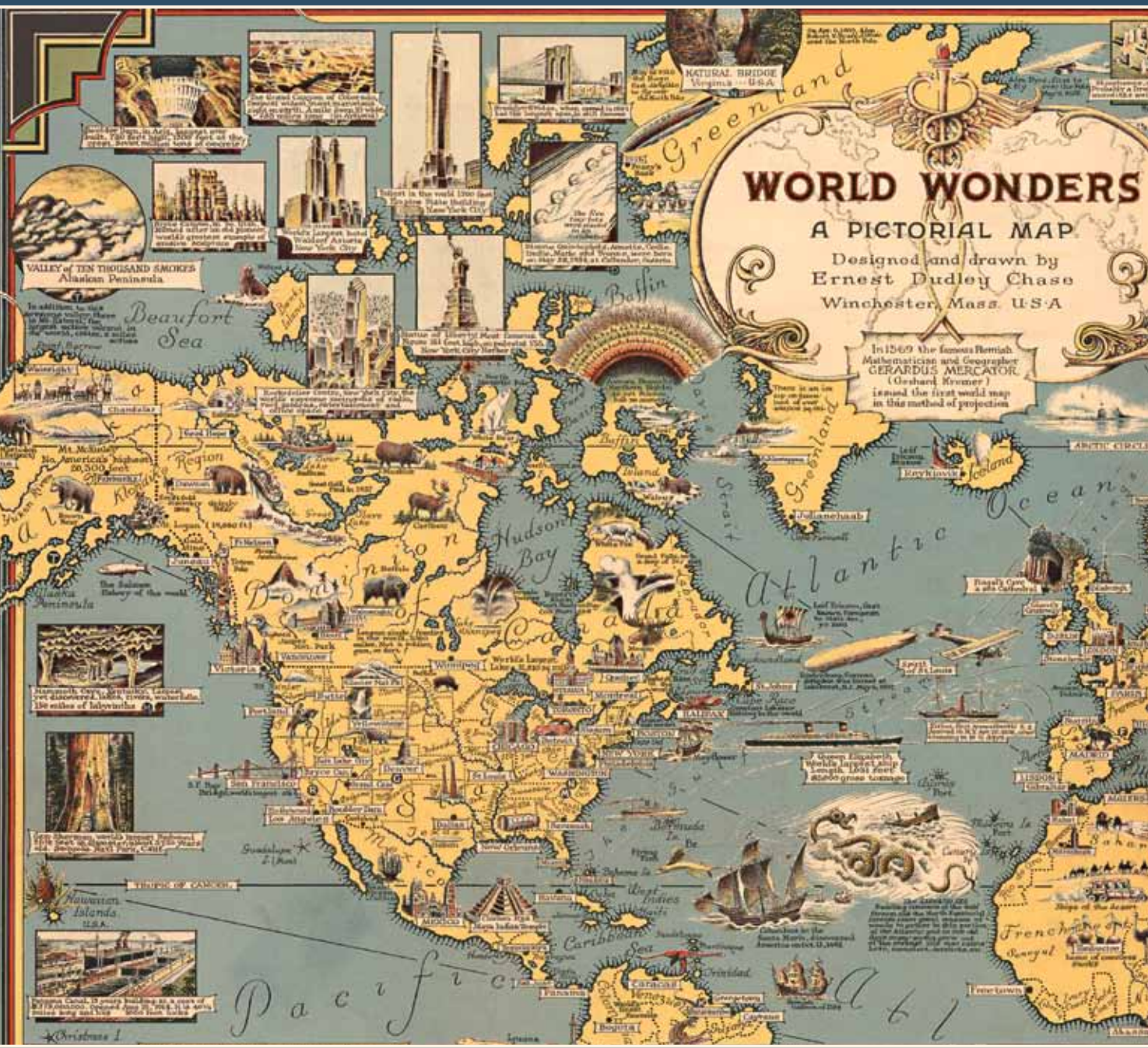
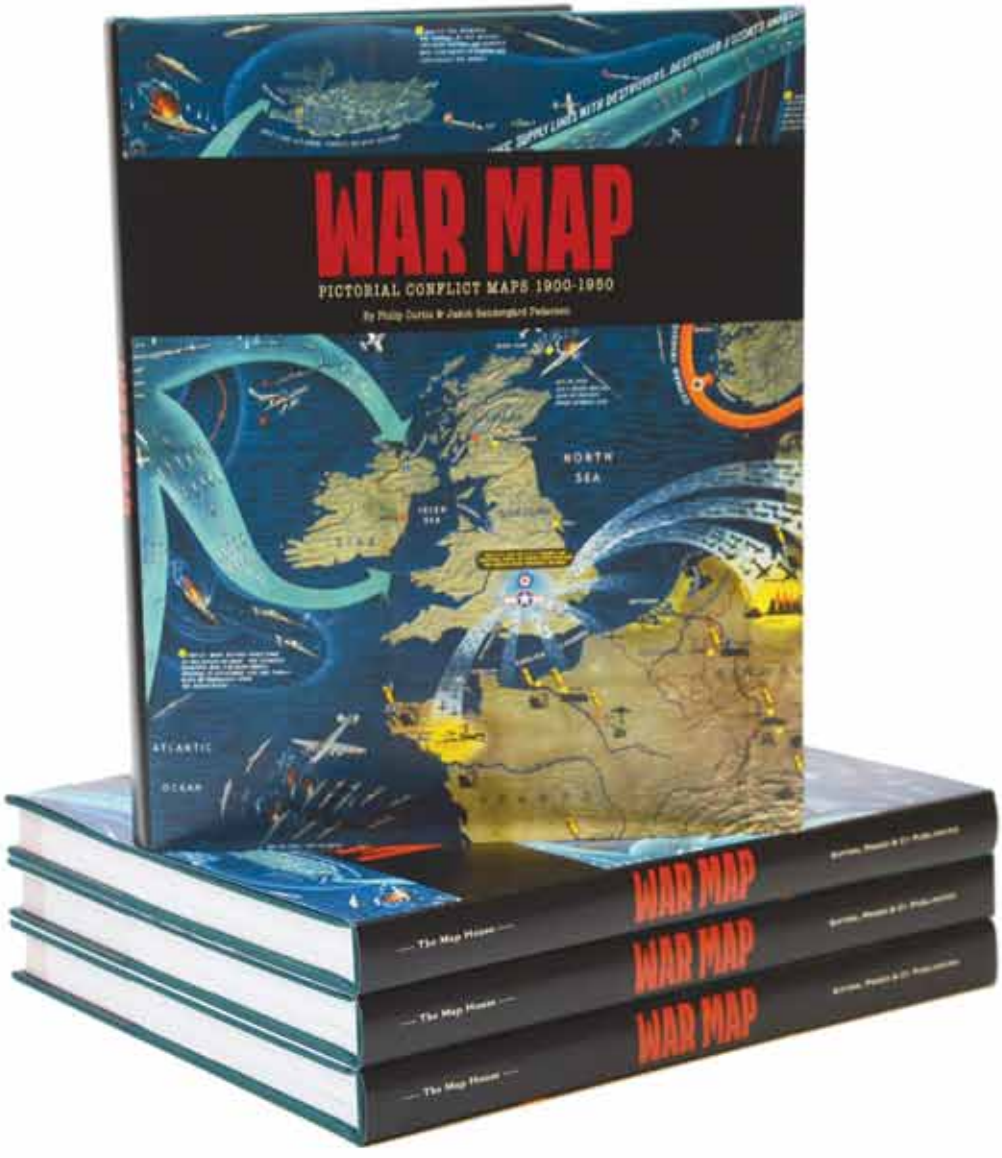
INTERNATIONAL MAP COLLECTORS' SOCIETY

IMCS JOURNAL

WINTER 2016 No.147



FOR PEOPLE WHO LOVE EARLY MAPS



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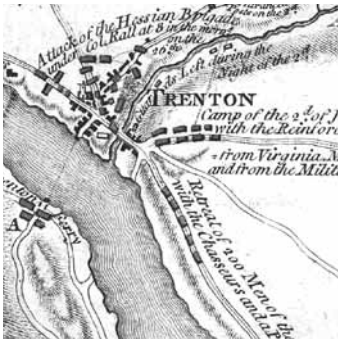
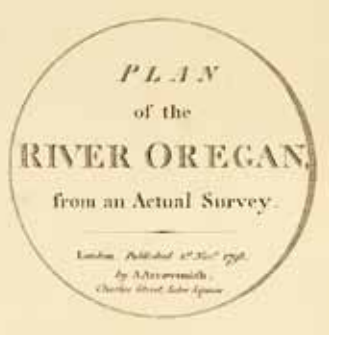
ARTICLES



REGULAR ITEMS



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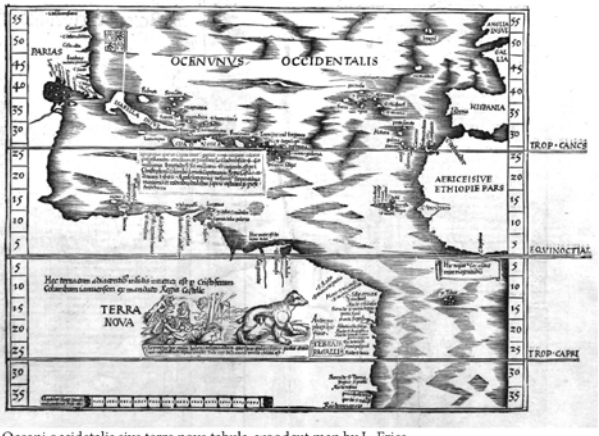
Front cover
Detail from Ernest Dudley Chase, 'World Wonders, A Pictorial Map', 1939. Winchester. Mass. 72 x 96 cm / 28 x 37 ½ in. Courtesy David Rumsey Map Collection, www.davidrumsey.com
For full image see p. 56.



Oceani occidetalis sive terre nove tabula, woodcut map by L. Fries from the Ptolemaeus edition by J. Grüninger, Strasbourg, 1525

A LETTER FROM THE CHAIRMAN

Hans Kok

We have just returned from the IMCoS 2017 Chicago/Milwaukee International Symposium which was combined with the Nebenzahl Lectures and the Chicago International Map Fair, together making for a full week's programme on historic cartography and map collecting. The map fair was quite successful, I understand, with maybe fewer visitors but more buyers than expected. The Nebenzahl Lectures have entered their fiftieth year, a record hard to match, let alone exceed. Kenneth and Jossy (Jocelyn) started the series in commemoration of their son Kenneth Jr, who died at age 17. Today it is an institution in its own right, famous for the quality of its speakers and subjects explored. On this occasion, the subject of the first series – map collecting – was revisited, and again, as fifty years ago, the papers provided food for thought or brain food, if you like. Kenneth has been a staunch IMCoS supporter for many years, as well as the IMCoS National Representative for Central USA.

Chicago is home to many well-known map collectors, which will remain unnamed, lest I forget one! An exception, however, must be made for our past President Roger Baskes; it was indeed a pleasure to meet with him and his wife Julie again on their home turf in the Newberry Library. The Symposium was, as always, organised in a very professional way, this year by Jim Akerman and his team, requiring no hard work from our IMCoS London side this time.

In the last few years, the Far East has featured prominently in our conference programmes and again, in Chicago, Korean, Chinese and Japanese mapping was ably discussed in a presentation, a visit to the MacLean Collection and at an exhibition at Chicago's famous Art Institute on Michigan Avenue. Richard Pegg was instrumental on all three counts and his expertise showed on these occasions.

As our 2017 Symposium will take place in Hamburg, a delegation from the organisers took part in the Chicago events. Wolfgang Sarges and Lisa Brümmer attended in order to meet IMCoS members and to better understand the various aspects of an IMCoS symposium and the audience expected to attend next year when Dr Vladi's enterprise The Old Map Centre will host the event. At a debriefing afterwards it was agreed that the Hamburg presentations will be aimed at the private collector and map enthusiast with more direct and hands-on cartographic content rather than at curators of institutional collections. A dedicated website has been set up (www.imoc-2017-hamburg.com) where information will be posted.

The Paris Map Fair also is behind us. The IMCoS stand was made available again free of charge for which we thank the organisers. Apart from waving the IMCoS banner it is always a pleasurable event where we get to meet many old and new acquaintances.

All that remains is for me to wish you all out there in our mapping world a Happy Holiday Season, a Happy New Year and many happy returns for your good health!

GUEST EDITORIAL

Wes Brown
Founder and first president of the Rocky Mountain Map Society, Colorado

In a brazen affront to Spanish authorities, historian Peter Martyr included the first printed map of the New World in his book the *Decades*, published in 1511. Spain, desiring to keep valuable information of the New World a secret from the map publishers of Europe, banned the book and destroyed most of the copies. Although initially succeeding, the Spanish authorities could not prevail for long, however; mapmakers proceeded to illuminate terra incognita, and the continent of North America was slowly revealed. This edition of *IMCoS Journal* contains four excellent articles about these revelations.

Untitled map of the Caribbean from Petrus Martyr d'Anghiera. Seville, 1511. From Martyr's *Legatio Babilonica Occeanea decas*. Collection of Wes Brown.

Ronald Gibbs, MD, a collector of Revolutionary War maps, will fascinate readers on both sides of the Atlantic with his article 'On the Brink of Disaster: George Washington and the American Revolution, 1775–1776'. In this gripping tale, Gibbs leads us through the sequence of early battles of the War and important maps that illustrate the campaigns. When Dr Gibbs first presented this work at a meeting of the Rocky Mountain Map Society, he was dressed in clothing of the period and wore a three-pointed hat!

From the Revolutionary War on the East Coast of the United States, we move to the mapping of the northwest coast of North America with Dr Jim Walker's essay 'Compiling "All the Recent Discoveries": Aaron Arrowsmith and Mapping Western North America, 1790–1823'. Accounts of James Cook's third voyage (published in 1784) sparked great interest in this virtually unknown region of the world. Arrowsmith, whose maps are now highly sought after, became the principal mapmaker to illuminate this region. This essay by a leading authority will likely become a standard reference on the subject.

Determining the route of the Transcontinental Railroad that would link the east and west coasts was a matter of great concern in the late 1840s and 1850s. As the West was largely unknown, the route had to be selected not only on the most suitable topography, but also based on political interests ultimately leading to the Civil War, and economic interests of communities that might be adjacent to the railroad. Major government surveys were conducted during this period to select the best railroad route. These surveys also revealed the secrets of this vast western land. J. C. McElveen's contribution to the journal tells us the story.

Curtis Bird, a long-time map dealer, recently observed that when sixty-year-old map-novices come into his shop, they are likely to head for the nineteenth-century American atlas maps of their home state. When thirty-year-olds come in, their first interest is pictorial maps of the twentieth century. Mapping the twentieth century is now hip, a trend that the *IMCoS Journal* has already embraced with its selection of articles in past issues. Our fourth feature article is by Bird, who has long specialised in pictorial mapping and is an expert in the field. His essay 'Pictorial Cartography: Its American Expressions' presents some new ideas about the subject.

This issue, focusing on North American cartography, is particularly timely given the great celebration of maps that occurred in October of 2016 which brought together enthusiasts from around the world to Chicago for the 34th IMCoS Symposium, The Nebenzahl Lectures at the Newberry Library and the Chicago Map Fair.

IMCoS MATTERS

Dates for your diary

15 January 2017
Nominations for the IMCoS/Helen Wallis Prize
The International Map Collectors' Society has been presenting an award to an individual, who in the opinion of the selection sub-committee has been responsible for cartographic contributions of great merit and wide interest to map collectors worldwide. Though the award is intended to recognise individual merit, in special circumstances a group of people or an organisation could be eligible. The award is made at the annual IMCoS dinner in June.

Please send nominations by 15 January 2017 to the Chairman, Tony Campbell, at tony@tonycampbell.info or to 76 Ockendon Road, London N1 3NW.

31 March 2017
Proposed IMCoS visit to Manchester
Vice-chairman, Valerie Newby, is planning a visit to Manchester next Spring for members of the society.

Plans are not yet finalised but it is hoped we will travel to the city on Thursday 30 March, ready for an early start the next day. Our first port of call will hopefully be the John Rylands Library to see a selection of their early maps. We will then stay together for lunch and visit another local library for more viewing of maps, returning to London (or elsewhere) late afternoon.

Final details, hotel booking advice, costs etc. will be emailed to members in the New Year and posted on the website as soon as arrangements have been finalised.

16 June 2017
IMCoS Annual Dinner & Malcolm Young Lecture
The event will be held at the Civil Service Club, 13–15 Great Scotland Yard, London SW1A 2HJ.

17 June 2017
IMCoS Annual General Meeting
The meeting will be held at the Royal Geographical Society (with IBG) at 1 Kensington Gore, London SW7 2AR.

17–18 June 2017
London Map Fair
Royal Geographical Society (with IBG) at 1 Kensington Gore, London SW7 2AR.

Detail of Georg Braun und Franz Hogenberg, 'Hamburg', 1588 *Civitates Orbis Terrarum*, **c. 1590.**

8–12 October 2017
35th IMCoS International Symposium in Hamburg
Provisional schedule
The theme of the symposium will be the Hanseatic League and German cartography.

Lectures will be held in the mornings of Monday to Wednesday with excursions for map viewing in the afternoon, provisionally to the International Maritime Museum; City Archives; Mercantile Library; Hamburg City Library and the Planetarium.

Optional excursions are being planned.
Thursday: Schloß Gottorf in Schleswig (with its 'walkable' globe) and the European Hanse Museum in Lübeck, with an overnight stay there.
Friday–Saturday: Berlin, its sights and cartographic treasures. The excursion will end in Berlin.

Details of fees, registration and hotel accommodation will be available at www.imcos-2017-hamburg.com as they are confirmed.

Report on the 34rd International IMCoS Symposium, Chicago

The 34th IMCoS Symposium was held against a backdrop of a city in high excitement. The Chicago Cubs had been absent from the World Series, the annual championship of the Major League Baseball, for more than 70 years, and had not won the Championship since 1908. As I write, the Cubs, pitted against Cleveland, are playing the fourth game out of seven (the first team to win four games takes the prize), are in position to win the much-coveted title. Enthusiasm for the event expressed by organiser Jim Akerman was not lost on IMCoS participants.

The Symposium was a cartographic troika for those who could attend all three events: symposium, 50th anniversary of the Nebenzahl Lecture series and the Chicago Map Fair. Their commonality was collecting, chosen to pay homage to the first Nebenzahl Lectures in 1966 at which R. A. Skelton (then Superintendent of the Map Room at the British Museum) was the key speaker.

The first session 'Private Collecting and Map Libraries' was shared between speakers from five leading US libraries whose holdings have been significantly advanced by donations from private collectors. **Brian Dunning** of the William L. Clements Library at the University of Michigan, Ann Arbor explained the legacy of their benefactor William L. Clements. In 1920 Clements left some 20,000 volumes of rare Americana (including a wealth of manuscript maps and papers relating to the Revolutionary War) to his alma mater. In addition, he provided the funds to build a suitable home for his collection. Clements stipulated that it be dedicated to collecting and preserving primary sources for early American history and that it be independent from the University's library system. The Library continues to acquire such material.

By comparison the collection history of the Osher Map Library & Smith Center for Cartographic Education at the University of Southern Maine is, as explained by its director **Ian Fowler**, much more recent. The Library's collection of 1.5 million cartographic items is built on two significant donations: the Lawrence M. C. Smith collection made in 1986 and the Harold and Peggy Osher collection in 1989. The collection grew rapidly in size and scope with further specialist donations from Peter H. Engass, Roger Baskes, Richard Auletta. Details of other gifted collections can be found on the Osher Library website. The Library has a strong online and digital presence and, as part of its commitment to education it is involved in an exciting online resource which is currently in development. Project MAPPY, initiated by the American Geographical Society Library, the University of Utrecht and digital history pioneer HistoryIT, will be a digital encyclopedia for the history of cartography for the general public.

Cartographic archivist **Stephanie Cyr** at the Norman B. Leventhal Map Center, Boston Public Library introduced us to its benefactor after whom the Center was named. Leventhal's collecting interests began late in life, at 70, while in London on a shopping trip to Harrods department store. In 2004 he donated his collection along with a $10 million endowment to establish a nonprofit public-private partnership with the Boston Public Library. He wanted his collection placed in a home open to the public. Amongst the Map Center's holding of 200,000 maps and 5,000 atlases it has four distinguished collections: the Revolutionary War, Boston and New England, nautical charts and urban maps and views. Following Leventhal's vision to make his maps available to all, the Center has, in addition to its exhibitions, publications and lectures, an active educational programme to advance geographic literacy among students.

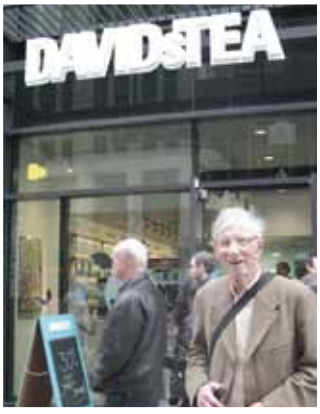
Ben Huseman Cartographic Archivist at the Virginia Garrett Cartographic History Library, University of Texas in Arlington assured us that an article on the library appeared in the *IMCoS Journal* back in the 1980s, but in case you can't locate it, the Library was established in 1978 with a mission to collect and preserve materials relating to the history of cartography. Virginia Garrett and her husband Jenkins were zealous collectors of all things related to Texas. In 1974 they donated Jenkins' Texas collection to the University of Texas; in 1990 Virginia's atlas collection; and in 1997 her map collection to Special Collections, making it a research centre for those interested in studying the history of Texas and the Gulf of Mexico region. Its holdings of maps of Texas from the years under Spanish Colonial and Mexican rule, through the Republic period and early statehood are significant. Beyond the Garrett collections there have been other notable donations from the Sid W. Richardson Foundation, Ted W. Mayborn, Lewis M. Buttery and map and globe dealer Murray Hudson

Left Jim Akerman showing early birds David Dare, Vince Ungvary, Stephanie Cyr and Connie Chin some of the treasures of the Newberry Library.

Right Valerie Newby and Diana Webster en route to the Adler Planetarium on Lake Michigan with the skyline of Chicago in the background.

Left Kenneth Nebenzahl and Hans Kok at the symposium dinner held at the Adler Planetarium.

Centre Tom Sander and Cal Welch at the symposium dinner.



Right IMCoS photographer David Webb has found his Chicago namesake teashop.

Left Bronson Percival discovers his family farm on a wallmap of Lichfield County in the Barry MacLean collection.

Right Globe dealer Murray Hudson and globe conservator Sylvia Sumira investigating Barry MacLean's collection.

Left Jonathan Potter at the Chicago Map Fair.

Right A rare copperplate seen at Daniel Crouch's stand. Plate and print of Herman Moll's 'New Map of North America'.

Attendees at the 34th IMCoS Symposium and the 50th Anniversary of the Nebenzahl Lectures in front of the Newberry Library.

which have added depth and scope to the Library's cartographic collection.

Julie Sweetkind–Singer head of the Branner Earth Sciences Library and Map Collections, the most recent of the five institutions represented in the first session spoke of the holistic approach they have adopted to collecting. Their strategy of combining their digital and physical collections is to encourage scholarship. The recent donation of David Rumsey's collection of eighteenth and nineteenth century North and South American material and the opening of the Map Center this year have been a major boost to this endeavour. Other special collections include 'Maps of Africa' which is made up mainly of antiquarian maps of the late Dr I. Oscar Norwich and augmented with maps from IMCoS members Caroline Batchelor and Rodney Shirley.

Two further papers were given by **G. Salim Mohammed** Head and Curator of the David Rumsey Map Center at Stanford University and **Lucia Lovison-Golob** from the Afriterra Foundation; both provided a more detailed look at each of their institute's digitisation programme. Particularly interesting was the discussion led by Salim on digital donations whereby donors' maps are scanned, the images are sent to Stanford University for use and long-term preservation and the maps are returned to the owner.

The afternoon presentation 'The Changing American West 1800–1907' by **Chris Lane** of the Philadelphia Print Shop was a cartographical exposition of America's shifting political configuration.

In 1800 it was a three-nation continent, in 1907 Oklahoma and the Indian Territory collectively became the 46th state, increasing the Union three-fold. The expansion and division of vast tracts of the continent into more manageable states and the role slavery played in border decisions were succinctly explained and supported with maps, many of which participants were able to enjoy 'in the flesh' at the Barry MacLean collection the following day.

Our second day was spent in neighbouring Wisconsin, hosted by staff of the American Geographical Society Library at the University in Milwaukee. Over lunch curator **Marcy Bidney** spoke of the Library's history and how the AGS's archives and collection came to the university. In the 1970s, when the New York based AGS no longer had the resources to support its research library, a call was put out for a new home for its collection. Milwaukee was the lucky recipient of the Society's outstanding collection of some 600,000 globes, maps, books and photographs. The transfer of the AGS collection, in sixteen moving vans and with a police escort doubled the Library's collection, which today boasts over 1.3 million items among which there are 520,000 maps dating between 1452 to the present day; 11,000 atlases (with fifteenth-century editions of Ptolemy's *Geographia*); and a unique photography collection that dates back to 1850. The Library staff had prepared for us a very rewarding exhibition of manuscript and printed maps, outstanding among which was the world map signed by Venetian cartographer Giovanni Leardo and dated to 1452/3. The medieval mappamundi was presented to the AGS in 1906 by philanthropist Archer M. Huntingdon (see page 10).

Dr Laura Matthew of nearby Marquette University spoke of an unusual and unexpected find in the drawer of an unused desk in the offices of the AGS. The Ixtepeji scroll is a colonial-era Mexican artefact. It measures over 2 metres long and 50 cm wide and features images and text in Spanish and the Zapotec language. She explained that it functioned as a deed of land ownership, as well as a genealogy of the

Leardo mappamundi.

Wallmaps in the Barry MacLean collection.

village of Santa Caterina in the state of Oaxaca. The work is the subject of an upcoming book by scholars Michel Oudijk and Sebastián van Doesburg, both of the Universidad Nacional Autónoma de México.

Our last visit of day was to the Barry MacLean collection, located in the north suburbs of Chicago. On walking into the library one might be forgiven for thinking that he is specialist collector of wallmaps. With so many he has devised a hanging system more usually seen in a cloakroom. In addition to the numerous wonderful maps related to America's westward expansion, there are hanging examples by de Wit, Bleau, Delisle and a one of a kind example by Hondius Sr. 'Nova et Exacta Totius Orbis Terrarum' (1699).

The MacLean collection goes far beyond wallmaps, 'it includes a broad range of media and formats' from globes, including a terrestrial by Coronelli of 1699, and sheet maps to atlases, games and puzzles. Areas of particular strength are maps and atlases of American states and counties and the exploration of the Great Lakes.

It also boasts an outstanding Asian art collection, including maps, several of which were on display at the Chicago Art Institute's exhibition *The Shogun's World: Japanese Maps of the 18th and 19th centuries*. A tour of the exhibition was led by **Richard Pegg**, director and curator of the MacLean Asian collection. Readers who attended the 32nd IMCoS Symposium in Seoul will remember him from the talk he gave on Cheonhado (world maps) in Korean atlases of the late Joseon period.

A report on the proceedings of the 50th anniversary of the Nebenzahl Lectures will appear in the spring 2017 issue of the journal.

Below
The Ixtepeji scroll. The photograph does not do justice to the scroll. Additionally, as we have had to splice three photographs together there is some distortion. Hopefully we will be able to rectify this with new photographs and an accompanying article on the scroll in the future.

Fig. 1 Detail from Thomas Jefferys' 'A Map of the most inhabited part of New England containing the Provinces of Massachusets Bay and New Hampshire...', 1774. Jefferys Sr (1719–1771) was Geographer to King George III. His *American Atlas*, first published posthumously in 1776, is one of the most important atlases of the period. Boston was on a peninsula jutting into the harbour. To the north was 'Charles Town', site of the Battle of Bunker Hill in June, 1775, and to the south was 'Dorchester Neck', occupied by the Americans in March, 1776. Courtesy of the David Rumsey Map Collection, www.davidrumsey.com

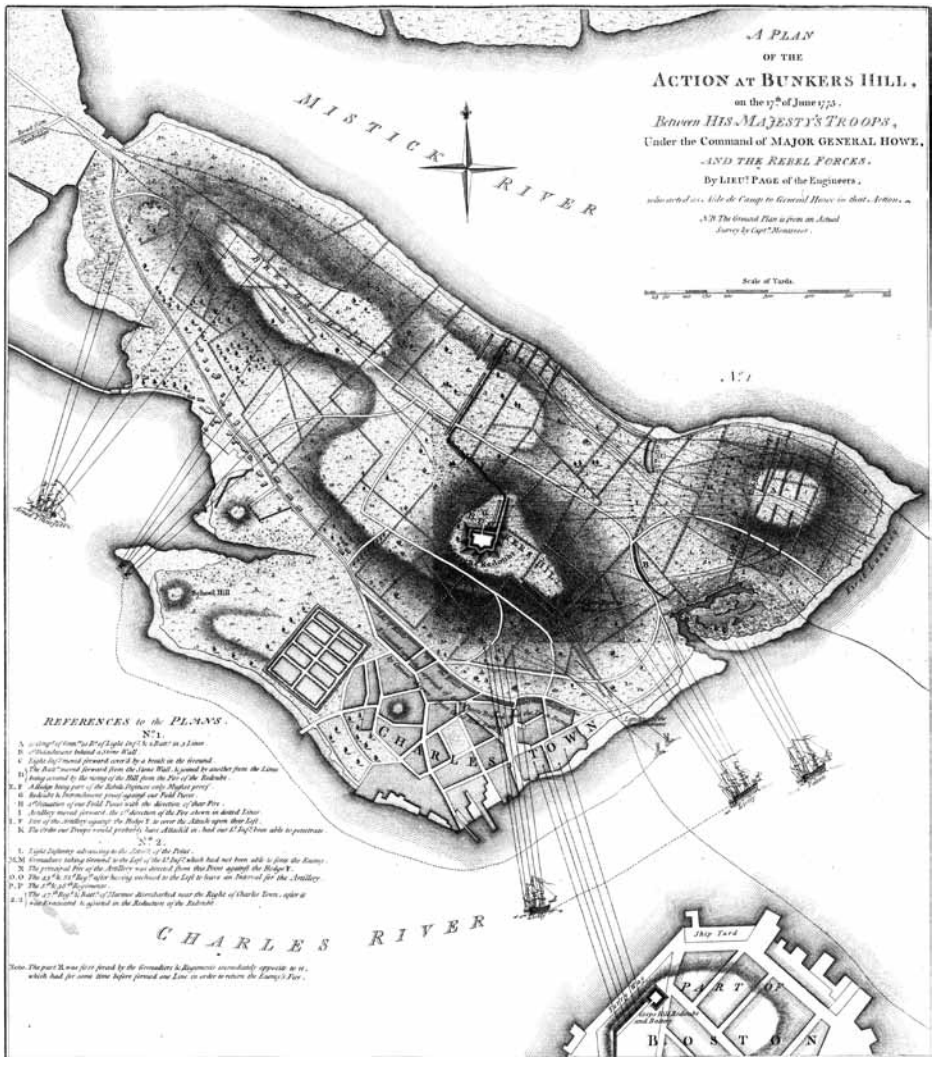


Fig. 2 Lieutenant Page, 'A Plan of the Action at Bunkers Hill, on the 17th of June 1775. Between His Majesty's Troops... by Lieut. Page...', 1775. Lt Thomas Hyde Page, a participant at the battle, drew the map which was engraved by William Faden (see Fig. 4). When the Americans fortified Bunker Hill above the hamlet of Charles Town, their cannon threatened the British in Boston. British General Gage ordered a frontal attack on the well-entrenched Americans. After three assaults, the British captured the hill but took withering casualties. Courtesy Barry Lawrence Ruderman Antiques Inc., www.raremaps.com

ON THE BRINK OF DISASTER

George Washington and the American Revolution, 1775–1776

Ronald S. Gibbs

The seeds of the American Revolution were sown as a consequence of the French and Indian War (1757–63). Faced with a heavy debt from the War, King George III and his ministers were intent on levying new taxes on the colonists who, the Crown reasoned, benefited from the victory over the French. The American colonists, on the other hand, reasoned that because they had fought alongside the British Regulars and helped win victory over the French and Indians, they were entitled to greater political freedoms from the British government. Political leaders in North America began to resist British policies and raised fundamental issues dealing with the inequality of powers, political rights and individual freedom. They wanted the right to representation, separation of church and state, and political independence. They opposed The Crown's policies of restriction of their commerce and of oppressive taxation.[1]

However, for the ideas of an American Revolution to succeed, there first had to be victory over the British forces. The colonists had only citizen-soldiers loosely organised as militia units, commanded often by elected officers among whom only a handful had command experience of any sizeable fighting unit. The common wisdom was that the revolution had little chance of success. George III had the world's most powerful navy, a crack army and resources to also hire thousands of German mercenaries.

For the decade after the close of the French and Indian War political tensions escalated. The hotbed of revolutionary spirit was Boston, Massachusetts, a town of 10,000 inhabitants. On a peninsula, it was connected to the mainland by a narrow neck. The topography of Boston and its environs was critical to understanding the events that developed in the first year of the Revolutionary War. Across the bay to the north was Charles Town, and to the south was Dorchester (Fig. 1). The tensions boiled over when in late 1773, patriots, disguised as Indians, boarded a ship in Boston harbour and threw hundreds of chests of tea into the bay to protest a new royal tax (the Boston Tea Party). As punishment for this rebellious act, the British government quartered troops in the town of Boston and had Royal Navy ships control the harbour.

Open rebellion erupted in early spring, 1775 when British troops marched from Boston, on an April night, to seize a cache of colonial arms in nearby Concord. Two riders, one a silversmith, were dispatched by the Committee of Safety to sound the alarm. Immortalised in Henry Wadsworth Longfellow's poem, 'Paul Revere's Ride' has become part of American folklore. En route from Boston to Concord the British Regulars skirmished with a small band of militia in the village of Lexington. The British troops brushed the militia aside and marched to Concord where they destroyed the colonial arms. On their return the British column found itself in an alarmed countryside, teeming with armed militia, firing at them from behind rock walls and trees. Exhausted from the long march and continual fighting, the British soldiers barely made it back to the safety of Boston on the evening of 19 April. Over the next days and weeks, colonial militia poured in from the countryside and took up positions around the British on the Boston peninsula.

On 17 June, British commanding General Thomas Gage awakened to the news that the Americans had fortified a new position across the harbour, above the hamlet of Charles Town (Fig. 2). His engineers informed him that the American position was called Bunker's Hill. From their positions, American cannon threatened the town of Boston. Four British warships immediately moved into the Charles River and opened fire on the rebel positions while General Gage ordered Major General William Howe to prepare assault troops to take Bunker Hill. Gage and Howe were confident the rebels would flee as soon as the British infantry line advanced toward them.

On the Charlestown Peninsula the Americans were under command of two militia leaders, General William Prescott and General Joseph Warren, a prominent Boston physician. They watched the mighty, scarlet-clad British regiments being ferried from Boston to the beaches of Charles Town. American morale was high; they were well-entrenched and in strong positions to pick off the British as they advanced up a steep hill to get to the militia's positions.

To Howe's horror, the British frontal attack crumbled before the colonists' massed musket fire,

coming virtually as a single sheet of lethal flame and lead. Even a second British frontal assault was beaten back by the gritty, determined militia. Appealing to the honour of the brave British regulars, Howe then ordered a third assault. This wave made it into the American positions as the militia ran out of powder and ball. It became a scene of carnage in the redoubt as the Redcoats sought revenge on the retreating militia, most of whom were able to escape through the Charlestown neck to safety. Exhausted themselves, the Redcoats gained control of Bunker Hill but did not pursue the militia.

Three hundred miles to the south, in Philadelphia, the American Continental Congress was debating as how best to address their grievances to King George. Simultaneously they were deciding on an American commander-in-chief. Although the seat of the war was in New England, Congress wanted unity on this matter among the thirteen colonies. Emerging as the unanimous choice was a Southerner who had seen service on the frontier in the French and Indian War. He was 43 years old, had an imposing military bearing and was a well-respected Virginian planter aristocrat. However, his military command experience was indeed limited; he had never led a unit larger than a regiment. His name was George Washington. Washington accepted the role with humility and left Philadelphia with his retinue for the 300 mile journey to Boston. He took command a few weeks after the Battle of Bunker Hill.

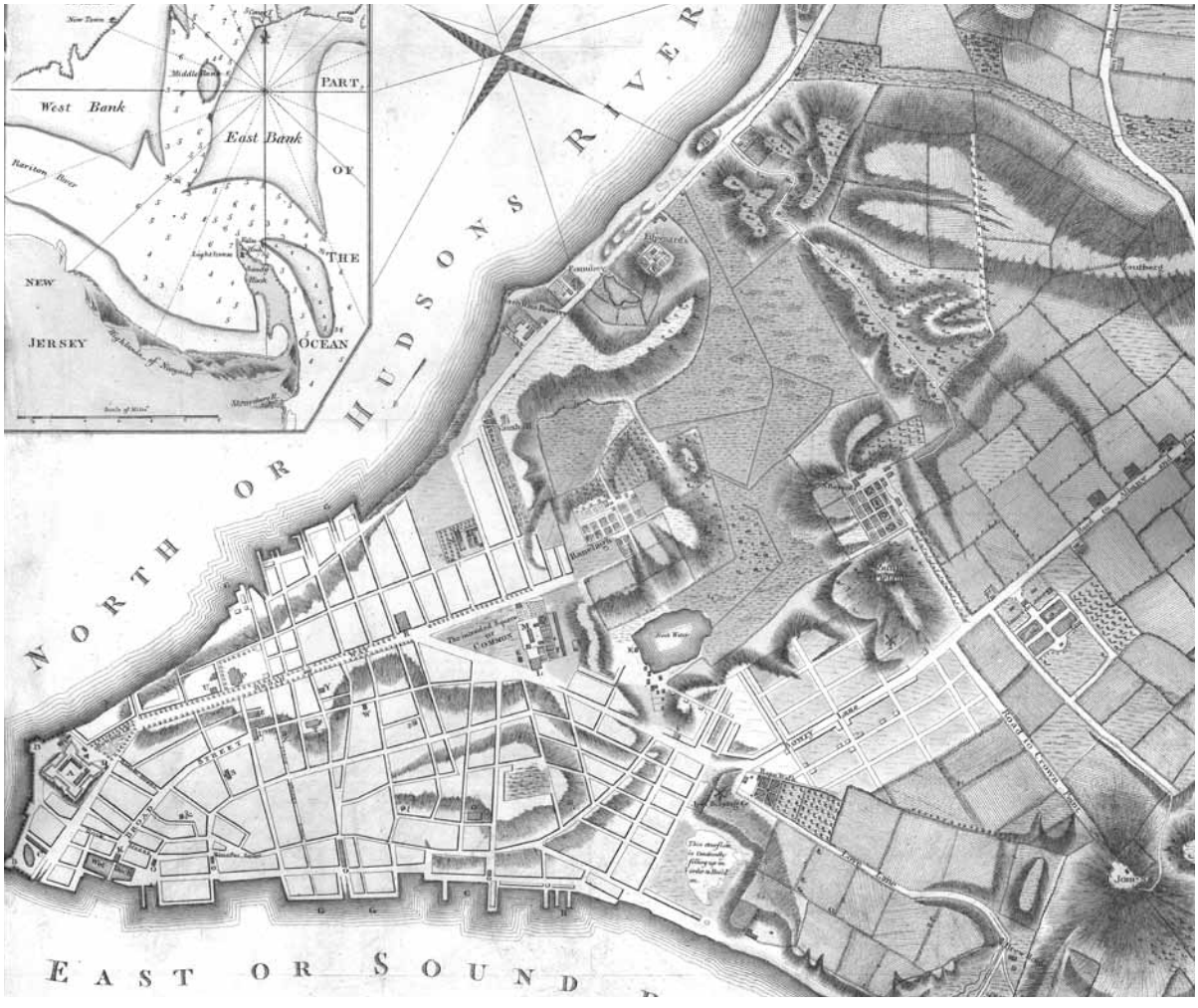


Fig. 3 Detail from 'A plan of the City of New York and its Environs…John Montresor', 1776. Captain John Montresor, a British military engineer, drew this. He was present at Lexington, Bunker Hill and Long Island. It was engraved by P. Andrews. New York City, with a population of 20,000, was the second largest city in North America. For the campaign of 1776, the British aimed to capture it and divide the hotbed New England colonies from the middle and southern ones. Courtesy Barry Lawrence Ruderman Antiques Inc., www.raremaps.com

From his early days Washington was introduced to maps and mapmaking. At age 16, he accompanied a surveying team into the Blue Ridge Mountains and Shenandoah Valley of his native Virginia. The very next year he was appointed surveyor for Culpeper County, Virginia, most likely through the patronage of his mentor Lord Fairfax. His facility with maps served him well as many of his decisions were made after careful consideration of those in his possession. Throughout his career Washington collected maps, and 43 of these were bound together in an atlas after his death. This collection is in the Sterling Library at Yale University in Connecticut. The maps General Washington would have had available to him during the American Revolution helped him plan his manoeuvres and defences against the powerful British and Hessian forces. In particular, they depict the terrain and waterways of New England, New York, New Jersey and Pennsylvania, where the campaign of 1775–76 would take place. (See Works consulted)

Throughout the summer, fall and winter of 1775-76 there was stalemate in Boston, the British holding the town and harbour and the Americans surrounding them. In the last days of winter, with his knowledge of the terrain gleaned from his maps, General Washington implemented a brilliant plan, taking full advantage of a catastrophic British oversight. They had left a promontory overlooking Boston, called Dorchester Heights, undefended, having convinced themselves that no army could possibly ascend and fortify this position (Fig. 1, lower centre). Washington rallied his men and overnight seized and fortified Dorchester Heights – stunning Gage and his command. The vaunted British Army had been outmanoeuvred. American guns could rain fire down upon them. The British had no choice but to evacuate Boston. General Gage negotiated that, if his withdrawal was not harassed, he promised to leave the town of Boston intact. If attacked, Gage warned, he would burn Boston to the ground. Washington agreed. The British embarked their army and a huge number of loyalists and sailed from Boston Harbour to the Canadian port of Halifax, Nova Scotia. As if predestined, this was already a festive day in Boston: 17 March, St Patrick's Day, 1776.

By early spring 1776 the War of the Revolution had been going well for the Americans, but the celebration in Washington's command was short-lived for they knew the British must return. The Americans were puzzled as to exactly where and when the War would be renewed but reasoned that the most likely British target was New York City, the second largest city in North America. With a population of 20,000, it was smaller than Philadelphia, but far larger than the next most populous cities, Boston and Charleston, South Carolina each with 10,000 each.

New York City, situated on the southern tip of Manhattan Island, was already a bustling centre of trade (Fig. 3). Its geography favoured British operations: situated on an island with the network of the Hudson and East Rivers and New York Bay, the city could easily be controlled by the Royal Navy. Adding to its strategic importance for the British command, control of New York by the army, and of the Hudson River by the Royal Navy, would effectively separate the rebellious New England colonies from the middle and southern colonies.

Washington fretted about the seemingly impossible task of defending New York, but Congress had ordered him to do just that. In April, anticipating the British attack, he sent a contingent to build defences of the city. By early summer, Washington received intelligence that a large British fleet had been spotted off the New England coast and was headed south. This was the news he had been waiting for. He marched his army 200 miles to New York and began to deploy them to await the battle. When the British fleet sailed into New York Bay, their hearts sank. They witnessed the largest fleet ever sent into American waters, more than 100 ships carrying 30,000 British troops and German mercenaries. One American observer said that there were so many masts of the British fleet that New York Bay looked like 'all London was afloat'.[2]

The British Army was now under command of General Howe, his brother, Admiral Richard Howe, called 'Black Dick' by his men, owing to his swarthy complexion, was in command of the Royal Navy. In late July 1776 the brothers disembarked the army at Staten Island to refit after the long voyage from Halifax. They spent the next four weeks on Staten Island preparing for the attack on Washington's men. Finally, in late August, the British crossed Lower New York Bay near the Verazanno Narrows and landed on western Long Island at Gravesend Bay to begin their assault on the American positions in Brooklyn. (Fig 4, lower centre).

Washington positioned most of his army in strong defences on Long Island – a front line on the Heights of Guian and a second line in redoubts closer to the East River. So secure was Washington in his position that he chose not to oppose the British landing at Gravesend. Howe took up positions fronting on the Heights of

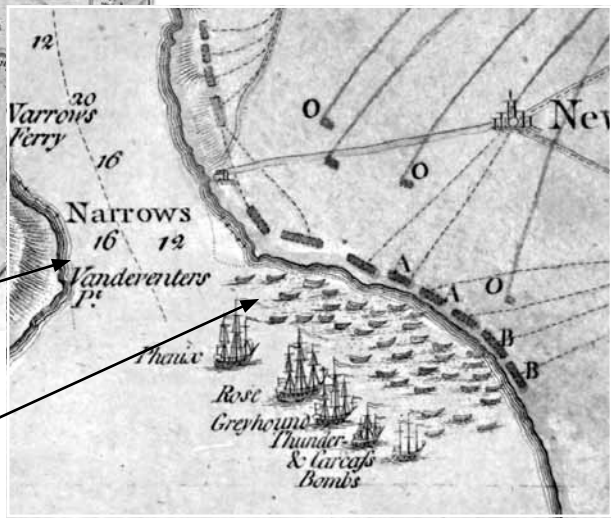


Fig. 4 Detail from William Faden, 'A plan of New York Island with a part of Long Island, Staten Island, & East New Jersey, with a particular Description of the Engagement ... 27th August 1776', 1776. William Faden (1749–1836) replaced Thomas Jeffreys as Geographer to the King and produced many of the most important maps of the war. The British landed on Staten Island (lower left) and resoundingly defeated the Americans in Brooklyn in late August. Washington and his army retreated to Manhattan Island. Courtesy Barry Lawrence Ruderman Antiques Inc., www.raremaps.com

Below **Fig. 4a Detail of Fig. 4 showing Verazzano Narrows and Gravesend Bay, Long Island.**

Guian. On the morning of 27 August, he sent two columns – one British and one Hessian – against the American line on the Heights. At the start of the battle, the American generals were pleased with how things were going. The two enemy columns failed to advance against the strong, barricaded American position.

Shortly thereafter the Americans became confused when they heard cannon and musket fire coming through the woods to their left. Fear struck them when they saw whole regiments of Regulars sweeping toward them from their rear. General Howe, always a brilliant tactician, had caught the Americans in his trap – for the two columns in front were merely feints. The main British-Hessian column under Howe himself had been on an all-night march through 'Flatland', around the virtually unguarded American left. Howe's main column smashed into the American rear, and the two columns on the American front began their attack in earnest. The rout was on; Howe's flanking manoeuvre resulted in thousands of Americans being captured, killed or wounded. Among the Americans captured was General John Sullivan, a hard-fighting Irishman from New Hampshire. Sullivan was Washington's second in command; his capture was a mighty blow.

The army on Long Island was saved from annihilation only by the determined resistance of the American right wing, fighting under General William Alexander. Alexander's men gave precious time for American contingents to wade or swim to safety across Gowanus Creek, and limp back from the Heights to the redoubts on the East River.

A man full of confidence, Howe rested his troops. His virtually unscathed army had the Americans hemmed in from their front, and the Royal Navy controlled the river, preventing any escape to Manhattan. It had been a perfect day for him. He had completely out-generaled Washington and planned to deal with the survivors the next morning.

That night Washington was rowed from Manhattan to the small American enclave at Brooklyn Heights. His Council of War concluded that their position was untenable and that they must evacuate to Manhattan. They would have to cross the East River knowing fully of the mortal threat if uncovered by Admiral 'Black Dick's marauding Royal Navy ships. Their sole hope rested on seamen from Marblehead, Massachusetts. These tough, courageous sailors were under command of flinty Col. John Glover and could handle small boats in any conditions. As the Americans prepared to board for the crossing to Manhattan, a thick fog settled on the East River, immobilising the big Royal Navy warships. By what seemed to many as an act of Providence, the fog concealed their crossing. The next morning when Howe's troops stormed the American redoubts, all they found were campfires set to deceive them. Washington's army had miraculously escaped.

Howe held Washington in disdain. He was furious that the amateur general had eluded him, but he then saw his opportunity to bring the War to a close. He aimed to capture all of Washington's army on Manhattan Island (Fig. 5).

In the American camp Washington was in a deep predicament. Manhattan, only 14 miles long and no more than 3 miles wide, presented another military dilemma: how to defend it against the expected attack

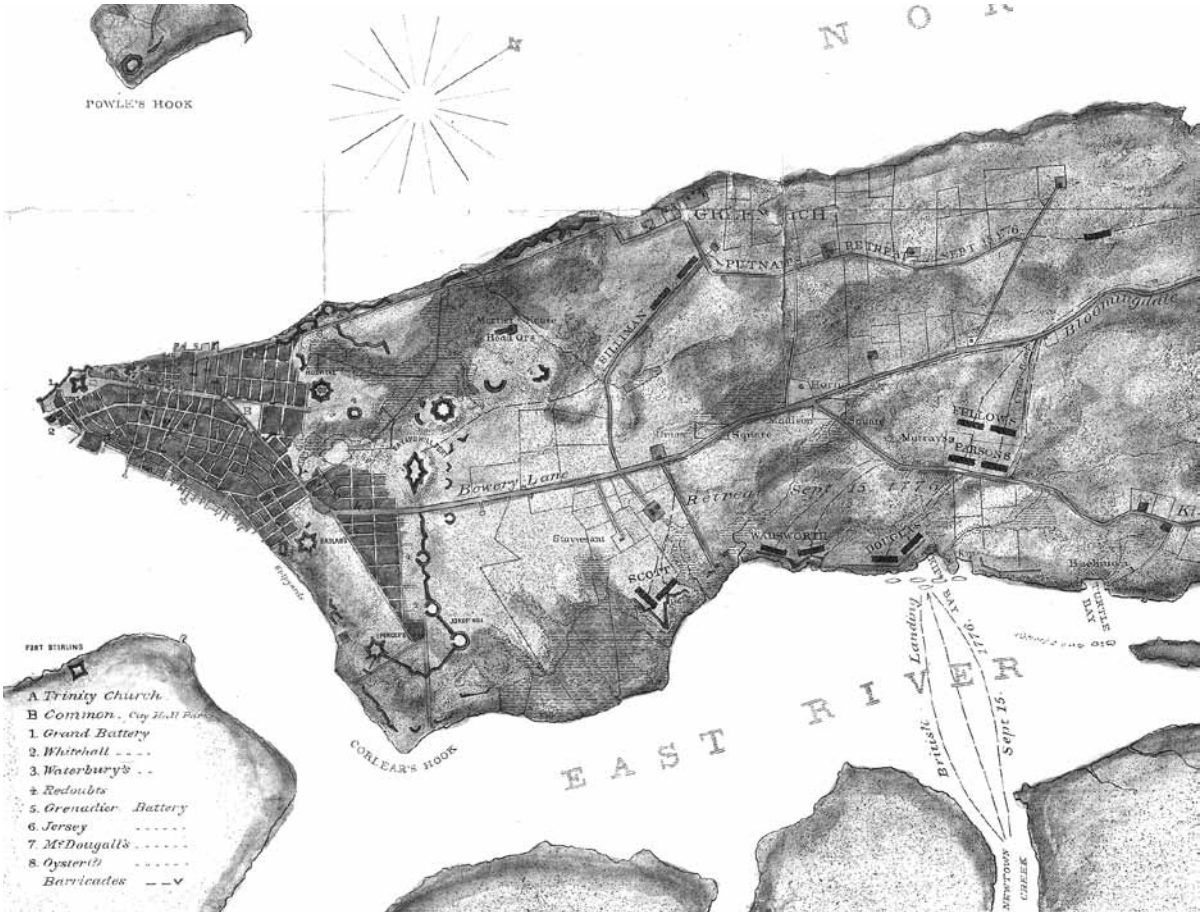


Fig. 5 Detail from 'Map of New York City and Manhattan Island with the American Defences in 1776. Compiled by Henry P. Johnston', Julius Bien Lithographer, 1878. This map was included in Johnston's 'The Campaign of 1776 around New York and Brooklyn' in 1878, originally published by The Long Island Historical Society and reprinted by Da Capo Press, New York, 1971. Two and half weeks after the Battle of Brooklyn, the British attacked the Americans at Kip's Bay on Manhattan. The British and Hessian troops sent the American defenders into a headlong retreat to northern Manhattan. American troops in New York barely escaped capture by using a little known road up the west side of the island. Courtesy Barry Lawrence Ruderman Antiques Inc., www.raremaps.com

from the wily General Howe. In the face of a larger enemy Washington violated conventional military tactics and divided his army. He disposed about one quarter of his nearly 20,000 men in New York City, and almost half were stationed in upper Manhattan, either in Harlem Heights or at Kingsbridge, on the very northern tip of Manhattan, to guard their escape route, if needed, to Westchester. The remainder – only about 5,000 men – were spread thinly over the East River facing Long Island.

Two weeks went by without an attack, then, on 15 September the raw recruits of the Connecticut militia at Kip's Bay awoke to a menacing sight. From their shallow trenches facing the East River, they peered out to see five huge Royal Navy warships, which had slipped into position less than 100 yards off shore with all their guns aimed at them. On that fateful morning the Howe brothers arranged one more deadly surprise for the Americans. Across the mile-wide East River, in Newtown Creek, thousands of Redcoats and Hessians were boarding landing crafts to attack at Kip's Bay just as soon as the Navy's bombardment was complete. At 11 am, their heavy guns opened up in terrifying salvos, and with first broadsides, the Connecticut men panicked and ran inland. With no opposition, British Light Infantry and Grenadiers, and then the Hessians, landed and fanned out south, west and north.

Seven miles to the north in his headquarters in Harlem Heights, Washington heard the British naval gunfire, mounted up with four aides-de-camp and raced toward Kip's Bay. In a wheat field, the general's party ran into the retreating Connecticut militia, but despite his personal commands, they were too panicked to respond. In a rare display of emotion, Washington dashed his hat on the ground and muttered, 'Are these the men with which I am to defend America?'.[3] With British Rangers approaching, a dejected General Washington was led off to the north by his aides.

Howe's officers, meanwhile, drove their men inland, and Howe himself paused at Murray Hill, at the mansion of Robert Murray, a wealthy Loyalist merchant, and his wife, Mary Lindley Murray, who provided General Howe and his staff with a leisurely midday meal. Howe's troops had already reached Bloomingdale Road, the main route north. He had had no reason to hurry; his army had control of the key thoroughfare, and when the Americans, now in New York City, reached this point, his men would easily bag them.

In the City, 4 miles to the south, American General Israel Putnam, a veteran of the French and Indian War, heard the naval cannon firing up at Kip's Bay and sized up the situation instantly. He and his command were in immediate danger of being cut off. Unless he got his men north, through the choke point and up to Harlem, they would be trapped by the British, who had landed above them. He knew he had better move fast. Spiking his precious cannon and leaving even vital supplies behind, Putnam began his march north on a little-travelled road and then through open country, up the west side of the island (as shown in Fig. 5, upper centre) for he had correctly surmised that the enemy must have control of the Bloomingdale Road and must be waiting there to pounce on his retreating troops. The energy exhibited by 'Old Put', as he was affectionately called by his rank and file, paid off handsomely that afternoon when his army slipped by the British holding their position on the Bloomingdale Road.

By the morning of 16 September the British and their Hessian allies controlled the lower two thirds of Manhattan; Washington's Army was in control of the upper third, the area called Harlem Heights. That morning the British sent a crack unit, the famed Black Watch Regiment, to probe the American lines. Each side sent in re-enforcements until the engagement became a large-scale to and fro battle. It was a tactical draw, but it marked the first time in the campaign that the Americans fought well against the British Regulars.

Washington solidified his defences with three well-fortified parallel lines, running east–west across the narrow northern part of Manhattan. His engineers constructed two strong points – one in Manhattan, called Fort Washington in his honour, and one in New Jersey directly opposite, called Fort Constitution. For most of the next month, there was again a stalemate, but in mid-October, the American generals learned that nearly all of Howe's army had been transported by boat to Throg's Neck, at the junction of the East River and Long Island Sound. Washington and his generals decided they must give up their positions in Harlem Heights and retreat from Manhattan to Westchester because remaining in Harlem Heights would put the American army in grave danger of being flanked once again. Down to 13–15,000 men with a huge baggage train, Washington's army began the march northward off Manhattan on 18 October, but there was one additional decision made by the American generals.

They decided to leave Ft Washington defended by 2,600 men who believed they could hold out, if attacked, for days and, if pressed, could descend from the Heights to the Hudson River and escape to Ft Constitution on the New Jersey side. Washington reluctantly agreed with the plan.

Washington marched via Kingsbridge, through Yonkers and Dobb's Ferry. The British were moving northwards – to the east of the Americans – through Westchester in pursuit. In late October Washington took up a defensive position on the hills above White Plains, New York to, once more, await the Redcoats. On a brilliant autumn day, 28 October, Howe's troops attacked. The Americans fought well but were forced to retreat, seeking safety across the Croton River, farther north in Westchester. Over the next days Howe pursued Washington, but the weather turned cold with heavy rain. On the morning of 5 November Washington learned that Howe was breaking camp and heading south. At first, Washington was relieved, but only for a short time, when it dawned on him that Howe had one more surprise in mind before winter weather brought down the curtain on the fighting season. Howe, Washington realised, was preparing to bring the full might of his army on the 2,600 isolated men at the fort bearing his name, back at Harlem Heights.

On 16 November the British launched an overwhelming, three-pronged attack on the fort. One column moved up from the south; one moved down from the north, and a third made an amphibious landing from Harlem Creek and attacked from the east. Washington, who had completed his army's movement from Westchester across the Hudson, was in Ft Constitution and watched the attack on Ft Washington through a spyglass. His heart sank when the great redoubt – thought capable of holding out for days – surrendered in less than five hours. It was a calamity of the highest order – 2,600 men and irreplaceable cannon, small arms, ammunition and other precious supplies were lost – after which there was plenty of finger-pointing, with many in Congress losing faith in Washington's military acumen. The capture of Ft Washington remained one of the greatest American disasters of the entire War.

As bleak as the situation was for Washington in mid-November, it was to get still worse. His army was shrinking from battlefield losses, camp diseases, expiration of enlistments and desertions. He knew he had to keep the army intact to keep the Revolution alive. His army was encamped at Ft Constitution on the New Jersey side of the Hudson when he received alarming news: a large British column, under the very able General Charles Cornwallis, had crossed the Hudson just to his north and was bearing down on them. Cornwallis was an energetic commander and a brilliant tactician. Indeed, it was his idea to execute this surprise night crossing of the broad Hudson amidst a heavy rain and capture Ft Constitution, with Washington in it.

The warning got to the Americans just in time. Leaving their breakfasts on the fire, they began a headlong retreat westward, praying to get to the other side of New Jersey (60 miles), and put the Delaware River between themselves and the pursuing British. After the defeats sustained between July and November, the retreat from Ft Constitution was humiliating for General Washington. He and his army were on the brink of disaster!

Washington stayed just out of Howe's grasp and reached the Delaware River above Trenton on 2 December. He sent scouts up and down the river to gather boats of every kind to ferry his army to the safety of the Pennsylvania shore and deny the British these crafts. Washington completed the westward crossing of the Delaware on 8 December, just as the vanguard of the British arrived on the eastern side of the river.

Generally pre-modern armies did not fight in winter. As roads became impassable from snow and mud and horses had no grass to eat they went into winter quarters. Washington encamped around Newtown, on the Pennsylvania side of the river, screened by a set of hills between him and the Delaware. It was approaching Christmas, but there was no celebrating. Their situation was too dire. The army had dwindled to less than 4,500 freezing, underfed, poorly sheltered men, and many of their enlistments were to expire at the end of the year – in just a few days. Of those remaining, over half were militia or untested recruits. The army was short of clothing, many were clad in only rags, and morale had plummeted to new lows. To make matters worse, American citizenry was losing faith in the cause of independence. Congress remained so fearful of a British attack that they abandoned Philadelphia and reconvened 100 miles to the south in Baltimore, Maryland.

On the New Jersey side of the Delaware Howe made traditional winter plans. He stationed several Hessian regiments at the end of the line, in two hamlets along the Delaware: Bordentown and Trenton. Several British regiments were posted in Princeton, New Brunswick and other New Jersey villages in a string back to New York. Howe and Cornwallis considered the fighting season over and returned to New York to enjoy the pleasures of winter in the city. The campaign of 1776 had been a great success for them, and they declared it over.

On the Pennsylvania side, on the morning of 24 December, Washington called his senior officers for a Council of War in his headquarters at the Thompson-Neely House. He reviewed their options. One was to sit out the winter here on the Delaware, but by spring the army would likely have dissolved, he warned. The second was to retreat into western Pennsylvania, Maryland or Virginia. Though this manoeuvre might keep the army intact, from these remote locations, the army would serve no purpose against the enemy. Washington concluded that both these choices spelled defeat. Even with their backs to the wall, Washington argued for an attack! He meticulously laid out the plan he had been working on, based on detailed intelligence about enemy strength and disposition on the New Jersey side of the river. The American army would attack at the end of their line with the objective of taking Trenton. There, eight miles to the south, was a garrison of 1,400 Hessians, with no other British or Hessian troops posted close enough to support them. Washington declared his men would have the advantage of total surprise by attacking the morning after Christmas, when the German units would be groggy from heavy celebrating and drinking.

On Christmas night, his main army of 2,400 men marched from Newtown and started to cross the Delaware at McKonky's Ferry (Fig. 6, upper left). Washington ordered another unit of 2,000 men to cross that same night farther south to tie up the Hessian corps in Bordentown. A further band of about 700 was ordered to cross at midnight, just opposite Trenton, seize the Bordentown Road to prevent any Hessian retreat from Trenton. Washington was frequently given to overly complex plans, and this one was exceedingly so, since the three units had no easy means of communicating. Nevertheless, there was excitement and morale was high. Washington encountered adverse conditions. There were ice flows, cold winds, strong currents and sleet mixed with snow, which delayed the large Durham boats used in the crossing. He worried that his element of surprise would be lost. His main column did not get fully to New Jersey until 3 o'clock in the morning. It was just four hours before first light, the appointed hour for the attack, and there was still an eight-mile march ahead.

Unknown to Washington, the generals ordered to cross down river – across from Bordentown and Trenton – sized up the conditions on that terrible night and assumed the attack must be off. They did not cross. Washington's force marched on to Trenton alone.

After the crossing, the two bands that did cross were divided into two columns. The right was commanded by General John Sullivan, who had been captured in August at Long Island but had since been exchanged. This column was to march along the River Road and if all went according to plan was to enter lower Trenton. The other column was commanded by Washington's favourite and most steadfast general, Nathaneal Greene, a Rhode Islander of Quaker origin. His column was to march along the Pennington Road and attack Trenton from the north or upper side. Washington decided to ride with Greene's column. If all went well, the two columns, marching a mile apart through the night, were to converge on Trenton and attack simultaneously from both ends of the town, as close to dawn as possible. The complexity of the plan and the inclement weather made the chances of success dim, but there could be no turning back.

Just after 8 o'clock Greene's column marching along the Pennington Road engaged a small Hessian outpost, just outside Trenton. These Hessian pickets were quickly forced back, but sounded the alarm of the imminent American attack. At a commanding position in upper Trenton, Greene's men set up cannon and began a raking fire on the town. Fortune was with the Americans as Sullivan's men, who were approaching Trenton along the River Road, heard the cannon fire off to their left and hurried their pace. Incredibly, the two American columns began their attacks on opposite sides of Trenton within minutes of each other.

Before the Hessians could form, the Americans, with musket fire and bayonets, were upon them. It was all over in less than an hour. The Hessians surrendered in an orchard in lower Trenton. Their commander Col. Rall was killed with over 1,000 of his force killed, wounded or captured. Only 200 Hessians escaped to the other German post in Bordentown. When Washington accepted the surrender, it was a sweet reprieve, a brilliant, though small victory following defeat after defeat and retreat after retreat.

Washington had no time for gloating. He had to deal with his tactical situation. He still did not know what happened to his units that had failed to cross. With only half the men he expected, and 1,000 prisoners, and knowledge that the Hessian and British regiments would soon be in motion against him, Washington took the only rational course. He marched his army back to McKonky's Ferry and re-crossed the Delaware to the safety of Pennsylvania.

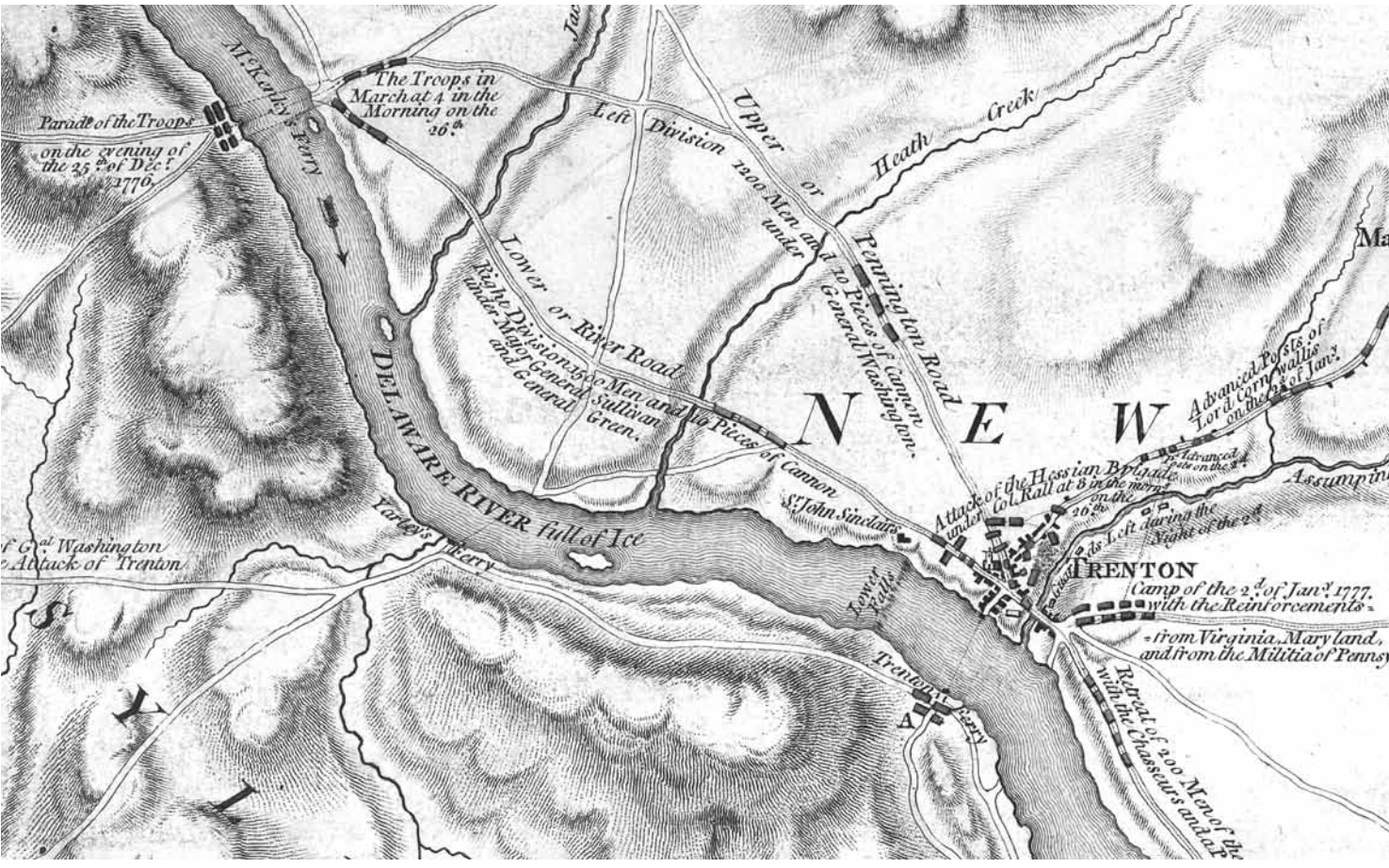


Fig. 6 Detail from William Faden's 'Plan of the Operations of General Washington against the Kings Troops in New Jersey from the 26th of December 1776 to the 3d January 1777', 1777. With his back to the wall, General Washington decided to attack a Hessian outpost at Trenton, New Jersey on the day after Christmas, 1776. His small but brilliant victory here and a succeeding victory over British regulars in nearby Princeton the next week brought new life to the American cause of independence. Courtesy Barry Lawrence Ruderman Antiques Inc., www.raremaps.com

The next day, an express rider brought Washington incredulous news. The 2,000 men, previously unaccounted for, had crossed the Delaware – over 24 hours late – and were now in Trenton. They reported no signs of the enemy. Not wanting to miss an opportunity, Washington decided to cross the Delaware once more, to consolidate his forces in Trenton and to attack the enemy in Princeton and regain control of West Jersey. The American army crossed back into New Jersey early on 29 and 30 December, but because of ice in the river, all the supplies and artillery did not make it to the New Jersey side until the 30th. Later that day, when the American army reached Trenton, Washington sent out scouting units while he fortified a defensive position with the Delaware on his left and Assumpink Creek on his front (Fig. 6, lower right). All was quiet on New Year's Day 1777, but the next afternoon, American scouting units engaged and delayed a large British force, under Lord Cornwallis, approaching from Princeton. Washington had not counted on a winter British offensive, but Cornwallis was hopping mad and seeking revenge. By nightfall, Lord Cornwallis fronted the British on the opposite side of Assumpink Creek planning to capture the Americans in the morning.

Once more, Washington was in a predicament, outnumbered in front and hemmed in by the river on his left. The Americans were masters of putting up strong defences overnight, but this time the ground was frozen. Ever resourceful, Washington once again demonstrated his tactical skills. With intelligence from local militia, he learned of a road which led due east and then intersected another road running directly north to Princeton. On the night of 2 January Washington executed a complex and dangerous manoeuvre, disengaging from Cornwallis' force on his front and marching around the British left. Had the British learned of Washington's withdrawal that

night and attacked him in his flank, it would have been a disaster, but Washington took that risk and completed the move without Cornwallis getting the slightest hint of it.

The next morning, 3 January when Cornwallis began his attack on the American positions, he was once again astonished to find that the American fox had escaped his grasp. Washington's force was already 8 miles to the northwest and collided with three British regiments marching from Princeton toward Trenton. In a hot engagement, the Americans forced them to retreat. Washington and his men entered Princeton, but quickly learned that Cornwallis was now in pursuit from Trenton. With his men exhausted, Washington wisely decided he could do no more. He moved to winter quarters in the village of Morristown, New Jersey where the hills would protect the army and where his men would find shelter. Not able to follow Washington into these hills, Cornwallis returned his whole force to New Brunswick, New Jersey.

Here the campaign ended, but news of the brilliant victories at Trenton and Princeton breathed new life into the cause of independence. Washington, at last, received credit as a superior strategist and leader and as a successful battlefield commander. No matter what adversity Washington faced, he responded with bravery, an iron will, and determination. He inspired his men and rallied them time after time. The future of the United States hung by a mere thread during five critical months in late 1776 and very early 1777. And, indeed, the destiny of the Union in those months rested heavily on the shoulders of one man, General George Washington.

Notes

1 See www.loc.gov/exhibits/creating-the-united-states. Exhibit from 12 April 2008–5 May 2012. Accessed 19 July 2016.
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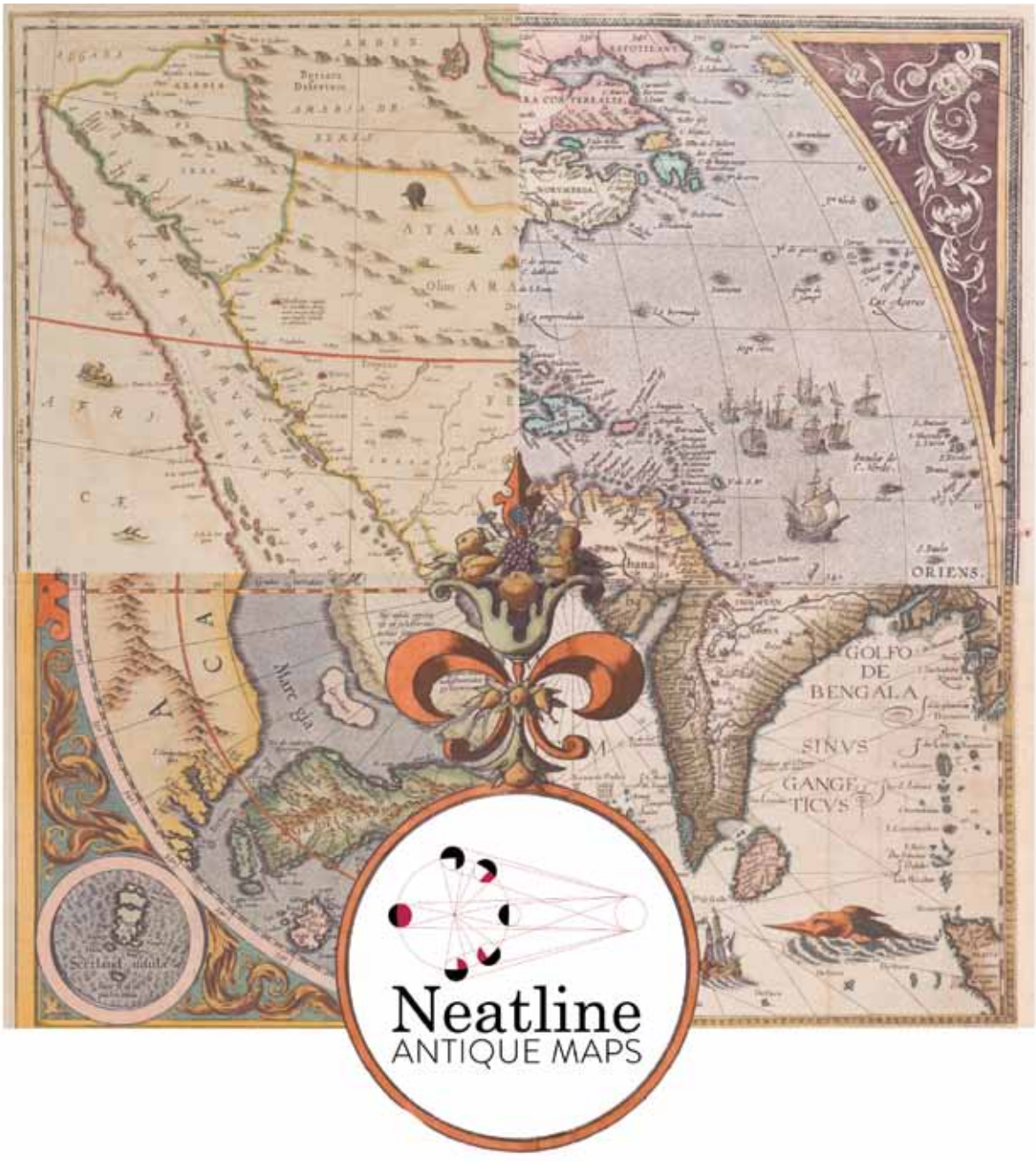

How can we imagine what our lives should be without the illumination of the lives of others?
James Salter

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COMPILING 'ALL THE RECENT DISCOVERIES'

Aaron Arrowsmith and mapping Western North America, 1790–1823

James Walker

From 1790 London-based cartographer and publisher Aaron Arrowsmith (1750–1823) regularly published world and regional maps that reflected the most recent European discoveries along the Northwest Coast (NWC) and western North America.[1] European maritime exploration of the NWC had begun in 1741 with a Russian expedition commanded by Vitus Bering.[2] The Spanish, fearing ensuing Russian commercial and imperial expansion to the continent, renewed their explorations along the NWC, which had been suspended since Sebastián Vizcaino's 1602–03 expedition. In 1774, 1775 and 1779 Spanish naval personnel explored and mapped extensive sections of the Pacific Coast from San Blas, Mexico to Prince William Sound, an expanse of nearly 37 degrees of latitude, but official policy prevented widespread public dissemination of this new information.

When the account and charts of James Cook's third voyage (1776–80) were published in 1784, Europeans learned about the complex geography of the NWC between 43° and 70° north latitude, and of the potential rich market for pelagic animal fur.[3] The first English fur traders, James Hanna and James Strange, arrived on the NWC the next year and were followed by John Meares (1786–87); Nathaniel Portlock and George Dixon (1786–87); and Charles Duncan and James Colnett (1787–88).[4] Between 1785 and 1795 an estimated 35 English and 15 American ships traded on the NWC between 42°–60° north and their reports and maps were responsible for generating all of the new geographical knowledge of the NWC. English shipowners operated under licensing regulations of the East India Company (EIC) and South Sea Company who required English captains turn over copies of log books, accounts and charts to Company authorities upon return to London. Alexander Dalrymple (1737–1808), the unofficial EIC hydrographer, a post he assumed in 1779, and member of the Royal Society, compiled these materials and often privately published charts of harbours and sections of this coastline.[5] Dalrymple interpreted these first reports of the NWC archipelagos as supporting his belief in the existence of a northwest passage. He envisioned that the discovery of such a navigable route would facilitate the union of the EIC and Hudson's Bay Company (HBC) and thereby extend a British mercantile monopoly across the continent.[6]

Dalrymple regularly employed several London-based commercial services to engrave and print his maps probably because of their superior technical expertise.[7] Some time before 1790 he developed a working relationship with Aaron Arrowsmith. Although speculative, it is likely that Dalrymple considered an association with Arrowsmith as an opportunity to use the commercial map trade to promote and disseminate new knowledge of British maritime 'discoveries' and hegemony on the NWC. As a result of their association Arrowsmith obtained access to maritime fur traders' records and charts. Indeed, Arrowsmith credited Dalrymple, among others, for information on new discoveries that he incorporated into his world maps of 1790 and 1794.

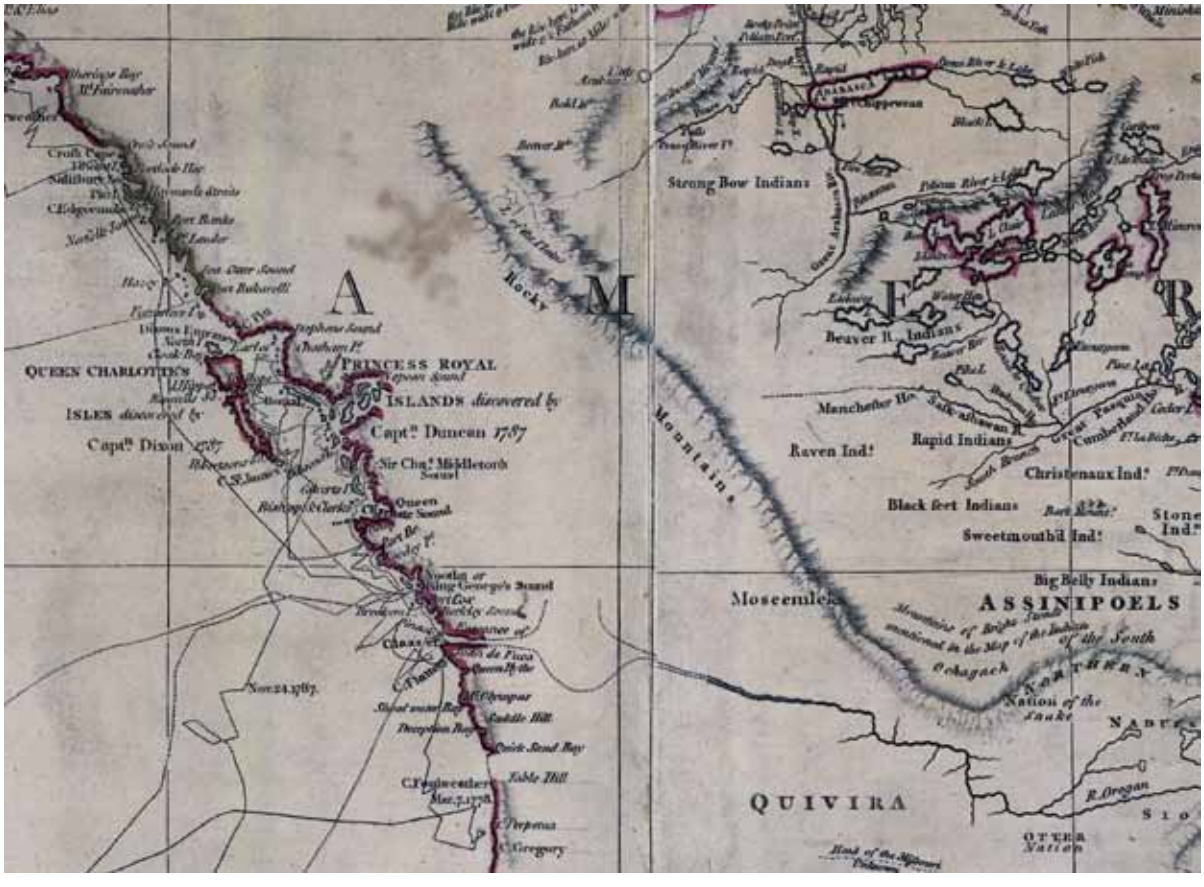
Arrowsmith also gained access to information about recent discoveries in the interior of the continent. Independent fur traders and employees of the London based HBC had begun to map the vast complex typography and hydrography west of Hudson's Bay following the reconnaissances of the French Canadian fur trading family La Vérendrye executed between 1731 and 1743.[8] HBC officials restricted access to these cartographic records until Samuel Wegg, Governor of the HBC from 1782 to 1799 and treasurer (1768–1802) of the Royal Society, championed a policy of promoting HBC activity by publishing its cartographic records.[9] Dalrymple enjoyed Wegg's confidence, and he facilitated his association with Arrowsmith. By 1795 Wegg and the London committee of the HBC had made Arrowsmith their unofficial cartographer.[10] This allowed him direct access to the charts and maps of HBC surveyors that arrived each fall from factories on Hudson's Bay. These surveyors/explorers included Philip Turnor, David Thompson (before 1797), Peter Fidler, Samuel Hearne, Joseph Howes and Donald McKay. Several of these invaluable cartographic

records have not survived; presumably they were retained by the Arrowsmith firm and were lost in the bombing of London during World War II.[11] Arrowsmith also obtained information directly or indirectly from the accounts of surveyors/explorers of the Montreal-based North West Company (NWCOM) including Alexander MacKenzie, Peter Pond, Simon Fraser and David Thompson (after 1797).[12] He also benefitted from his continued association with Dalrymple. From September 1795 to November 1796, Arrowsmith served as an assistant to Dalrymple, who had been newly appointed Hydrographer to the Admiralty, thus gaining access to the accounts of Capt. George Vancouver and other commanders of ships of the fleet commanded for survey work by the Admiralty.[13]

In summary, Arrowsmith's long-term professional connections with Dalrymple, Wegg and others allowed him to obtain regular access to the documents and details about the most recent discoveries along the NWC and in western North America. For over 30 years Arrowsmith compiled, interpreted and edited geographic information from maritime and overland explorers, surveyors and from indigenous sources, and he regularly reissued splendid engraved wall maps of the world and North America. British and American statesmen, geographers, and many other cartographers used these maps to help develop policies, plan explorations and disseminate knowledge.

Between 1790 and his death in 1823 Arrowsmith Sr operated his firm from three successive London locations. In 1810 he was named Hydrographer to the Prince of Wales, and in 1820, Hydrographer to the King.[14]

In this article I will briefly describe eight selected maps from Aaron Arrowsmith's lifetime that illustrate his understanding of developing knowledge of 'all the new discoveries' of the NWC and interior. I emphasise his assiduosness in seeking new information, how he used it, and how explorers, statesmen, and other cartographers consulted and reproduced his maps. I have drawn heavily upon the work of many scholars of Arrowsmith and his work including Barbara Belyea, Richard Ruggles, Coolie Verner, Warren Heckrotte and others.



Part 1: Two maps of the World (1790 and 1794)

On 1 April 1790, from his newly established business at Charles Street, Soho, Arrowsmith published a large (56 x 79 in/142 x 183 cm) wall map of the world: 'Chart Of The World On Mercator's Projection, Exhibiting all the New Discoveries to the present Time…'.[15] He did not issue an accompanying geographic description, but in The National Archives a letter in his hand lists multiple printed and manuscript sources for this map. Yet, judging from the information on the map, this list is incomplete.[16] The section of map pertinent to this discussion covers the NWC and interior from latitudes 45° to 55° (Fig. 1).[17] Here Arrowsmith prominently included the geography and toponomy of several English captains who traded along the coast from 1785–88. In so doing, Arrowsmith both reflected new geographical knowledge and helped to superimpose a British identity on the region. On this map, Arrowsmith credited George Dixon with the discovery of the 'Queen Charlotte's Isles' in 1787 and incorporated several of his place names (many drawn from prominent British personages) that remain today, including Port Banks, Dixon's Entrance, North Island and Cloak Bay (named for the large number of fur garments obtained there). Farther north, he noted Portlock Harbour named by Dixon's sailing partner Nathaniel Portlock.

A legend on the mainland opposite the 'Queen Charlotte's Isles' noted the 'Princess Royal Island discovered by Capt. Duncan in 1787'. Nearby, Arrowsmith tracked Charles Duncan's route on his ship *Princess Royal* and that of his sailing partner James Colnett on the *Prince of Wales*. Duncan skirted the eastern side of the 'Queen Charlotte's Isles' and named several places, including 'Bishops and Clerks' Island and 'Sir Cha^{s} Middleton's Sound' (present-day Fitzhugh Sound) and two locations whose names remain today, 'Nepean Sound' and 'Calverts I.' Arrowsmith also used place names he obtained from accounts of John Meares' trading expedition to the coast in 1788 and 1789 including Port Cox, in Clayoquot Sound on Vancouver Island, and from William Douglas' expedition in 1788, including 'Sea Otter Sound'. Arrowsmith amended this information on subsequent states of his world map. On the 1799 state, for example, he depicted the most recent discoveries and some names from Vancouver's expedition and eliminated references to Duncan's less complete descriptions, thus simultaneously updating both the 'progress' of new surveys and a more authoritative set of British associated place names.

In the interior (Fig. 1, lower right) at 45° the 'R. Oregan' flows northwestward from its origins in several lakes and connects via a dotted line into the 'Entrance of Juan de Fuca' at 49°. This is perhaps the earliest cartographic version of the hypothetical River of the West (a long conceptualised river originating from the interior) emptying into the Pacific Ocean at this particular latitude.[18]

Other mariners and cartographers quickly adopted this construct of the River of the West. It is likely that the British trader Meares adopted Arrowsmith's depiction for a map accompanying his account published in 1790.[19] American geographer Jedediah Morse depicted it similarly for a map accompanying several editions of his *American Gazetteer*.[20] Indeed, this cartographic concept, traced to Arrowsmith, contributed early on to Thomas Jefferson's vision for a transcontinental exploring expedition. In January 1793 he proposed this venture to the French botanist and explorer André Michaux explaining, 'It would seem by the latest maps as if a river called Oregon… entered the Pacific ocean not far southward of Nootka Sound'.[21] Later, Dalrymple also made use of Arrowsmith's world map, and the British foreign secretary, the Duke of Leeds, invoked the map in 1790 as part of his case against Spain during the Nootka Controversy over contested territorial sovereignty of Great Britain in the Pacific Northwest.[22]

Above the Arctic Circle (not illus.) Arrowsmith recorded for the first time the approximate 3,000-mile trek from 'Ft. Chippewean' (on the western shore of 'Arabasca Lake') to the Arctic Ocean made by Alexander MacKenzie between June and September 1789. Arrowsmith added a legend affirming the well-placed source of information for this exploration: 'By Permission of Simon M^{c}. Tavish Esq.^{r} [founding partner of the NWCOM] is correctly delineated the Discoveries of M^{r}. M^{c}. Kenzie laid down from his original Journal in the Year 1789'.

While Arrowsmith's 1790 map was an authoritative source of universal knowledge about recent European exploration, it also became a tool of political purpose, and a construct of a British identity in the Pacific Northwest during the Nootka Controversy between Britain and Spain.[23] The place

Fig. 1 The Pacific Northwest section of Arrowsmith's 1790 'Chart of the World on Mercator's Projection…' Other cartographers copied this geographic and toponymic information ensuring dissemination of Arrowsmith's reputation and the concept of a British identity on the region. Reproduced by permission of the National Library of Scotland.

names and legends on Arrowsmith's map eclipsed the fact that explorers other than British had been there or the existence of large and culturally diverse numbers of indigenous communities.

In January 1794 Arrowsmith published 'Map of the World on a Globular Projection, Exhibiting Particularly the Nautical Researches of Capn. James Cook, F.R.S. with all the Recent Discoveries to the Present Time'. He dedicated it to Dalrymple and included portraits of Cook and Dalrymple within elaborately engraved cartouches. Simultaneously, he published *A Companion to a Map of the World* that was principally a treatise on map projections, but also included a list of the sources he used to compile his world map.[24] This list tallies nearly 135 books, maps, charts and manuscripts. The North American sources include multiple manuscript surveys by HBC surveyor Philip Turnor and NWCOM surveyor Alexander MacKenzie; 'Tracks and Settlements of the Canadian Traders in the Interior Parts of the Country'; and three manuscripts 'North of Churchill…by an Indian'. Arrowsmith acknowledged his indebtedness to Dalrymple 'who generously presented me the whole of his valuable geographical publications, consisting of 632 Maps, Charts, Plans, &c. accompanied with near 2,000 pages of letter-press'. Arrowsmith also expressed gratitude to many others including Fellows of the Royal Society, the Secretary of the Admiralty, and to 'The Honorable Company of Merchants trading to *Hudson's Bay'*. During the late eighteenth and early nineteenth centuries, as Matthew Edney notes, the relationship between mapmakers in England and those who represented the state, members of the Royal Society, Admiralty, and others of London's intellectually elite, must be understood in the context of cartography 'as a socially constructed rather than as a purely intellectual system'.[25] Arrowsmith's tributes to his benefactors indicate familiarity but also evidence of his unequal professional and social hierarchical status in relation to his patrons.

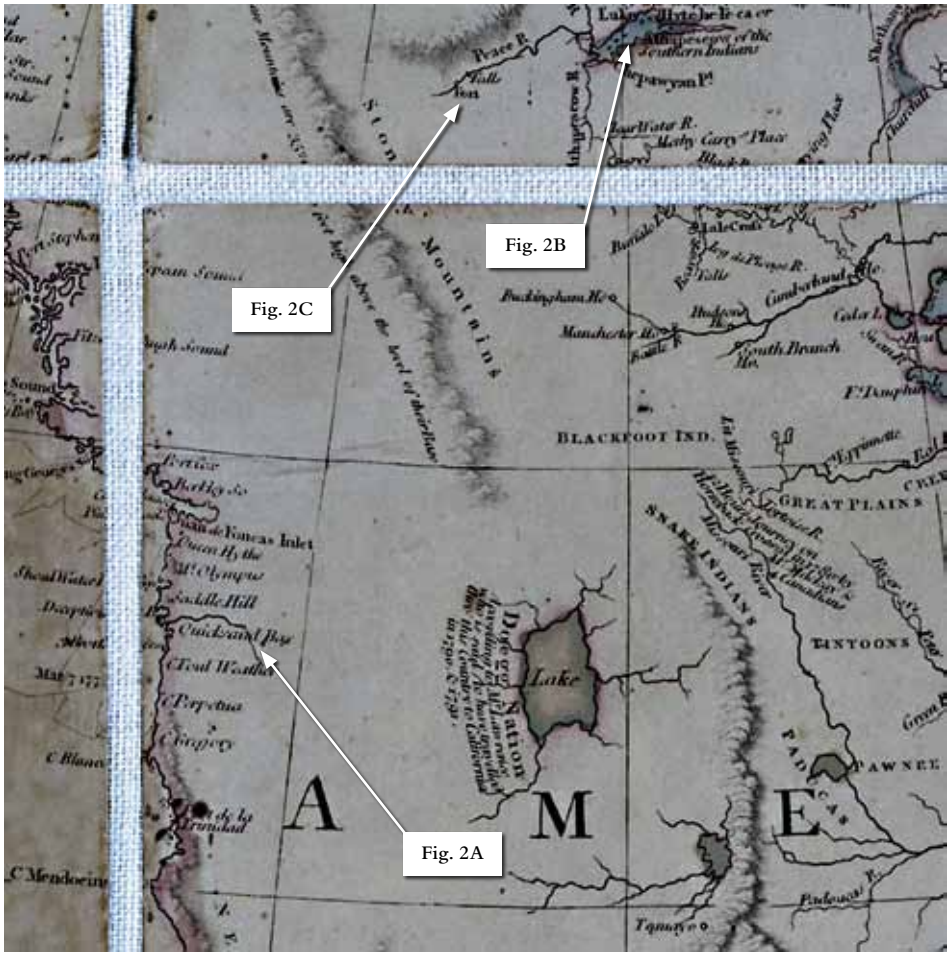


Fig. 2 Section of Arrowsmith's 1794 world map with many additional place names along the Washington and Oregon coast and the earliest printed illustration of the (unnamed) Columbia River. Courtesy of the Norman B. Leventhal Map Center at the Boston Public Library.

Nevertheless, this relationship was symbiotic. Arrowsmith was provided with privileged material, which he could use to generate financial gain and prestige. In return, 'mapmaking was integral to the fiscal, political, and cultural hegemony of Europe's ruling elites'.[26]

Along the NWC on this 1794 map, much of Arrowsmith's typography and toponymy are similar to his earlier world map, but he introduced new information in the region just south of 50° north. He eliminated the conceptual 'R. Oregan' connecting the interior with 'Juan de Foncas Inlet'. And south of 'Deception Bay', he drew an unnamed river at 46° (Fig. 2A).[27] This is undoubtedly the first printed cartographic depiction of the Columbia River.[28] It is likely that Arrowsmith made both changes based on incomplete information he obtained from the accounts and charts which Vancouver had sent to the Admiralty in July and August 1793 with Lts Zachary Mudge and William Broughton. If so, it is puzzling that Arrowsmith did not also depict Vancouver's exploration of Puget's Sound and the insularity of Vancouver Island. Also, Vancouver and Broughton are omitted in the list of credits in his *Companion*.

In the interior, Arrowsmith incorporated much of the information from the explorations of HBC surveyors Philip Turnor and Peter Fidler, made between 1789 and 1792, into the Athabasca Country from the Saskatchewan River to the south shore of Great Slave Lake (not illus.) and east end of Lake Athabasca (Fig. 2B).[29] 'Buckingham Ho.' on the (unnamed) North Saskatchewan River wasn't seen by Turnor, but was under construction when visited by Fidler in late 1792. Both men made composite maps based on personal observations and 'from Canadian and Indian information' although, as Belyea notes, Fidler scrupulously distinguished between indigenous maps and his own; other mapmakers such as Turnor blended native information with their own surveys.[30] Along the 'Peace River' (Fig. 2C)., the feature 'Fort' locates a NWCOM site (Fort Forks), at that time the westernmost French, or English speaking, habitation in North America.[31] This fort was the 1792–93 overwintering site for Alexander MacKenzie and John Finlay on their trek to the Pacific Ocean.[32]

The new discoveries on Arrowsmith's 1794 map did not go unnoticed by other mapmakers. In 1796 John Reid in New York published William Wintherbottom's *The American Atlas* which included 'A General Map of North America Drawn From the Best Surveys 1795'.[33] This map was an almost exact copy of the North American section of Arrowsmith's world map and the first appearance on an American authored map of the still unnamed, Columbia River. Arrowsmith reissued new states of his 1794 world map at least four times to 1814.[34]

'Plan of the River Oregan from an Actual Survey… Published 1st. Nov. 1798'

The first printed chart specifically centred on the Columbia River, 'The Entrance of Columbia River', was one of three insets on a larger map of the NWC prepared by Lt Joseph Baker for the atlas accompanying the 1798 publication of Vancouver's *Voyage of Discovery*.[35] It delineated approximately 30 of the nearly 100 miles of the Columbia River that William Broughton surveyed in October 1792. Approximately six months after publication of *Voyage of Discovery*, Arrowsmith published his 'Plan of the River Oregan' (Fig. 3).[36] While Arrowsmith, at this time, no longer held an official position with the Hydrographic Office of the Admiralty, Dalrymple remained its Hydrographer, which probably ensured that he maintained access to Vancouver's surveys. His 'Plan' reproduced the entirety of Broughton's 8ft/2.4m long manuscript chart from the mouth of the river at the lower left to Point Vancouver at upper right, nearly 100 miles upstream.[37] Arrowsmith drew this map at approximately the same scale as on Vancouver's inset chart, but incorporated many more place names that had been bestowed by Broughton, several of which remain today: 'Baker's Bay', 'Young's River', 'Tongue Point', 'Grey's Bay', and others. We can only speculate why Arrowsmith continued to choose the toponym 'Oregan' to identify the river instead of adopting Vancouver's use of Robert Gray's name, 'Columbia'. Interestingly, in 1798 he issued an updated edition of his 1794 world map on which he marked both 'R. Oregan' and 'Columbia R.'.

Arrowsmith's 'Plan of the River Oregan' was the principal survey of the Columbia River consulted by mariners to the area for nearly the next three decades.[38] The Arrowsmith firm republished this chart in 1831 and 1840.[39]

Part 2: Nineteen states of 'A Map Exhibiting all the New Discoveries in the Interior Parts of North America…' [hereafter Map of NA] with descriptions of five states from 1795–1818

In the *Companion* to his 1794 world map Arrowsmith noted, 'Speedily Will Be Published A Map of that Part of North America which is included between the

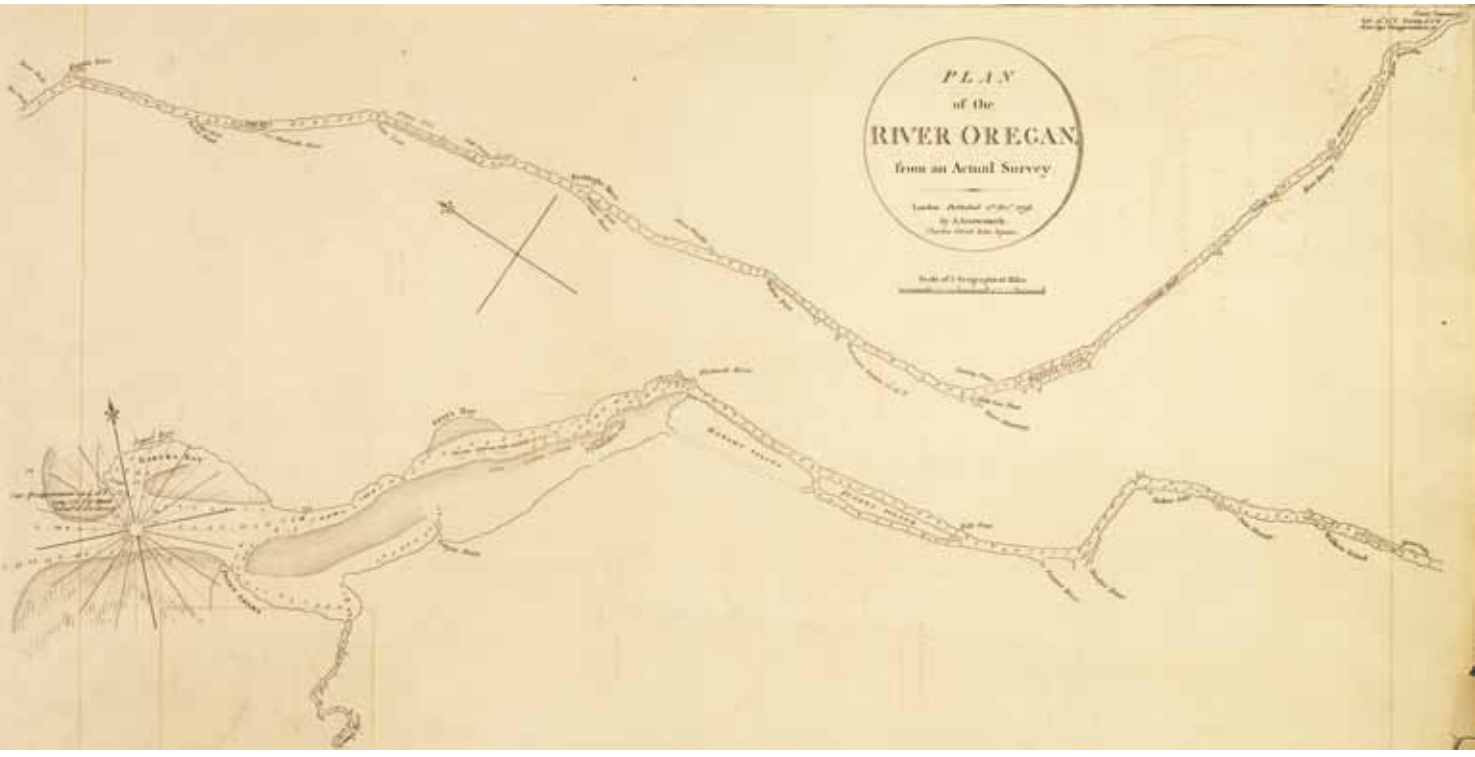


Fig. 3 Arrowsmith reproduced William Broughton's survey of the River Oregan from its mouth (lower left) to Point Vancouver (upper right). Courtesy of the Royal British Columbia Museum, BC Archives.

Latitude 45.° and 70.° North…exhibiting all the new Discoveries in the interior Parts of that Continent'.[40] On 1 January 1795 he published the first state of this large map (35 x 66 in / 88 x 167 cm). Throughout 1850 the Arrowsmith firm published nineteen states of the map, fifteen of these during Aaron Arrowsmith's lifetime.[41] Several scholars have commented on the difficulties in establishing their precise publication dates.[42]

With considerable input from Barbara Belyea, Warren Heckrotte and others, the following table reflects current understanding of the chronological sequence of printed states of Arrowsmith's 'A Map Exhibiting all the New Discoveries in the Interior Parts of North America Inscribed by Permission To the Honorable Governor and Company Of Adventurers Of England Trading into Hudsons Bay…' until the last recorded date of publication in 1850. To avoid confusion in terminology I use the word 'state' as defined by Coolie Verner to 'identify the various changes encountered among different impressions of the maps'.[43] A different state represents any alteration to any of the copperplates from which the map was printed including geographic information, imprint information such as dates, addresses and so on. This list does not satisfy the requirements of a cartobibliography.[44] I have seen and cited digital or printed images of most, but not all, the listed states of the map. Beginning with the 1802 states, Arrowsmith enlarged his map to 49 x 57 in / 124 x 144 cm. For each state I have indicated the date and address of the Arrowsmith firm taken from the imprint. The source indicates where the particular state is described or located in an institutional or private collection and where an image is available. This table excludes hybrid states of the map resulting from printing a map composed of different sheets from more than one state. Undoubtedly, this list will be further revised.

Arrowsmith's frequent copperplate changes with updated information of 'all the New Discoveries' made his Map of NA the principal source for understanding the geography of Canada, west of Hudson's Bay,

KEY TO TABLE 1

BL British Library
HBCA Hudson's Bay Company Archives (Archives of Manitoba)
HL Huntington Library
LAC Library and Archives Canada
LOC Library of Congress
NYPL New York Public Library
PBA Pacific Book Auction
UBC University of British Columbia
WCL William Clements Library of the University of Michigan
YALE Yale Map Collection Beinecke Rare Book & Manuscript Library

Table 1 Printed States of 'A Map Exhibiting all the New Discoveries in the Interior Parts of North America…'

State	Date	Address	Source	Note
1	1 January 1795	Charles Street, Soho	Belyea, *Peter Fidler…* **IMAGE** p. 29; BL (System No.004789713); HBCA (Locator Code 6.4/26); LAC (NMC 97818)	Examples seen by the author include a pasted overlay of Hearne's journey down the Coppermine River
2	Additions to 1796	Charles Street, Soho	LAC **IMAGE** (NMC 24668); PBA Sale 572 29 October 2015 (Heckrotte Lot 102) **IMAGE**	According to Heckrotte, paper watermarked 'J. Whatman 1794'
3	Additions to 1796 (but later,? 1798–1799?)	Charles Street, Soho	PBA Sale 572 (Heckrotte Lot 103) **IMAGE**	According to Heckrotte, paper watermarked 'Russell 1798'
4	Additions to 1796 (but later)	No. 24 Rathbone Place	LAC (NMC 17396); Wheat, *Mapping Transmississippi West…*, Vo. 1, no. 231	
5	Additions to 1802	No. 24 Rathbone Place	LOC (Call No. pending) **IMAGE**; PBA Sale 572 (Heckrotte Lot 104) **IMAGE**; Heckrotte, 'Arrowsmith Map of North America…' **IMAGE**	
6	Additions to 1802 (but later,? 1803?	No. 24 Rathbone Place	LOC (Call No. G3300 1802 A7) **IMAGE**; Heckrotte, 'Arrowsmith Map of North America…' **IMAGE**; HBCA (Locator Code G.3/672)	
7	Additions to 1802 (but later,? 1810–1811?	No. 10 Soho Square	PBA Sale 572 (Heckrotte description of Lot 105); only example known to author is in a Private Collection	For the first time Arrowsmith added *Hydrographer to H. R. H. Prince of Wales* beneath his name, a position he was awarded in 1810
8	Additions to 1811	No. 10 Soho Square	David Rumsey Map Collection (List No. 4189.000) **IMAGE**; PBA Sale 572 (Heckrotte Lot 106) **IMAGE**; HBCA (Locator Code G.3/87); UBC (Call No. RBSC-ARC-1677:A:1811:A); BL (System No. 004789716)	
9	Additions to 1814	No. 10 Soho Square	David Rumsey Map Collection (List No. 0032.001) **IMAGE**; LOC (Call No. G3300 1814. A7) **IMAGE**; Belyea, *Columbia Journals…*, **IMAGE** p. 301; LAC (NMC 19686)	This map often found bound in *Atlas* accompanying Thompson's *Alcedo* printed by George Smeeton in 1816
10	Additions to 1811–1817	No. 10 Soho Square	WCL (Maps 1-1-3)	
11	Additions to 1811, 1818	No. 10 Soho Square	David Rumsey Map Collection (List No. 5699.004) **IMAGE**; HL (Call No. 105:441 M) **IMAGE**; Belyea, *Columbia Journals…*, **IMAGE** p. 303	
12	Additions to 1811, 1818–1819	No. 10 Soho Square	LAC (NMC 11698) **IMAGE**; BL (UIN BLL 01004789718); HBCA (Locator Code G. 4/29); UBC (C19: Nineteenth Century Index)	
13	Additions to 1811, 1818–19, 20	No. 10 Soho Square	YALE (Call Number 71 1820B)	For the first time Arrowsmith printed *Hydrographer to His Majesty* beneath his name, a position he was awarded in 1820
14	Additions to 1811, 18, 19, 20, 21	No. 10 Soho Square	LAC (NMC 19688) **IMAGE**; BL (UIN BLL 01004789719)	
15	Additions to 1802, 1811, 1814, 1818, 1819, 1823	No. 10 Soho Square	HBCA (Locator Code G. 3/87)	
16	Additions to 1811, 18, 19, 20, 24	No. 10 Soho Square	LAC (Microfiche NMC 29026) **IMAGE**; HBCA (Locator Code G. 3/135); BL (Cartographic Items Maps 26.b.17); WCL (Call No. At12 1824 Ar); UBC (G3300.1795.A7 1824)	
17	Additions to 1811, 18, 19, 20, 24, 33	No. 10 Soho Square	LAC (NMC Microfiche C27112) **IMAGE**	
18	Additions to 1811, 18, 19, 20, 24, 33, 39	No. 10 Soho Square	NYPL (Map Division 01-11492) **IMAGE**; BL (System No. 004789721)	
19	Additions to 1811, 18, 19, 20, 24, 33, 39, 50	No. 10 Soho Square	HL (Call No. 298729) **IMAGE**; BL (System No. 004789722)	

in the first two decades of the nineteenth century. A sequential examination of these maps testifies to two of the most compelling elements of Arrowsmith's cartographic practices: his alacrity to add and edit new first-hand information from surveyors/explorers, and the impressive multiple sources of his information. Below are brief descriptions for five states of the Map of NA that Aaron Arrowsmith constructed during his lifetime.

Map of NA, first state, 1795

For the first time on a printed map Arrowsmith introduced the name Columbia River for the river entering the coast just south of 'Deception Bay' with a 'Village' located on the southern shore (Fig. 4).[45]

Fig. 4 Section of Map of NA, first state, 1795, illustrating the earliest printed naming of Columbia River. Courtesy of the British Library Board, No. 004789713.

This information could only have derived from accounts and charts sent from Vancouver in the Pacific Northwest to London via Lts Mudge or Broughton, who arrived in England within one month of each other by August 1793. Both men would have known about Robert Gray's 'discovery' and naming of the Columbia River in May 1792, but only Broughton had personally surveyed it and described a deserted Clatsop village on the southern shore.[46] As noted previously, Arrowsmith apparently obtained little additional information from Vancouver's surveys since he depicted no evidence of Puget's Sound or the insularity of Vancouver Island.

Along the coast Arrowsmith reconfigured the shape of Queen Charlotte Islands (not illus.) and added several unique indigenous origin toponyms such as 'Luddy geyskuggins' (presumably a native Haida name) and the villages of 'Nootsema' east of Queen Charlotte Sound and 'Lullapee' within the Strait of Juan de Fuca.[47]

Between 'Great Slave Lake' and 'Hudson's Bay' (not illus.), Arrowsmith used an overlay to illustrate Samuel Hearne's 1771–74 'inland journey' from Prince of Wales fort on Hudson's Bay to the shores of the Arctic Ocean. British mapmaker Henry Roberts first published Hearne's trek on a 1784 world map and on his 'Chart of the N.W. Coast of America' that illustrated James Cook's third voyage.[48] Hearne's account was published posthumously in 1795.

For much of the vast interior of the continent from the 'Stony Mountains' to 'Hudson's Bay' (not illus.), Arrowsmith copied the monumental 'Map of Hudson's Bay and the Rivers and Lakes Between the Atlantick and Pacifick Oceans' that Turnor completed in London in late 1794.[49] This map was a composite of Turnor's own surveys with Peter Fidler into the Athabasca Country between 1790 and 1792; from Fidler's own observations along the North Saskatchewan River in 1792–93; and from those of other HBC and non-company surveyors and explorers. Arrowsmith may have had little time to incorporate Turnor's information before publishing his Map of NA. This may account for his awkward attempt to reconcile the eastern portion of Slave Lake with the 'Arathapescow' [Athabasca Lake] 'of Mr. Hearne 1772'. Also, as noted by Belyea, Arrowsmith's rendering of the South Saskatachewan River does not correspond well with

Turnor's map perhaps indicating that Turnor updated his manuscript after Arrowsmith had published his map.[50] Arrowsmith included only limited information from Fidler, also likely to have been obtained from Turnor, as indicated by the legends, 'Mr. Fidler 1792' at 50° latitude and 111° longitude, and 'Mr. Fidler 1793' at 113° near the foothills of the 'Stony Mountains' just beyond Buckingham House on the North Saskatchewan River (not illus.).

Map of NA, third state, dated 1796 (but probably 1798 or 1799)

Each of the three sheets of this map is watermarked 'Russell 1798', but the actual publication date of this state is not certain.[51] Striking changes along the NWC from the Gulf of Alaska to the modern Oregon–California border reflect information from the mid-1798 published account and maps of Vancouver. 'Cook's River' is now 'Cook's Inlet', although Arrowsmith retained the native toponymy on nearby 'Kishtac Island' instead of adopting Vancouver's 'Kodiak Island'. He noted Vancouver's location of a Russian factory near the head of Cook's Inlet on the modern Kenai Peninsula, and added Vancouver's cartography of the complex Alexander Archipelago. Further south, he now depicted Puget's Sound and the insularity of Vancouver Island but preferred to identify modern Vancouver's Island with the indigenous derived toponym 'Wakish Nation' instead of 'Quadra' and 'Vancouver Island' as on Vancouver's published map of the area.[52] Arrowsmith rendered the shape of the Columbia River in the inverted 'L-shape' as depicted on Vancouver's map, but he spurned Vancouver's toponomy by using 'R. Oregan' (a change from his 1795 map), a name that he maintained on his 1798 'Plan of the River Oregan'.

On the first map dated 1796 (second state of the Map of NA), and again on this second dated 1796 (third state of the Map of NA), Arrowsmith updated the geography of the region north and west of Lake Winnipeg to reflect Turnor's corrections on his 1794 manuscript by now depicting the South Saskatchewan River and branches abutting the Stony Mountains (still extending only to 49°) and moving upper traces of his Missouri River almost 4 degrees further east. Undoubtedly, one of the three Maps of NA dated 1796 was the 'Mape of America by Arrow Smith' that Julian Niemcewicz, Polish writer, patriot and correspondent of Thomas Jefferson, recommended to the soon-to-be American president in a letter of 2 August 1800.[53]

Map of NA, fifth state, 1802 (first map dated 1802)

Here Arrowsmith expanded coverage of North America to include most of the American Southwest and Florida. Principal additions in the 1802-dated maps (states five, six and seven of the Map of NA) relate to the information provided by primary HBC surveyor Peter Fidler.[54] From 1799 to June 1802, operating chiefly from newly built Chesterfield House on the South Saskatchewan River, Fidler surveyed an extensive area from between latitudes 50° and 55° including the North and South Saskatchewan Rivers to the foothills of the Rocky Mountains. In addition, he transcribed several Indian-authored maps that covered a much larger area extending south along the Rocky Mountains, east into the Missouri River tributaries, and west past the mountains; these included the often discussed two maps drawn by a Siksika Nation chief Akkomokki.[55] Fidler prepared a large composite map (no longer extant) of this vast region in July 1802 that he sent to London along with the transcribed Indian maps. When they arrived in October, the HBC committee promptly turned them over to Arrowsmith.[56]

In the 1802-dated maps Arrowsmith extended the renamed 'Rocky Mountains' south to 42°, and he used dotted lines to suggest the presence of various tributaries of the Missouri River across the continent from several named mountain peaks (Fig. 5).[57] The knowledge of these water courses could only have come from Fidler's native informants from 1802 or before, sources Arrowsmith did not acknowledge. But, as Belyea argues, since Arrowsmith did not closely follow the pattern of Akkomokki's map, the interpretation and cartographic representation of this indigenous knowledge was likely the work of Fidler or Arrowsmith himself.[58] Courses of the transcontinental tributaries vary slightly on the first two 1802-dated maps; on the second (sixth state of the Map of NA) Arrowsmith added 'River Mississury' to the branch originating from Bear's Tooth at 46°.

West of the mountains on this first map dated 1802 (fifth state of the Map of NA), the 'Great Lake River' flows west and southwest from just above 50° and eventually connects with the 'River Oregan' at 'Pt. Vancouver', the most westerly landmark noted on the Columbia River by Broughton. Farther north, Arrowsmith also traced Alexander Mackenzie's route along the 'Peace River' and across the 'Rocky Mountains' (Fig. 5 upper left) to the Pacific Ocean that just the year before he had depicted on 'A Map of America' published in MacKenzie's *Voyages from*

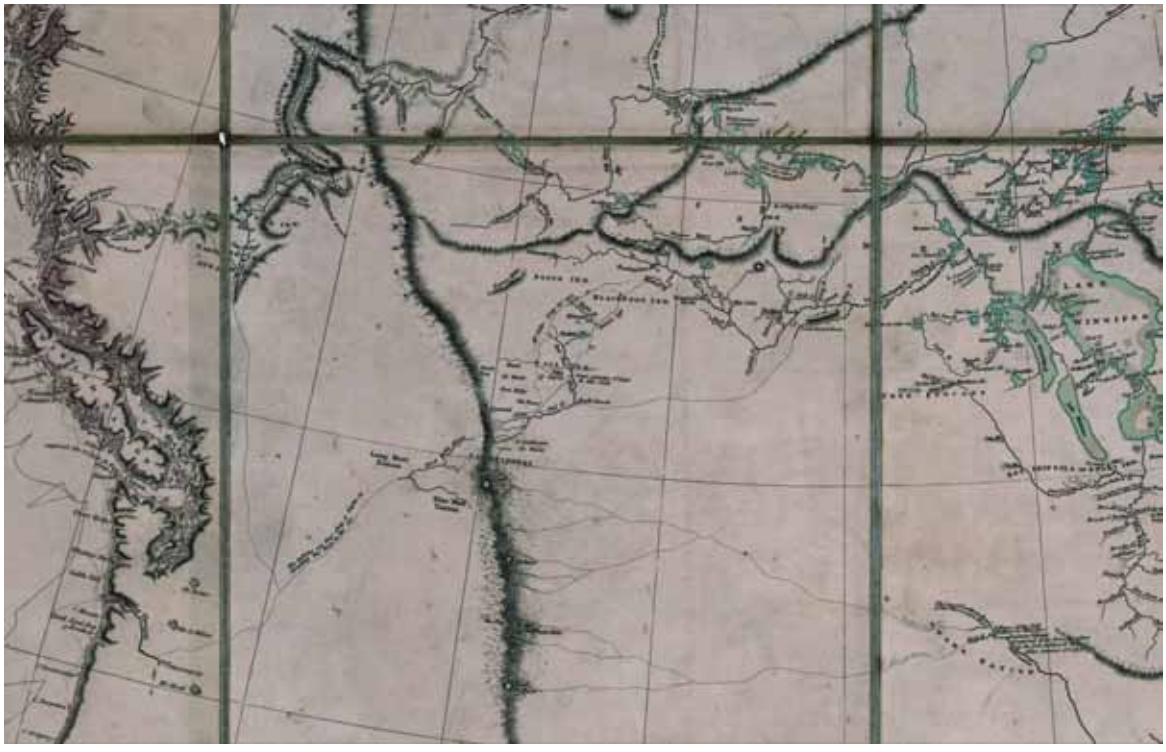


Fig. 5 Section of Map of NA, fifth state, 1802, illustrating possible transcontinental tributaries of the Missouri River. Courtesy of the Geography and Map Division, Library of Congress.

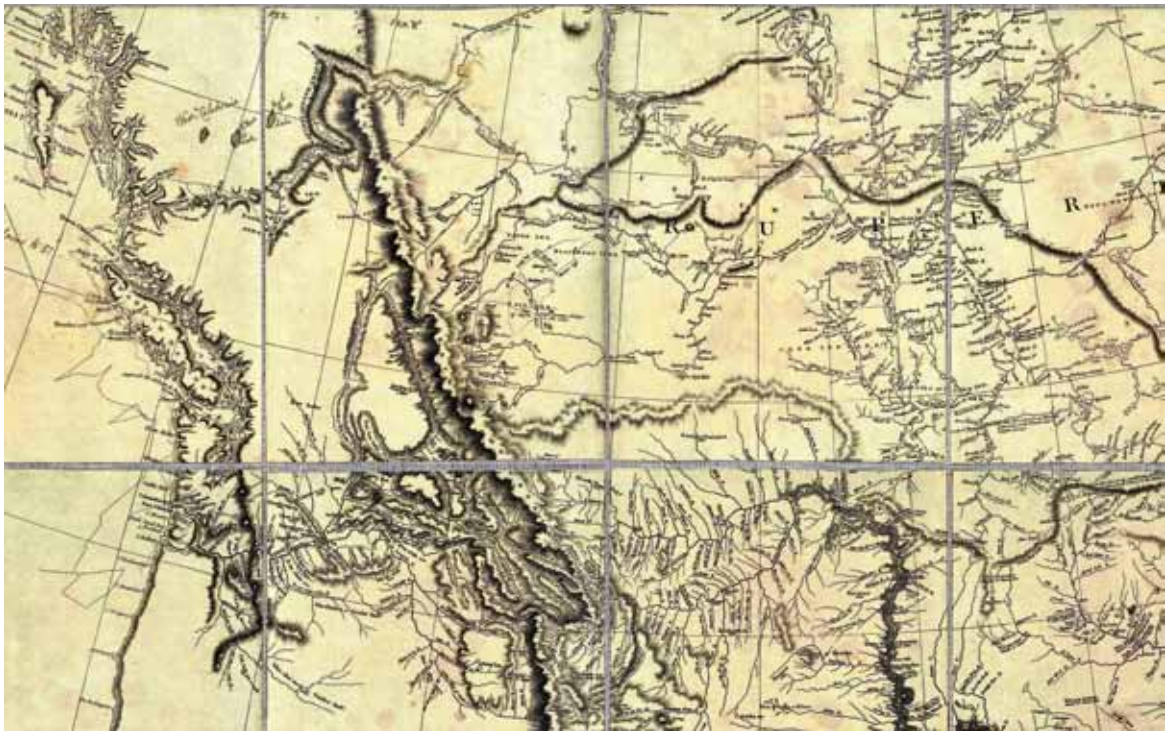


Fig. 6 Section of Map of NA, ninth state, 1814, incorporating William Clark's mapping of the topography and hydrography of the far west. Courtesy of the David Rumsey Map Collection, www.davidrumsey.com

Montreal… Through the Continent of North America.[59] From the first to the second maps dated 1802, Arrowsmith also extensively revised the course of branches of the North and South Saskatchewan Rivers based on Fidler's July 1802 map.

The fifth and sixth states of the Map of NA are the most frequently discussed of all Arrowsmith's maps among scholars, exhibition curators and dealers. Warren Heckrotte's widely quoted article has substantiated that Jefferson, Albert Gallatin and Nicholas King used the first map dated 1802 (fifth state of the Map of NA) in planning the Lewis and Clark expedition, and that the captains carried this fifth state with them.[60] In 1803–04, Jefferson, Secretary of State James Madison and two emissaries to France, Robert Livingston and James Monroe, also used Arrowsmith's 1802 map during negotiations with France prior to the Louisiana Purchase and over later boundary considerations of the territory.[61]

Map of NA, ninth state, 1814

Based on the legend 'Additions to June 1814' on this map, Arrowsmith printed this updated state within three or four months after Bradford and Inskeep published *History of the Expedition Under the Command of Captains Lewis and Clark*. Arrowsmith incorporated William Clark's mapping of the complex topography of the Rocky Mountains and hydrography of the Missouri, Snake and lower Columbia River systems (Fig. 6).[62] He adapted Clark's toponomy, including, finally, 'Columbia River', in lieu of the 'River Oregan'. To the north, Arrowsmith documented crossings of the Rocky Mountains by employees of both the HBC and the NWCOM. In 1809, and again in 1810–11, HBC surveyor Joseph Howes searched for a pass across the Rockies and wintered on Flathead Lake in 1810 ('Howes' Ho.' on 'Flathead Lake'), and in 1812 he constructed a non-extant map that HBC historian Richard Ruggles believes may have shown relations among the upper Columbia, Kooteney and Flathead Rivers and Flathead Lake.[63] Howes' surveys would have reached Fidler who likely added this information to his 1812 composite map that he sent to London.[64] This map, too, has been lost.

Although David Thompson was employed by the NWCOM after 1797, news of some of his extensive transmontane surveys from 1807–12 into the headwaters of the Columbia and Kooteney River systems reached HBC operatives. On this 1814 map Arrowsmith drew a circuitous loop of the upper Columbia and added the legend 'Head Waters of the Columbia R. Portage 3 Miles'– both clear indicators of Thompson's surveys. Arrowsmith most likely obtained all this information from the now lost copies of maps of Howes and Fidler, but how Thompson's results were transmitted to Arrowsmith is unclear.[65]

On this 1814 state of the Map of NA (as well on an earlier 1811 state), Arrowsmith also added additional details of the complex water courses and portages of the Churchill, Nelson and Saskatchewan Rivers systems between Lake Athabasca and Lake Winnipeg.

Several mapmakers incorporated Arrowsmith's updated information on the Saskatchewan and Columbia River systems into their maps including French geographer Adrien Brué in 1815. In 1816 Philadelphia-based cartographer John Melish published an extensive memoir, *Geographical Description of the United States*, to accompany his 'Map of the United States with the Contiguous British and Spanish Possessions'.[66] He credited Arrowsmith's map for the 'delineation of the mountains, and style of the work'. But Melish's sparing depiction of river systems between the 49th and 53rd parallels suggests that he may have consulted an earlier edition of Arrowsmith's map. Interestingly, on one of the 1816 editions of his 'Map of the United States', Melish drew an undulating northern border between the colour-coded British and United States possessions. A large portion of this border followed three main river courses that Melish must have adapted from an earlier unaccredited Arrowsmith Map of NA. Extending south and southwest from 'South Branch House' is the 'Supposed course of South Branch' [of the Saskatchewan River] connecting to the 'Bad River', then passing through breaks in two mountain ranges to the 'Great Lake River' that then joins 'Clark's River' at 49° 45'.

Map of NA, eleventh state, 1818

At the mouth of the Columbia River, Arrowsmith added 'Fort Clatsop' or 'F^{t}. George' on this 1818 updated Map of NA (Fig. 7).[67] This toponymy misidentified the different locations of these American and British occupied forts, perhaps in an attempt to maintain a British identity to the area. Also, on this 1818 state (as well on the 1817 state), Arrowsmith greatly expanded the explored hydrography of the region west of the Rocky Mountains from 48° to 55° incorporating incomplete information from NWCOM surveyors.[68] This included David Thompson's surveys across Howse Pass in 1807 and Athabasca Pass in 1810–12, and Simon Fraser's 1808 expedition down the river later named for him by Thompson, and depicted on Thompson's

Fig. 7 Section of Map of NA, eleventh state, 1818, with additions of Fraser's River and the fictitious Caledonia River (top left) that played a role in Anglo-American boundary negotiations. Courtesy of the David Rumsey Map Collection, www.davidrumsey.com

1814 manuscript 'Map of the North-West Territory of the Province of Canada'.[69] Arrowsmith neither cited these two North Westerners as sources for his 1818 state, nor did he precisely copy their cartography. Nevertheless, he now illustrated the headwaters of the upper Columbia River with more semblance of reality, and adopted Thompson's description of 'M^{c}Gillivray's River' (today's Kootenay River) joining the Columbia at approximately the 49th parallel.[70]

Importantly, for the first time on a printed map, Arrowsmith added two new river systems, the 'Tacoutche Tesse or Fraser's R.' and the 'Caledonia R.', both entering the Strait of Juan de Fuca just to the south and southeast of Vancouver Island (Fig. 7 upper left). Arrowsmith also had depicted segments of these rivers on the 1817 state of Map of NA. In 1808 NWCOM surveyor Simon Fraser explored the river that he recognised was separate from the Columbia River and which David Thompson later named for his colleague. In 1814 Thompson incorporated Fraser's information into a map that was then passed on to Arrowsmith either directly by Thompson or indirectly through HBC.

The fictitious Caledonia River played a role in the 1818 and 1826 Anglo-American northern boundary negotiations.[71] Following extensive surveys in the Columbia River region, Thompson wrote on 13 April 1813:

> *… the mid River, which I have named the Caledonia River, between Fraser's River and the Columbia, takes its rise among the sources of the Columbia in Athabasca and Snake Rivers – from many circumstances I am led to believe it does not join Fraser's River, but falls into the Pacific Ocean, somewhere about where I have placed it. When I have time to finish my calculations, I shall be more able to determine this place.*[72]

Thompson sketched a map of the region west of the mountains including the Caledonia River and sent his map and remarks in April to William McGillivray, chief partner of the NWCOM in Montreal.[73] That map is no longer extant, and Thompson removed the non-existent Caledonia River from his subsequent maps. But Arrowsmith incorporated the Caledonia River on his 1817 and 1818 Maps of NA. On the latter,

the principal source of this river is a large unnamed lake at 52°; on both states, the river's forked mouth enters the Straits of Georgia at 48°.

The 'Caledonia R.' also appeared on an 1817 anonymously authored map, 'A Map of America… Exhibiting The Principal Trading Stations of the North West Company', that accompanied a pamphlet written in support of the position of the NWCOM not to accept partition of the northern boundary at 49°.[74] The cartographic defence of this opinion was that ceding sovereignty to the United States below the 49th parallel would interdict a potentially important British river communication (Caledonia River) to the sea. Historian Frederick Merk noted that during boundary negotiations in London in 1818, the authority of the 1817 pamphlet and possibly Arrowsmith's 1818 Map of NA helped to induce American negotiators to offer their British counterparts a cession of an area below the 49th parallel to allow access to the mouth of the Caledonia River. During the next round of negotiations in June 1826, American plenipotentiary Albert Gallatin wrote to Secretary of State Henry Clay:

> *The parallel of the 49th degree…will intersect the Caledonia river a short distance above its mouth, leaving the mouth to the United States, and almost the whole course of the river to Great Britain. This renders it improbable that she will accede to our proposed line without modifications*.[75]

Arrowsmith continued to depict the Caledonia River on several subsequent states of his Map of NA.[76] The influence and authority of his 1818 map resulted in the appearance of the Caledonia River for several years on North American maps by such authorities as Henry Tanner (1822), James Wyld (1823), John Melish (1823) and Adrien Brué (1825).

In the interior, east of the foothills of the Rocky Mountains, Arrowsmith used Fidler's information to extensively update the network of the north and south branches of the Saskatchewan River including the 'Bull Pound R.' (Pekisko Creek) extending south nearly across a spur of mountains to the upper reaches of tributaries of the Missouri River.

Arrowsmith's continuing influence

Arrowsmith worked on four additional states of Map of NA (1819, 1820, 1821 and 1823) before he died in April 1823. His sons, Aaron, Jr. and Samuel, continued the business after his death and published four more states of the map, as well as several states of a reduced version, 'British North America', beginning in 1832.[77] Aaron Sr.'s nephew, John, assumed control of the firm in 1839, and, after his death in 1873, the entirety of the stock was sold at auction the next year.[78]

Scant documentation of the Arrowsmith firm's inventory remains from Aaron's lifetime, but an 1812 catalogue lists 32 maps and 55 charts for sale at the N°. 10 Soho Square address, including two maps of the world, one map of North America on four sheets, and one chart of the 'Coast of North America'.[79] In addition, according to contemporary newspaper advertisements, by 1821, Arrowsmith's firm also served as a commercial outlet for charts printed at the Admiralty Office.[80]

Arrowsmith died within four months of the death of the most prominent and prolific American map publisher, Philadelphian John Melish. In Philadelphia, as in London, the shift in cartographic leadership coincided chronologically with geopolitical events that focused leadership in both countries more intensely on western North America. In 1819 the Adams-Onis treaty between the United States and Spain removed Spanish claims to dominion in North America above the 42nd parallel. In 1824 and 1825 conventions between Russia and the United States and Great Britain terminated Russian settlement and commercial activity below 54° 40' and left only Britain and the United States in dispute over sovereignty in the region.

In 1821 the intense competition between the HBC and the NWCOM ended with a merger of these two powers that essentially linked the immense territory from Hudson's Bay to the Pacific Ocean into a single trade network. Soon after, HBC Governor George Simpson's first tour to the Pacific Northwest in 1824–25 led to the establishment of Ft. Vancouver in late 1824.[81]

American interests in potential settlement and commercial opportunity in the Pacific Northwest developed almost simultaneously. After the sale of Astoria to the British in 1813, American focus on expanding the American republic to continental proportions slackened. Activity reemerged during the initial Northern Boundary negotiations with Britain in 1818. Between 1820 and 1824 Congressman John Floyd advocated for extending jurisdictional sovereignty to a newly created Oregon Territory in the Columbia River drainage area. And in December 1823 President James Monroe declared to Congress that 'the American continents…are henceforth not to be considered as subjects for colonisation by any European power'.[82]

In Philadelphia in 1822, cartographer Henry Tanner both reflected these geopolitical events and promoted his opinion of American expansionism through his maps. Tanner became the predominate American cartographer of North America when he published 'A Map of North America, constructed according to the latest information'.[83] His large (43 x 58 in / 109 x 147 cm) map boldly expanded the geography of Melish's wall maps and emulated Arrowsmith by encompassing the entirety of North America to 75°. Tanner incorporated the latest political activity relative to the Pacific Northwest by adapting Floyd's recommendation from a few months before; he depicted 'Oregon Terr.' on his map as the region Floyd wished to occupy. But in the vast expanse of North America above the 49th parallel, Tanner borrowed Arrowsmith's cartography. Tanner apparently had access to Arrowsmith's 1818 Map of NA since he depicted the Caledonia River, but elsewhere his rendition of the branches of the Saskatchewan, Nelson, and Churchill Rivers appear to be taken from an earlier state of the map.

Contemporary and current critique

Simpson's personal reconnaissance in the Pacific Northwest made him critical of established commercially produced maps of the region, including Arrowsmith's. He wrote in the journal of his Pacific Northwest tour, 'I have examined with much attention the different charts and maps that have appeared of this Country but none of them give any thing like a correct idea thereof'. He prepared his own manuscript drawn from personal observations and from 'Mr Thompson's Chart' and planned to forward his draft 'to the Hon^{ble} Committee [HBC in London] who may perhaps allow Arrowsmith to correct his map thereby which in its present state is very erroneous'.[84]

In December 1825 Simpson's travelling partner, chief trader James McMillan, reinforced Simpson's opinion, 'I ought to observe that there is no such River as that called New Caledonia in Arrowsmith's Map, indeed there is no large or navigable river between Frazers River and the Columbia'.[85] Despite these remonstrations, the HBC continued to supply the Arrowsmith firm with charts and journals until 1859,[86] although John Arrowsmith apparently did not issue an update of HBC cartographic information in North America until the 1832 publication of 'British North America' and a later edition of the Map of NA.

An entry on Arrowsmith in the *SDUK Biographical Dictionary* published in 1884 also reflected Simpson's criticism of the cartographer's inaccuracy, noting his 'diligence in his profession, and extensive, if not always accurately scientific knowledge of geography'.[87] Modern scholars have expanded upon this critical assessment. Edney cites the prevailing social order of early nineteenth-century London as favouring cartographers who were influenced more by their associations with proxies of the state (HBC, British Admiralty, and others) than by the information supplied by surveyor/explorers.[88] Belyea cites Arrowsmith's incomplete cartographic incorporation into his maps of source information and lack of acknowledgment of the work of HBC surveyor Peter Fidler as an example of the influence on Arrowsmith of waning interest of British intellectual elites Joseph Banks and Alexander Dalrymple in the work of Fidler.[89] Arrowsmith minimally acknowledged other surveyors as well, and his recognition of any contribution of indigenous sources of critical geographic information is restricted to a few place names.

As any early or modern cartographer, Arrowsmith compiled information, then selected, interpreted, edited and represented the material for a final product that became his unique construct of a region. Contemporary and current study of his maps may simultaneously recognise the shortcomings and the strengths of this process. The SDUK biographer also commented that his maps, 'obtained a high reputation throughout Europe for their distinctness' and noted 'the anxious and indefatigable care with which Arrowsmith accumulated materials from every quarter'.[90] During his lifetime, Aaron Arrowsmith's maps of western North America appealed to a broad range of map readers because of their distinguishing knowledge of 'all the new discoveries' and the quality of their engraving. They continue to do so today.

Acknowledgments

Barbara Belyea graciously shared her extensive knowledge of the North American fur trade and cartography, especially related to Arrowsmith. Warren Heckrotte's substantial experience with editions of Arrowsmith's map of North America greatly helped in my construction of the table herein. Several individuals provided answers to my many questions or material to my many inquiries including Art Holzheimer, Ralph Ehrenberg, Ed Dahl and archivists at the institutions I have recognised in the endnotes. Wes Brown and Barbara Walker offered valuable comments after review of the manuscript. Thanks finally to Derek Hayes whose several Historical Atlases have substantially contributed to the enjoyment and education of those interested in historic maps.

Notes

1 The geographical focus of this article extends from the watersheds of the Missouri River north to the Coppermine and MacKenzie Rivers and from the interior west of Hudson's Bay to along the NWC from 45°–70° north that encompassed 'all the recent discoveries' that Arrowsmith incorporated into his maps.

2 William L. Lang and James V. Walker, *Explorers of the Maritime Pacific Northwest*, Santa Barbara: ABC-CLIO, 2016, xvi, pp. 61–63.
3 Ibid., xvii, 85–89; J.C. Beaglehole, ed., *The Journals of Captain James Cook on His Voyages of Discovery*, Vol. 3: *The Voyage of the* Resolution *and* Discovery, *1776–1780*, Cambridge: Cambridge University Press, 1967.
4 Lang and Walker, *Explorers*, pp. 115–119; Frederic W. Howay, 'A List of Trading Vessels in Maritime Fur Trade, 1785–1794',*Transactions of the Royal Society of Canada*, 3rd series, 24(2) (1930): pp. 111–149; for the American traders, see James R. Gibson, *Otter Skins, Boston Ships and China Goods The Maritime Fur Trade of the Northwest Coast, 1785–1841*, Montreal: McGill–Queens University Press; 1992 and Mary Malloy, '*Boston Men' on the Northwest Coast: The American Maritime Fur Trade 1788–1844*, Kingston: The Limestone Press, 1998.
5 The most thorough examination of Dalrymple's career is Andrew S. Cook, *Alexander Dalrymple (1737–1808), Hydrographer to the East India Company and to the Admiralty as Publisher: A Catalogue of Books and Charts, Volumes 1–111* A Thesis Submitted for the Degree of PhD at the University of St Andrews 1993 http://hdl.handle.net/10023/2634.
6 A. Dalrymple*, Plan for Promoting the Fur-Trade, Securing It to This Country, by Uniting the Operations of The East-India and Hudson's-Bay Companys*, London: Printed by George Bigg, 1789.
7 Cook, *Alexander Dalyrmple*, pp. 135, 231; both Dalyrmple and Arrowsmith employed the printer George Bigg.
8 Richard I. Ruggles, 'Mapping the Interior Plains of Rupert's Land By The Hudson's Bay Company to 1870', *Great Plains Quarterly* 4 (summer 1984), pp. 152–65; Ruggles, *A Country So Interesting: The Hudson's Bay Company and Two Centuries of Mapping, 1670–1870*, Montreal: McGill–Queen's University Press, 1991, pp. 32–48.
9 Ruggles, *A Country*, pp. 4–5; Ruggles, 'Governor Samuel Wegg Intelligent Layman Of The Royal Society'*, Notes and Records of the Royal Society of London*, 32, No. 2 (March 1978), pp. 181–199.
10 Ruggles, *A Country*, p. 60.
11 Coolie Verner and Basil Stuart-Stubbs, *The Northpart of America*, Toronto: Academic Press Canada, 1979, p. 224.
12 Although Arrowsmith apparently had direct contact with some principals of the North West Company such as Simon McTavish and MacKenzie (see below), it is unclear how he obtained information from others.
13 Cook, *Alexander Dalrymple*, pp. 158–61.
14 Aaron Arrowsmith Wikipedia https://en.wikipedia.org/wiki/Aaron_Arrowsmith
15 Lang and Walker, *Explorers,* pp. 138–41.
16 TNA HO 42/17/69 - Folios 143–146, Statement signed by [Aaron Arrowsmith] listing the authorities on which he had compiled his Chart of the World published in 1790. The National Archives, Kew.
17 Permission to use this image kindly given by Craig Statham of the National Library of Scotland; see also Derek Hayes, *Historical Atlas of the Pacific Northwest,* Seattle: Sasquatch Books, 1999, p. 57.
18 James V. Walker, 'Jonathan Carver and the Map That Introduced Oregon', *Mercator's World*, Vol. 1, No. 5, 1996, pp. 30–37.
19 Lang and Walker, *Explorers*, pp. 135–38.
20 Jedediah Morse, *The American Gazetteer,* Boston: Printed by Samuel Etheridge, 1804.
21 Thomas Jefferson to André Michaux January 1793 in ed. A. P. Nasatir, *Before Lewis and Clark Documents Illustrating the History of the Missouri 1785–1804*, Lincoln: University of Nebraska Press, 1990, pp. 164–66.
22 Daniel W.Clayton, *Islands of Truth The Imperial Fashioning of Vancouver Island*, Vancouver: UBC Press, 2000, p. 179.
23 Daniel Clayton argues that at the time of the Nootka Crisis, British politicians laid the groundwork for subsequent colonisation of Vancouver Island utilising 'cartographic inscription and practices of naming, classification, tabulation and illustration'. See Clayton*, Islands*, pp. 182–84.
24 A. Arrowsmith**,** *A Companion To A Map of The World*, London: Printed by George Bigg, 1794. I am grateful to Colyn Wohlmut of the Sutro Library, California State Library for supplying a copy of this document. The following Arrowsmith quotations are all taken from this document.
25 Matthew Edney, 'Mathematical Cosmography and the Social Ideology of British Cartography, 1780–1820', *Imago Mundi*, Vol. 46, 1994, p. 107.
26 Ibid., p. 109.
27 I am grateful to Catherine Wood of the Norman B. Leventhal Map Center at the Boston Public Library for supplying this image.
28 See Walker and Lang, 'The Earliest American Map of the Northwest Coast: John Hoskins's *A Chart of the Northwest Coast of America Sketched on Board the Ship Columbia Rediviva*…1791 & 1792', in press; Henry R. Wagner, *The Cartography of the Northwest Coast of America to the Year 1800* (Amsterdam: N. Israel, 1968), p. 213.
29 Ruggles, *A Country*, pp. 52–54.
30 Belyea, personal communication.
31 Constructed in 1792, Fort Forks is now a National Historic Site of Canada.
32 On his return east, MacKenzie overwintered from 1793–1794 at Fort Chipweyan, and it is unlikely that Arrowsmith would have learned of his route at the time of publication of this map. For images of several of the earliest maps to illustrate MacKenzie's route, see Derek Hayes, *Historical Atlas of Canada,* Seattle: University of Washington Press, 2002, pp. 143–45.
33 Walter W. Ristow, *American Maps and Mapmakers Commercial Cartography in the Nineteenth Century*, Detroit: Wayne State University Press, 1985, p. 153.
34 Henry Stevens and Roland Tree, 'Comparative Cartography', *The Mapping of America,* London: The Holland Press, 1980, p. 107.
35 Jack Nisbet, *The Mapmaker's Eye David Thompson on the Columbia Plateau,* Pullman: Washington State University Press, 2005, p. 22; Lang and Walker, *Explorers*, pp. 220–23.
36 I am grateful for the assistance of Kelly-Ann Turkington of the Royal BC Museum and Archives for assistance in obtaining this image; for images of this map and Broughton's manuscript, see Hayes, *Atlas of Pacific Northwest*, 88.
37 Lang and Walker, *Explorers*, pp. 218–20.
38 Andrew S. Cook, 'The Publication of British Admiralty Charts for British Columbia in the Nineteenth Century', *Charting Northern Waters Essays for the Centenary of the Canadian Hydrographic Service*: Montreal: McGill–Queen's University Press, 2004, p. 51.
39 Ibid., p. 233, fn 8.
40 Arrowsmith, *Companion*, p. 20.
41 To my knowledge the only previously published list of states of this map is by Stevens and Tree, 'Comparative Cartography', pp. 79–81.
42 Coolie Verner, 'The Arrowsmith Firm and the Cartography of Canada', *The Canadian Cartographer* Vol. 8 No. 1 June 1971, pp. 3–4; Heckrotte, personal communication.
43 Verner, *Northpart of America*, p. 228.
44 I have drawn from Coolie Verner's description of a cartobibliography in Verner, *Northpart of America*, pp. 228–32; for the most recent elaboration of the history of confusion and complexity of describing old maps, see Andrew Cook, 'Editions, Printing, Issue and State as Terms in Cartobibliography', May, 1989, minor revisions July 2016 (private printing supplied by the author).
45 This image courtesy of the British Library; for additional descriptions and images of this map, see Barbara Belyea, ed., *Peter Fidler From York Factory to the Rocky Mountains,* Alberta: Ha Ling Design, 2016, p. 29 and Carl I. Wheat, *Mapping the Transmississippi West*, Volume 1 *The Spanish Entrada to the Louisiana Purchase 1540–1804,* San Francisco: The Institute of Historical Cartography, 1957, pp. 175–77.
46 George Vancouver, *A Voyage of discovery to the North Pacific ocean, and round the world; in which the coast of north-west America has been carefully examined and accurately surveyed*. Volume II Chapter III Lieutenant Broughton's Account of Columbia River, London: Printed for G. G. and J. Robinson, and J. Edwards, 1798, pp. 52–79.
47 Wagner, *Cartography*, 213.
48 Tony Campbell, 'A Cook Mystery Solved', *The Map Collector* No. 32, 1985, 37; for images of Hearne's manuscript maps, see Hayes, *Atlas of Canada*, pp. 136–37.
49 Barbara Belyea, *Dark Storm Moving West*, Calgary, Alberta: University of Calgary Press, 2007, pp. 42–43, 45; Nisbet, *Mapmaker's Eye*, p. 15; Hayes, *Atlas of Canada*, pp. 147–48; Ruggles, *Country*, pp. 59–60, Plate 18.
50 Belyea, personal communication.
51 See description from Warren Heckrotte in Lot 103 of PBA

Galleries Sale 572, October 2015.
52 See https://en.wikipedia.org/wiki/Wakashan_languages.
53 Letter from Julian Ursin Niemcewicz to Thomas Jefferson, August 2, 1800 in Barbara Oberg, ed., *The Papers of Thomas Jefferson*, Vol. 32, Princeton and Oxford: Princeton University Press, 2005, pp. 68–69.
54 Warren Heckrotte, 'Aaron Arrowsmith's Map of North America and the Lewis and Clark Expedition', *The Map Collector* 39 (Summer 1987), pp. 16–20; Belyea, *Dark Storm*, pp. 45–47; Belyea, *Peter Fidler*, pp. 19–22, 290–291.
55 Belyea, *Dark Storm*, pp. 46–49; Ruggles, *Country*, pp. 63–64; Barbara Belyea, 'A Map and Nine Makers', *Bulletin Association of Canadian Map Libraries and Archives*, Number 144 Spring/Summer 2013, pp. 35–38; Barbara Belyea, 'Mapping The Marias The Interface of Native And Scientific Cartographies', *Great Plains Quarterly*, Summer/Fall 1997, pp. 168–179; D. W. Moodie, Barry Kaye, 'The Ac Ko Mok Ki Map', *The Beaver* Spring 1997, pp. 4–15.
56 Ruggles, *Country*, p. 64.
57 I am grateful to Ralph Ehrenberg and the Geography and Map Division of the Library of Congress for making this image available; see also Heckrotte, 'Aaron Arrowmsith's Map' for another image of a section of this map.
58 Belyea, 'Mapping the Marias, p. 177.
59 Hayes, *Atlas of Canada*, pp. 144–145; in his preface MacKenzie notes, 'The General Map which illustrates this volume is reduced by Mr. Arrowsmith from his three sheet map of North America…His professional abilities are well known'.
60 Heckrotte, 'Aaron Arrowsmith's Map', pp. 16–20.
61 See letters from Robert Livingston to James Madison, May 3, 1804 and from James Madison to James Monroe, March 26, 1803 on Founders Online, National Archives (http://founders.archives.gov/documents/Madison/02-07-02-0147 and 02-04-02-0543.
62 Courtesy of David Rumsey, the David Rumsey Map Collection, www.davidrumsey.com; see Barbara Belyea, *Columbia Journals David Thompson*, Seattle: University of Washington Press, 2007, p. 301.
63 Ruggles, *Country*, p. 68.
64 Belyea, *Dark Storm*, p. 86–87.
65 Belyea, *Columbia Journals*, pp. 296–97.
66 John Melish, *Geographical Description of the United States With The Contiguous British and Spanish Possessions…* (Published by the author: Philadelphia, 1816) Reprint edition, Nashville: The Gazetteer Press: 1972, p. 9.
67 Courtesy of David Rumsey, the David Rumsey Map Collection, www.davidrumsey.com; regarding the Caledonia River, see also Hayes, *Atlas of Pacific Northwest*, 105 and Belyea, *Columbia Journals*, 303.
68 Belyea, *Columbia Journals*, 296–97.
69 Wheat, *Mapping Transmississippi West*…Volume Two *From Lewis and Clark to Fremont 1804–1845* (The Institute of Historical Cartography: San Francisco, 1958), 100–104; Hayes, *Atlas of Canada*, 166–67.
70 Belyea, *Columbia Journals*, 297.
71 Frederick Merk, *The Oregon Question Essays in Anglo-American Diplomacy and Politics,* Cambridge: The Belknap Press of Harvard University Press, 1967, pp. 60–67.
72 David Thompson, 'Remarks on the countries westward of the Rocky Mountains with reference to the rough chart by David Thompson', Cambridge University Library: Royal Commonwealth Society Library, Countries westward of the Rocky Mountains, RCMS 250.
73 Nisbet, *Mapmaker's Eye*, pp.132–34.
74 *Notice Respecting The Boundary Between His Majesty's Possessions in North America And The United States with A Map of America*…Printed by B. McMillan, Bow-Street, Covent-Garden: London, 1817; Verner and Stuart-Stubbs, *Northpart*, pp. 119–22.
75 Merk, *Oregon Question*, pp. 66–67.
76 Hayes, *Atlas Pacific Northwest*, 107 (image of map of North America updated to 1824).
77 Wheat, *Transmississippi West*, Vol. 2, pp. 146–49; Wagner, *Cartography*, p. 114.
78 Verner, 'The Arrowsmith Firm', p. 3.
79 'Maps & Charts Published by A. Arrowsmith' N°. 10 Soho Square London, 1812.
80 *The Edinburgh Gazette*, July 6, 1821, notice regarding sale of 'Naval Charts Admiralty-Office, June 30, 1821'.
81 John S. Galbraith, *The Hudson's Bay Company As An Imperial factor 1821–1869*, Berkeley: University of California Press: 1957, pp. 181–83; Frederick Merk, *Fur Trade and Empire*, Cambridge: The Belknap Press Harvard University Press, 1968.
82 Regarding Floyd, see Merk, *Oregon Question*, pp. 112–13; for the Monroe Doctrine, see https://en.wikipedia.org/wiki/Monroe_Doctrine.
83 James V. Walker, 'Henry S. Tanner and Cartographic Expression of American Expansionism in the 1820s', *Oregon Historical Quarterly*, Winter 2010, pp. 416–33.
84 Merk, *Fur Trade*, p. 112–13; Galbraith, *Hudson's Bay*, p. 128.
85 Merk, *Fur Trade*, p. 250.
86 Ruggles, *Country*, p. 274 fn 20.
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Fig. 1 Illustration showing the seven railroad surveys conducted between 1853 and 1855. Courtesy of Mark Greaves, Wheat Ridge, Colo.

Fig. 2 Robert Mills, 'Map of the Several Routes Proposed to the Pacific Ocean from the Head Waters of the Missouri to the Isthmus of Darien', 1848. This map illustrates two potential transcontinental railroad routes Mills felt were among the most viable: (A) Whitney's route across the northwest and (B) a south-central route across Texas, New Mexico and into California. Courtesy of the author.

THE PACIFIC RAILROAD SURVEYS

The idea of a railroad across North America

J. C. McElveen

The first railroad across continental United States was not completed until 1869, when a golden spike was driven into the ground at Promontory Summit, Utah. However, the idea was conceived some thirty years earlier and explorations for a possible route began, in earnest, in the late 1840s. This article will highlight some of those explorations and discuss the reports and maps produced as a result of them.

It is not known who first suggested building a railroad that would link the east and west coasts of the United States. The editor of an Ann Arbor, Michigan newspaper, the *Western Emigrant*, is often credited for bringing the issue to widespread public attention in 1832.[1] At that point, though, the problems of realising it seemed insurmountable. How would such an enormous infrastructure be financed and who would pay for it? What route would it take when the Southwest belonged to Mexico and the Northwest was shared with Great Britain? In addition, the logistics of negotiating mountains, rivers, deserts and hostile Indian territory were more than intimidating.

Nevertheless, the idea endured, and, in 1845 a petition was presented to the US Congress by wealthy dry-goods merchant Asa Whitney, who was, perhaps, the most persistent (and annoying) proponent of a transcontinental railroad. Whitney's petition, entitled *Memorial Proposing a Grant of Public Land to Enable the Construction of a Railroad from Lake Michigan to the Pacific Ocean*, did get the ball rolling. He proposed a route from Prairie du Chien, Wisconsin, across the northern plains, through the northern Rockies and to the mouth of the Columbia, and a financing method by which the government would provide some cash and allow Whitney to sell land 30 miles on each side of the tracks. Land which couldn't be sold would go to Whitney.[2] The petition was referred to the House of Representatives' Committee on Roads and Canals, where it languished.

The tempo picks up

The settlement of the American West was rapidly gaining momentum. In 1836 the Republic of Texas was established and became a state in 1845. War with Mexico broke out in 1846 and two years later, by the Treaty of Guadalupe-Hidalgo, the United States was ceded what today comprises the states of California, Nevada, Utah and Arizona (north of the Gila River), and parts of New Mexico, Colorado and Wyoming. (What is now Arizona south of the Gila River, and extreme southwestern New Mexico was added by the Gadsden Purchase, ratified by Congress in 1854.)[3]

Also in 1846, in the Webster-Ashburton Treaty between Great Britain and the United States, Britain relinquished all of its claims to land west of Lake of the Woods and south of the 49th parallel, adding what became the states of Washington, Oregon and Idaho, and parts of Montana and Wyoming to the United States.

As a result of these events and the discovery of gold in California in 1848 large numbers of people began moving west along the Santa Fe, the Oregon and several California Trails. Concurrent with this movement were discussions in the press and in the halls of Congress, as to whether the west coast could remain a part of the United States, if there was no means of communication or transport linking it to the east coast.

By 1848, one of America's foremost architects Robert Mills, known for designing the Washington Monument, submitted to Congress a petition proposing a railroad route to the Pacific and a telegraphic system which could get messages to Astoria, Oregon in fifteen days,[4] Congress sat up and took notice. Mills' proposal identified several alternative railroad routes, taking regional interests into consideration. The petition contained a map that proposed, in addition to Whitney's northerly route, a Memphis-Albuquerque route ending in San Diego, and a Vicksburg and Mississippi-New Orleans route, passing through San Antonio, Texas and ending, oddly, in Mexico[5] (Fig. 2).

Senator Stephen A. Douglas of Illinois advocated for a railroad that began in Chicago. Thomas Hart Benton, long-time Senator from Missouri, was in favour of the railroad starting in St Louis, crossing the middle of the country in essentially a straight line, to San Francisco. Southern interests, represented by Senator Jefferson Davis, of Mississippi, and others, advocated for a more

southerly route, either from Memphis or Vicksburg, or New Orleans, across the southwest, to San Diego or Los Angeles.

Preliminary investigations take place

In the late 1840s, a series of expeditions were sent out, funded by the United States government, and staffed primarily with active duty military personnel, to explore various possible routes for a railroad to the Pacific. The first of these was headed by Thomas Hart Benton's son-in-law, John C. Fremont, who had, in the early and mid-1840s, explored vast areas of the West. His 1848 effort to chart a route from St Louis to San Francisco, across the 38th parallel, through southern Colorado, was a disaster. Fremont's reckless attempt to cross the San Juan Mountains in the dead of winter in an effort to get to Taos, New Mexico, resulted in the loss of more than a hundred animals and more than a dozen of his 34-man expedition. It was the worst loss of life among government-led expeditions of the American West. Undaunted, Fremont wrote, 'The result was entirely satisfactory. It convinced me that neither the snow of winter nor the mountain ranges were obstacles in the way of a [rail]road.'[6]

Following Fremont's attempt, the head of the US Army's Corps of Topographical Engineers, Col. John James Abert, sent out several expeditions, primarily to explore the more southerly routes through lands which had been acquired after the Mexican War and where the geography and weather were more conducive to railroad construction. In 1849 Capt. Randolph Marcy explored routes from Fort Smith, Arkansas to Santa Fe, New Mexico, investigating alternatives to the Santa Fe Trail.[7] At the conclusion of the expedition Marcy enthused, 'I am, therefore, of the opinion that but few localities could be found upon the continent which (for as great a distance) would present as few obstacles to the construction of a railway as upon this route'.[8] In the same year, on an expedition to pacify the Navajo Indians, Lt James Simpson explored an area west from Santa Fe to the Colorado River, and suggested that might be a good railroad route.[9] His findings stimulated Capt. Lorenzo Sitgreaves' exploration in 1851 through New Mexico and Arizona, along the Gila River to the Colorado River, and across it into California. The terrain was harsh, water was very scarce, and the Indians along that track were hostile. Not surprisingly, Sitgreaves reported that the route he took was unsuitable.[10]

Simultaneously, in 1849, to blunt criticism by those interested in a more northerly route, Col. Abert sent Capt. Howard Stansbury, aided by Lt John Gunnison, from Fort Leavenworth, Kansas out to the Platte River, along the Oregon Trail, past Fort Laramie, in present-day Wyoming, and Fort Bridger, and across the Wasatch Mountains of Utah, to Salt Lake City. Despite Stansbury's extensive exploration of the Great Salt Lake, they found no viable pass through the Wasatch Mountains. On his return in 1850 Stansbury discovered a pass he named Cheyenne Pass (near present-day Cheyenne, Wyoming), which was ultimately used by the Union Pacific Railroad.[11]

In conjunction with Stansbury's expedition going west to the Great Salt Lake, Capt. William Warner was sent east, from Sacramento, California, to find a route across the Sierra Nevada and up the Humboldt River in what is now Nevada, toward the Great Salt Lake. He rejected a wagon train pass as being too steep for a railroad, but found another that he believed could be used. Before he could complete his explorations he and many of his party were killed by Indians. His maps were later recovered, and proved to be a great help for those building the Central Pacific Railroad.[12]

By the early 1850s pressure was building for a transcontinental railroad. Several expeditions had reported on possible routes yet there was no political agreement as to where such a line should start or end, what territory it should cross, or how it might be funded. Complicating matters further was the issue of slavery. Some northern and northwestern Congressmen regarded a railroad across the southwest as a way of spreading slavery.

The Pacific Railroad Surveys get under way 1853–1855

In light of all these disputes it is surprising that Congress acted at all, but on 2 March 1853, it passed a law authorising the survey of multiple possible railroad routes from the Mississippi River to the Pacific Ocean, to determine which was 'the most practicable and economical'. The surveys were to be overseen by the War Department, and staffed with personnel from the US Army (and as necessary civilian scientists). Congress financed these projects, up to the sum of $150,000. It also called for the data from all these surveys to be summarised and a final report produced and submitted to Congress ten months from the effective date of the law, in early January 1854.[13] (Not too surprisingly, that time requirement was not met.)

H. Viola described the tasks as follows: 'these were topographical reconnaissances, rather than surveys; they weren't mapping the exact routes of the railroads. The parties were to look at climate, soils, rocks,

minerals and natural history. The engineering problems and economic factors were to be considered, along with water and timber availability'.[14]

Even though the stated goal of the Pacific Railroad Surveys was to find 'the most practicable and economical' route to the Pacific Ocean, the Surveys were highly politicized. Senators and Congressmen from all parts of the north, south and midwest were competing for the commercial, developmental, and employment advantages that would be afforded by particular routes. Additionally, some routes were favoured, or disfavoured, based on whether people thought they would encourage, or discourage the westward transmission of slavery. The Secretary of War, trying to appease all these political factions, fielded several expeditions in order to make sure all the disparate interests were represented.

The Northern Survey

The Northern Survey was the best funded of all the explorations and ran from St Paul, Minnesota to Puget Sound, on the Washington coast between the 47th and 49th parallels. This route had originally been proposed by Asa Whitney and was now supported by Senator Stephen Douglas of Illinois, provided that it began in Chicago. It was headed by Isaac I. Stevens, a West Point valedictorian and newly appointed Governor of the Washington Territory. He was a friend and protégé of Senator Douglas and had been a supporter of the President of the United States, Franklin Pierce. As Governor, it was clearly in Stevens' interest that the Northern route be viable, and, in fact, he found it to be so.[15]

Stevens' party included a naturalist, Dr George Suckley; a surgeon, Dr James G. Cooper; a gifted linguist and artist, Gustavus Sohon; and John Mix Stanley, a well-known artist of the American West.[16] Preparing for his journey, Stevens noted that 'It was necessary, moreover, to give great attention to the Indian tribes, as their friendship was important to be secured, and bore directly upon the question both of the Pacific Railroad and the safety of my party'.[17]

Their route was to follow the Missouri River, cross the Rocky Mountains in today's western Montana and eastern Idaho to Puget Sound, in Washington. Governor Stevens set out from St Paul, Minnesota on 6 June 1853 and had much of the terrain to the Pacific explored by November of that year. However, some of the individuals and groups from Stevens' expedition continued to explore other 47th and 49th parallel trails into 1854 and even 1855.

For the Northern route to be viable, three major tasks had to be accomplished. The first was to find a railroad pass across the Continental Divide; the second was to get across or around the Bitter Root Mountains; and the third was to find a way across the Cascade Mountains.[18]

As this part of the country had not been mapped with scientific rigor since Lewis and Clark's expedition of 1804–06, Stevens' party used their journals to help identify passes and their locations. Despite operating under extremely difficult conditions (Fig. 3), the expedition ended up identifying five passes across the northern Rockies, recommending two of them as possible for railroad:[19] Cadotte's Pass and Lewis and Clark's Pass (Fig. 4).

Negotiating the Bitter Root Mountains turned out to be easier than was anticipated. There was no need to cross the mountains at all as they were able to follow the routes taken earlier in the nineteenth century by Canadian fur trappers and traders who travelled around the north side.

Crossing the Cascades turned out to be more difficult. Stevens initially assigned the job of finding a suitable pass to a young Army Captain named George B. McClellan. He explored one pass but refused to test it during the winter snows. He also failed to investigate other passes, which, as it turned out, were better routes. The Washington Territorial Legislature had to send out another party, headed by Frederick W. Lander, a civil engineer, to identify suitable passes.[20] When McClellan, then a General, led the Union Army's Peninsular Campaign to capture Richmond during the Civil War, President Lincoln accused him of having 'the slows' by which he meant that McClellan planned too much and executed too little: clearly his problem in the Cascade Mountains in the 1850s, too.

Three major and a number of other, important maps were prepared as a result of the Northern Survey and published for the United States Government by Beverly Tucker in 1859 in Volume XI of the *Pacific Railroad Reports*. The first major map began at St Paul, Minnesota and followed a track slightly north of the Missouri River to about 102 degrees west; the second continued from there on to the Rocky Mountains, showing the Cadotte and Lewis and Clark Passes to the north, and the Hell's Gate Pass to the south; and the third map continued from the Rocky Mountains to the Pacific Ocean.[21]

Stevens enthusiastically concluded that there were two viable routes across the Pacific northwest. The cost of one of them would be about $90,000,000;

the other about $95,000,000. He indicated that harsh winter conditions 'would not present the slightest impediment to the passage of railroad trains'.[22] Expedition member Suckley disagreed:

> *The extreme northern route to the mind of all who went over it, including … our railroad estimating engineer… seems impracticably expensive. A road might be built over the tops of the Himaleyah Mountains – but no reasonable man would undertake [it]. I think the same of the Northern route.*[23]

Despite the misgivings of some, two major transcontinental roads were built through this area: the Northern Pacific Railroad and the Great Northern Railroad.

The North Central Survey

The North Central Survey followed along the 38th and 39th parallels, from the headwaters of the Arkansas River and across to California, and was designed to more or less follow Fremont's 1848 route. It was supported, politically, by Fremont's father-in-law, Senator Thomas Hart Benton.[24] The basic rationale for this route (other than the fact that it would pass through Benton's state) was that its eastern terminus, in St Louis, was at the 39th parallel, and its western terminus, in San Francisco, was at the 38th parallel.[25] In other words, it offered a 'straight shot'.

The expedition was headed by Capt. J. W. Gunnison who had been in Utah with Capt. Stansbury in 1849–50. He was accompanied by Richard Kern, a topographer and artist and by Frederick Creuzefeldt, a German botanist, assisted by Artillery Lt E. G. Beckwith. In addition, several of the party members had been with Fremont, during his disastrous 1848 expedition. The route to be followed was from Fort Leavenworth, Kansas, up the Kansas River and up the Arkansas River; over the Sangre de Cristo Pass (southwest of current-day Pueblo, Colorado); through the San Luis Valley; thence through a pass satisfactory for a railroad;[26] across present-day Utah, Nevada and into California.

Gunnison left Fort Leavenworth on 23 June 1853, leading the expedition across Kansas, into what is now Colorado, and over the Sangre de Cristo Pass into the San Luis Valley, at the headwaters of the Rio Grande. The party exited the Valley by way of Cochetopa Pass, and travelled westward down a river that was later named for Gunnison, moving into territory claimed by

Fig. 3 Gustavus Sohon, *Crossing the Hell Gate River, May 5th 1854*. This lithograph, a part of the *Pacific Railroad Survey Reports*, is one of a very few 'action' shots of expedition members at work. Sohon is probably one of the people pictured. Courtesy of the author.

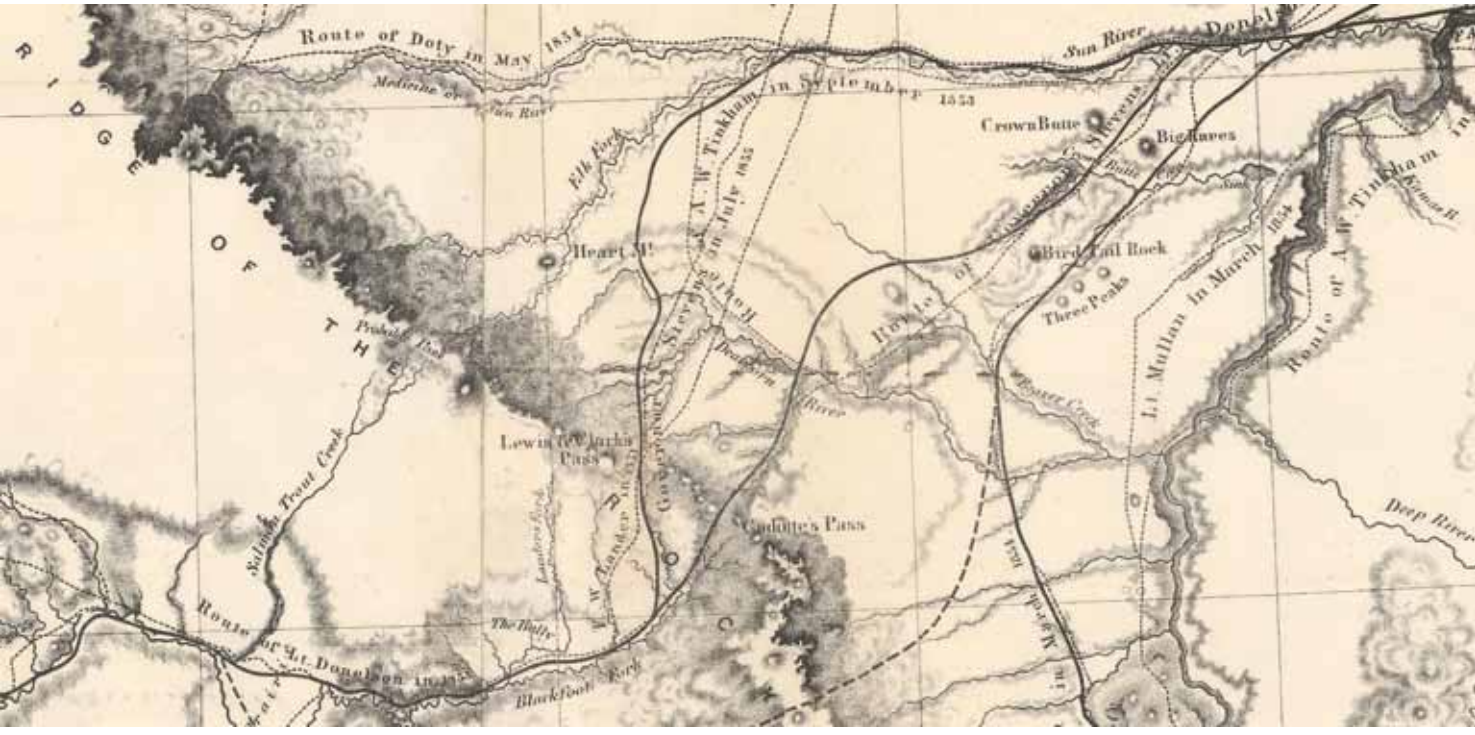

Fig. 4 Isaac I. Stevens, detail of 'Milk River to the Crossing of the Columbia River', 1855. This portion of the map shows the two passes over which Stevens believed a Pacific Railroad could be routed. Courtesy of the author.

the Ute Indians.[27] Though they crossed over the San Juan Mountains and moved through the valleys of the Grand (now the Upper Colorado) and the Green Rivers, and across the Wasatch Mountains, they were constantly harassed by the Utes.[28] Gunnison got as far as Sevier Lake, southwest of the Great Salt Lake, where on 26 October 1853, the party was ambushed by a band of Utes; he, Kern, Creuzefeldt and several others were killed[29] (Fig. 5).

Following that tragedy, Lt Beckwith (who was camped elsewhere) took the rest of the party to Salt Lake City and spent the winter there. In April 1854, after obtaining the War Department's consent to continue the reconnaissance, Beckwith and his group, including Baron F. W. von Egloffstein, a Prussian topographer and artist and James Schiel, a German geologist, backtracked a short distance to Fort Bridger, northeast of Salt Lake City and across the Wasatch Mountains. On returning to Fort Bridger, Beckwith followed Capt. Stansbury's earlier route identifying Utah's Weber River and the Timpanogos Canyon as well suited for a railroad.[30]

From Fort Bridger the party returned to Salt Lake City and travelled slightly north to the 41st parallel. It crossed the Great Basin to the Humboldt River and on to the base of the Sierra Nevada Mountains. The party located two suitable passes through the Sierras to the Sacramento River Valley: Madeline Pass and Noble's Pass.[31] The expedition ended at Fort Reading, California, near the gold mining area, in July 1854.

An early map, published in 1854 in *Report of the Secretary of War on the Several Pacific Railroad Explorations* and covering the several routes pursued by Capt. Gunnison and Lt Beckwith, is called 'Skeleton Map Exhibiting the Route Explored by Capt. J. W. Gunnison [and] Lt. E. G. Beckwith'. The map extended from Chicago and St Louis to San Francisco.[32] This was followed, in 1855, by a very large and detailed 4-sheet map of the 41st parallel route explored by Beckwith after Capt. Gunnison's death.

Beckwith was doubtful about the viability of the 38th parallel route through the Colorado Rockies but enthusiastic about the 41st parallel route in present-day Wyoming. He was not an engineer, and in his report failed to include cost estimates for the construction of the railroad. As a result, his work was virtually ignored by the War Department, though, interestingly, the Union Pacific Railroad section of the first transcontinental railroad followed much of his route very closely.[33]

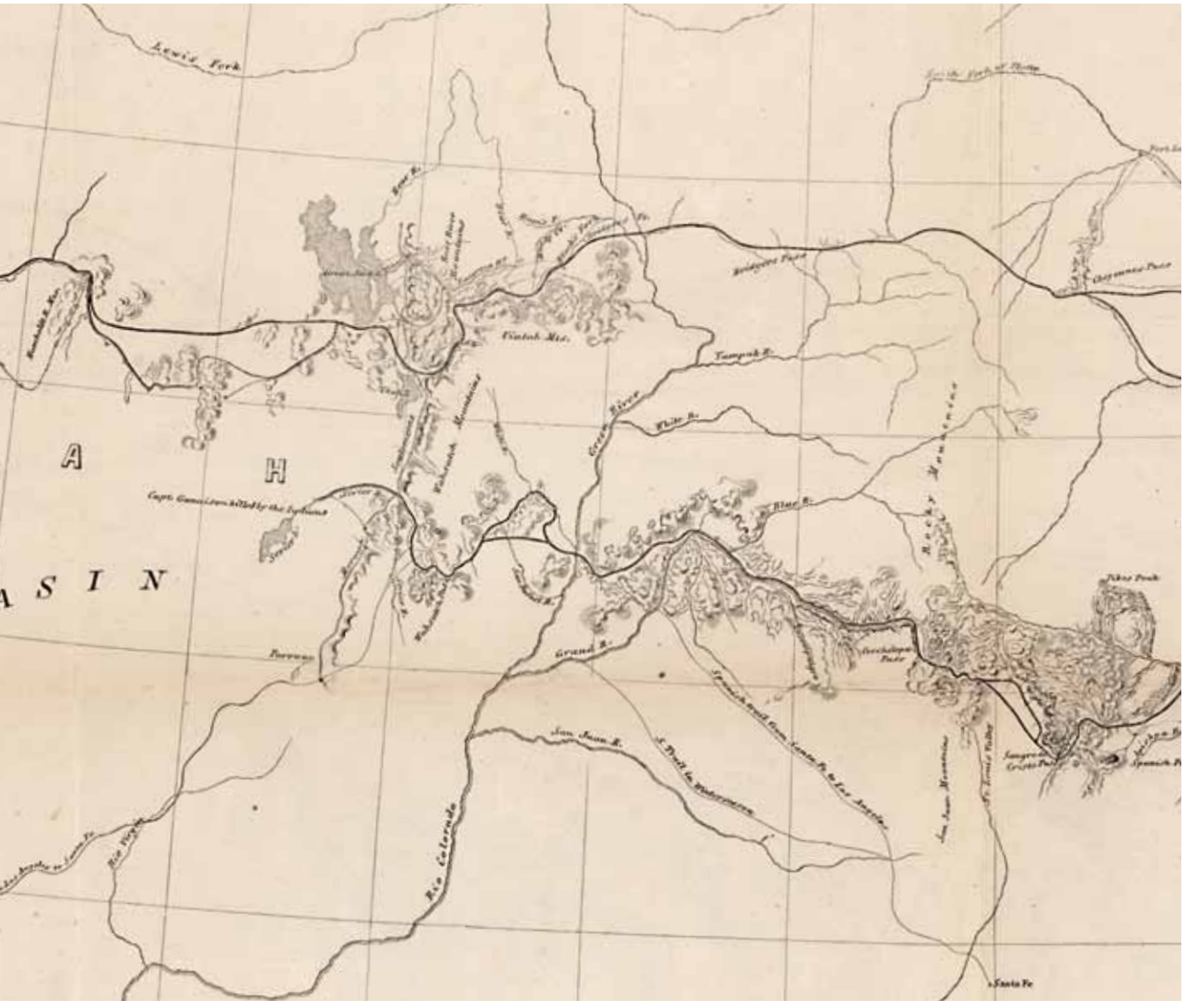

Fig. 5 J. W. Gunnison, E. G. Beckwith, detail of 'Skeleton Map Exhibiting the Route Explored by Capt. J. W. Gunnison, U. S. A. 38th Parallel of north latitude-1853, also that of the 41st parallel of latitude explored by Lieutenant E. G. Beckwith 3d Army', 1854. This map shows Gunnison's route across southern Colorado and Utah, to the point where he was slain. It also shows a portion of Beckwith's route into Wyoming and through the Salt Lake Valley. Courtesy of the Geography and Map Division, Library of Congress.

The South Central Survey

The South Central Survey followed the 35th parallel from Fort Smith, Arkansas through Albuquerque, New Mexico, to California. This route was advocated by Congressman J. S. Phelps, of Missouri, a spokesman for the interests of southwest Missouri. He hoped to present a possible compromise among those interested in a railroad west from Memphis, Tennessee; those interested in a railroad from Cairo, Illinois; and those, like Senator William M. Gwin, a Mississippi Congressman in the 1840s and a California Senator in the 1850s, who wanted a trunk line along the 35th parallel, with radiating branches.

The expedition was headed by Lt Amiel Weeks Whipple, a West Point graduate who had worked for the US Coast Survey, and for the US–Mexico Boundary Survey Commission from 1850–52. Whipple was accompanied by, among others, Dr Jules Marcou, a Swiss geologist and Heinrich Baldwin Möllhausen, a Prussian geographer and artist. The War Department's instructions to this party were that it should proceed along the Canadian River, cross the Pecos River and proceed along an appropriate route to Albuquerque, New Mexico. From there, the party was to proceed along the most practicable route through the Sierra Madre Mountains, and through the Zuñi and Moqui (Hopi) lands, to the Colorado River.

From the Colorado River Whipple was to find a practicable route to either Los Angeles or San Diego.[34]

The party began its trek not far from Fort Smith, on 14 July 1853, proceeding up the Canadian River to one of its sources; from there, it travelled to Anton Chico on the Pecos River and thence over to Albuquerque. This trail had, in fact, been surveyed by several groups in the late 1830s and the 1840s, including Marcy and Simpson who completed it in 1849.[35] The party then proceeded west, through Zuñi and Hopi Indian country, to the Little Colorado River, on to the Colorado River south of a geologic formation known as 'The Needles', and across the Mojave Desert. The expedition continued west through the Cajon Pass, ending in San Bernardino in March 1854.[36] Whipple was enthusiastic about this route, but he erred badly in estimating the cost of the project. He estimated a huge $169,000,000, instead of the correct $94,000,000; this misjudgement caused quite a bit of consternation back in Washington.[37]

Although the expeditions were directed to gather information about the Indians along their routes, Whipple took this direction much more seriously than any of the other leaders. His report contains extensive and detailed data on every Indian tribe he came across, including sketches and illustrations of tribe members (Fig. 6), and their cultural activities.

There are two major map sheets of the 35th Parallel Survey published in Volume XI of the *Pacific Railroad Reports*. The eastern sheet extends from the Mississippi River to Santa Fe and Albuquerque. The western sheet continues from Albuquerque and goes west, through the Zuñi Indian country, what is now Flagstaff, Arizona, and to the Colorado River. The route then passed through present-day Needles, California, across the Cajon Pass and into San Bernardino; thence to Los Angeles and San Pedro, on the Pacific.[38]

Fig. 6 H. B. Möllhausen, *Navajos*, 1855. This is one of many lithographs and drawings of Indians in Whipple's ethnological report. Courtesy of the author.

The Southern Survey

The Southern Survey was a late entry. It followed the 32nd parallel across Texas to the Colorado River and into California. The route was supported by Senator Thomas Jefferson Rusk of Texas and by Jefferson Davis, who had been a Senator from Mississippi before he became Secretary of War and, therefore, in charge of the Pacific Railroad Surveys.[39]

Much of this route had been explored earlier by Lt W. H. Emory in 1846 and 1847 during the Mexican War, and by A. B. Gray, a civilian surveyor, for the Texas Western Rail Road Company, in 1853.[40] However, building on their work, two sections of the 32nd parallel route were explored as a part of the Pacific Railroad Surveys. The first, from the Pimas Villages, in today's central Arizona, to the Rio Grande River, was undertaken by Lt John G. Parke between January and late March 1854. He concluded that there were only nine locations with a permanent water supply and recommended drilling artesian wells along the route. Later he located a pass which reduced the distance between the villages and the Rio Grande and had a shallower grade and a lower maximum altitude. All these findings were useful for railroad construction.[41]

The second section was explored by Capt. John Pope who travelled from Doña Ana, on the Rio Grande, north of Franklin, now El Paso, Texas to Preston, on the Red River, in northeast Texas. The expedition lasted from February to May of 1854 moving, from west to east, with the group crossing the Pecos River, the Colorado River of Texas, the Brazos River and the Trinity River.[42]

Fine maps of each route were produced by Parke and Pope and published in *Report of the Secretary of War on the Several Pacific Railroad Explorations*. Lt Parke's map was the first survey of a route through the very new Gadsden Purchase. Capt. Pope's map is one of the first maps to show Dallas, Texas.[43]

The California–Oregon–Washington Survey

This survey was tasked with exploring the Tulare and San Joaquin Valleys of California for a suitable pass, to connect with the 35th and 32nd parallel routes,[44] and with determining the best routes between Los Angeles and San Francisco, and between San Francisco and the Oregon and Washington Territories.

They were headed by Lt R. S. Williamson, aided by Lt H. L. Abbott and Lt John G. Parke, before he went to explore the 32nd parallel route. The German cartographer Charles Preuss, who had been on several of John C. Fremont's expeditions, and Scottish geologist Thomas Antisell were part of the team. There were essentially two objectives in the west coast surveys: to identify suitable railroad passes through the Sierra Nevada Mountains and the Coast Range, and to determine a route that would connect California with Oregon and Washington.[45] The California surveys were begun in July and concluded in December of 1853. The surveys into Oregon and Washington were begun in July and concluded in December of 1855.

In the final analysis five passes in the Sierra Nevadas were explored, but only two were found satisfactory for railroads: the Tehachapi Pass and the Cañada de las Uvas Pass. Walker's Pass, which had previously been considered promising, was deemed by Lt Williamson not to be suitable. Along the Coast Range a newly discovered pass, called New Pass, connected the desert with the Santa Clara Valley; the Gorgonio Pass cut through to the San Bernardino Valley, and the Cajon Pass (if improved with a tunnel) allowed access to Los Angeles. Neither Warner's Pass nor Jacum Pass – the only two which crossed the Coast Range into San Diego – were found suitable for a railroad (Fig. 7).[46]

Explorations up the west coast showed there were two viable railroad routes: one east and one west of the Cascade Mountains. In addition, a suitable route for a railroad was found to exist between Los Angeles and San Francisco.[47]

Several maps were produced as a part of this Report. The interior of California was extensively mapped, and the passes which were considered satisfactory for railroads were mapped in minute detail.

Conclusion

Mounting political turmoil resulted in none of the surveyed routes being used to build a railroad before the Civil War. Nevertheless, the surveys did produce two very significant outcomes before the War. The first was the thirteen volume set of reports of the expeditions. Published in the late 1850s, and very widely distributed, they contained the geography and practicability of each route. In addition, by virtue of the Congressional mandate, they also contained a wealth of visual and textual data collected by the artists and scientists who accompanied the surveys. The geology, ethnology, fauna, zoology, botany and landscape

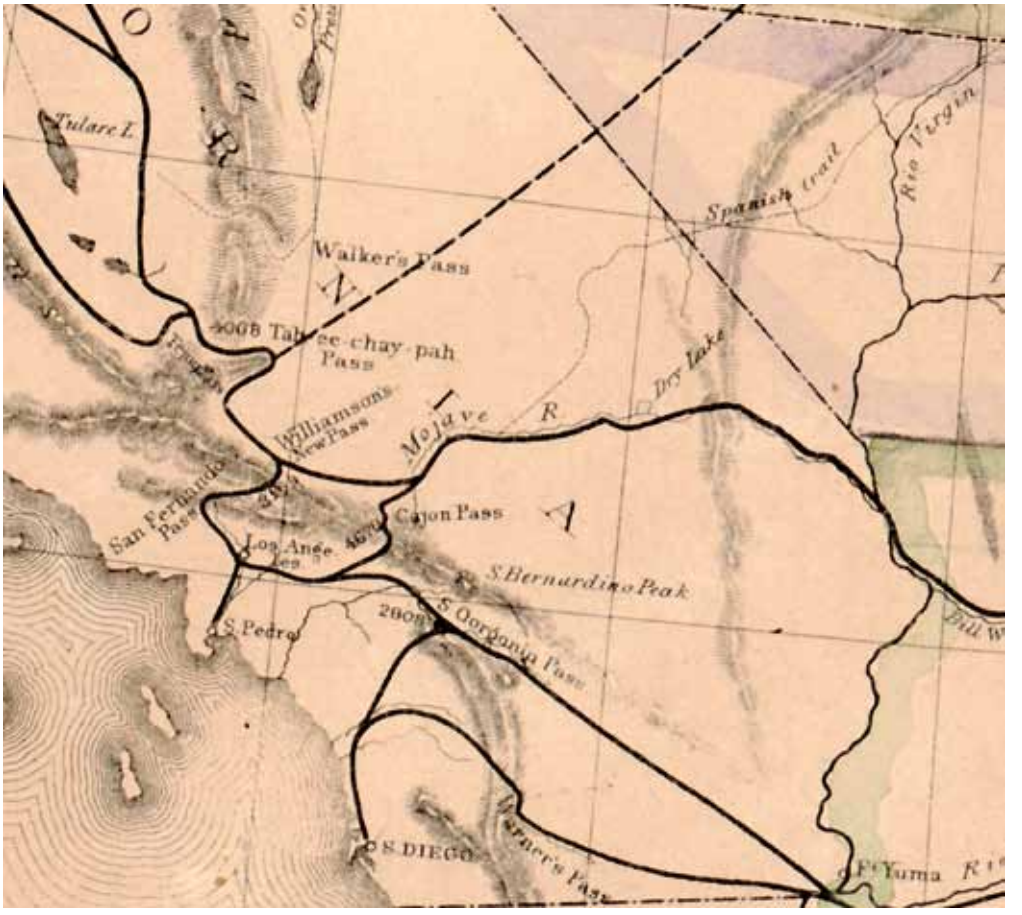

Fig. 7
G. K. Warren, detail of 'Map of Routes for a Pacific Railroad', 1855. This detail shows several of the passes into southern California examined by Lt R. S. Williamson and his survey. Courtesy of the Geography and Map Division, Library of Congress.

lithographs have become a treasured document of America's landscape. As has been noted, most of the maps describing these five reconnaissances were part of the set.

The second major pre-War outcome of the Pacific Railroad Surveys was a memoir and a map produced by a member of the US Corps of Topographical Engineers – Lt Gouverneur K. Warren. Warren, at the age of 20, graduated second in his class at the United States Military Academy. In the early 1850s he explored and mapped portions of Nebraska, the Dakotas, Montana and Wyoming. To prepare his memoir and map, he analysed many maps of areas of the West, from those produced by Lewis and Clark through to the Railroad Surveys. His was the most complete map of the West to that time. The map was completed in 1857 (though it was frequently updated),[48] and was called 'Map of the Territory of the United States from the Mississippi to the Pacific Ocean'. It remained the standard map of the West for many years.[49] The face of the map lists nearly 50 cartographic sources Warren consulted. Many of those source maps were prepared as a result of the explorations discussed in this article.

All of the surveyed routes were used to build railroads after the Civil War. The first transcontinental railroad was completed in 1869. A section of it, the Union Pacific Railroad, went west from Council Bluffs, Iowa, and followed much of the route explored by Lt Beckwith, along the 41st parallel. A second section, the Central Pacific Railroad, went east from Sacramento, California and followed part of the route explored by Capt. William Warner, from Sacramento up into the Sierra Nevada Mountains, in 1849.

Although the 47th–49th parallel routes were rugged, mountainous and often had harsh weather, the Northern Pacific and Great Northern Railroads were operating there by the end of the 1880s. Though the 35th parallel route got off to a rocky start, with an enormously overblown cost estimate, much of it became the route of the Atchison, Topeka & Santa Fe Railroad. Finally, the 32nd parallel route, though considered problematic by some because of deserts, lack of wood and water and the presence of hostile Indians, became the route of the Southern Pacific Railroad.

Notes

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3 http://history.state.gov/milestones/1830-1860/texas-annexation; http://history.state.gov/milestones/1830-1860/gadsden-purchase; accessed 18 Sept. 2016.
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9 William H. Goetzmann, *Exploration and Empire: The Explorer and the Scientist in the Winning of the American West* (New York: History Book Club, 1993) pp. 274–275.
10 Goetzmann, *Exploration and Empire* pp. 275, 277; see also, Goetzmann, *Army Exploration,* pp. 244–245.
11 Goetzmann, *Exploration and Empire* pp. 277–279.
12 Ibid., pp. 279–280.
13 Viola, *Exploring the West*, p. 111.
14 Ibid.
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29 Viola, *Exploring the West*, pp. 114–115; See also Goetzmann, *Army Exploration*, p. 285.
30 Goetzmann, *Exploration and Empire*, p. 288.
31 Goetzmann, *Army Exploration*, p. 286; see also, Goetzmann, *Exploration and Empire,* p. 288.
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33 Ibid.
34 Wheat, *Mapping the Trans-Mississippi West: Vol. 4*, pp. 17–18.
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46 Ibid., p. 293.
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48 www.usace.army.mil/about/history/historical-vignettes/parks-and-monuments/119-Warrens-map Accessed 18 Sept. 2016.
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J. C. McElveen *is a retired lawyer, map collector and independent scholar who specialises in maps and narratives of nineteenth-century American westward exploration. He has served as President of the Washington Map Society and is a volunteer at the Geography and Map Division of the US Library of Congress.*

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PICTORIAL CARTOGRAPHY

Its American expressions

Curtis Bird

Imagine eavesdropping on the moment of the first cartographic communication. By fire light, one person perhaps scratches out the shape of the valley in which they live, then with some more fluid marks they illustrate the neighbouring river that must be crossed to pass a grove of pointed trees in order to finally reach the bison herd drawn as if grazing in a distant plain. If we could distil this first moment into its components, it would basically be images of their place of origin, the obstacles and points of reference they would encounter and finally their target. And while this illustration is just our hypothetical imagining, such images have been found on stone in parts of the Navarre region of Spain and the town of Pavlov in the Czech Republic dating back to between 14,000 and 25,000 years ago. Prior to an age of precision and common measurements, this pictorial approach to mapping would be grasped regionally, coming from a specific people at a specific time. Without longitude or latitude, or scale, or possibly any of the constituents of the modern map that we think of, this approach can seem terribly distorted coming from only one vantage point, but in another sense it can be more than accurate. This basic map is grounded in the moment in which it was made and reveals how an area is perceived and experienced at the time of drawing. Most of all pictorial cartography conveys a subjective understanding of place.

Last year I gave a talk on 'Pictorial Cartography – The History and Evolution of a Different Perspective on Place', in which I identified how this mapping technique is common to mankind and reveals how we perceive place and travel. If we could say there is a innate mapping style, it might well be that we are wired for the pictorial experience. Despite living in an age of digital navigational devices that can give instant coordinates of latitude and longitude, we don't hear, 'Meet you at 38.8976°N, 77.0062°W', but rather, 'See you in front of Union Station'. It's a way to understand place that isn't based on refined measurements, but on visual references of the time. Pictorial cartography uses a similar approach and distils those points of reference, and with it, a cultural perspective.

While twentieth-century European and American branches of pictorial cartography have gained massive popularity in the last few decades, it is certainly not where it began nor are its origins in these regions. It reaches back to primitive times. A fine example is the mosaic map in the Church of St George in Madaba in Jordan from c. 570, which identifies pictorially key locations in the Bible. It becomes clear that there is no one region, culture or artist that can claim to be the 'first' to create and use pictorial cartography. Certainly there are powerful roots that we can identify in European and American cultures that helped bring about a crescendo in this genre in the early twentieth century, but the methodical evolution and lineage of prior centuries should not be disregarded.

The rapidly growing nation of the United States of the nineteenth and twentieth century was a prime example of a culture in which pictorial cartography might thrive. Its ability to capture the developing towns and settlements in the westward expansion in a simplified and vernacular way would prove useful to advertisers, artists and educators in reaching the average person. The unique American contributions to this genre are several: focused regionalism; innovative perspectives; and a new stream of non-traditional mapmakers who brought fresh forward-looking ideas to the genre.

While the major map producers were mostly concentrated on the East Coast and Midwest, such a vast nation could not be understood by the measure of life in New York City, Boston or Chicago. Individual states and regions have a different identity, priority, history and culture from those areas that are hundreds or thousands of miles away.

Such a regional pictorial mapmaker would be contained in the diminutive stature of powerhouse Irvin 'Shorty' Shope (1900–1977). Born and raised in Montana, he could ride and rope from a young age, and was a key part of his family's farm, but when he was struck with polio at the age of 9, his destiny was altered. Ranching for a living was not a dream to be fulfilled. He could always sketch well, loved the history of the West and was inspired by artists such as Charles Russell, whom years later he would get to meet and study with, so he went to study art at the Portland Art

Association and later Montana State. In time he created several pictorial maps of Montana commissioned by the State Highways Department that included both historical and contemporary vignettes about the state (Fig. 1). Other maps by Shope include topical historical maps of 'The Trail of Lewis and Clark 1804–1806' (1945) and the 'Old Oregon Trail' (1948). His work brought exposure to regional history and conveyed how it was the context for the present day. Mapping facets of indigenous and settler life in the West found him integrated into various communities, including the local Blackfoot tribe, where he was named 'Moquea Stumick' which translates to 'Man the size of wolf with heart big like buffalo'. Shope typifies the regional mapmaker, and he is not alone, others like Karl Smith and Don Bloodgood brought a deep local understanding of the past and the 'now' of their lifetime. Their view is a kind born of local knowledge, which artists working in the publishing offices in Philadelphia would not have been able to produce.

As is typical of many great American success stories, they don't necessarily begin in the US, but start abroad and come to full bloom in the States. One such luminary is Joseph Jacinto 'Jo' Mora (1876–1947) whose work is universally accepted as the archetype of the pictorial map. He took what could have been just anonymous lines on a map and by adding the human element expressed how people might have felt about the area or understood it, he animated the regions of California, our national parks and, in particular, his beloved area of Carmel-by-the-Sea and the Monterey Peninsula. Born in Uruguay in 1876, to a Spanish father who was a sculptor, Jo moved with his family to Boston in 1880. He was a talented artist who studied in New York and Boston, and had been taught, at one time by the great painter William Merrit Chase. In 1903 Mora began travelling west, which included an extended stay with the Hopi in Arizona. He learned some of the native languages, and painted, photographed and sketched extensively while there. Works from this

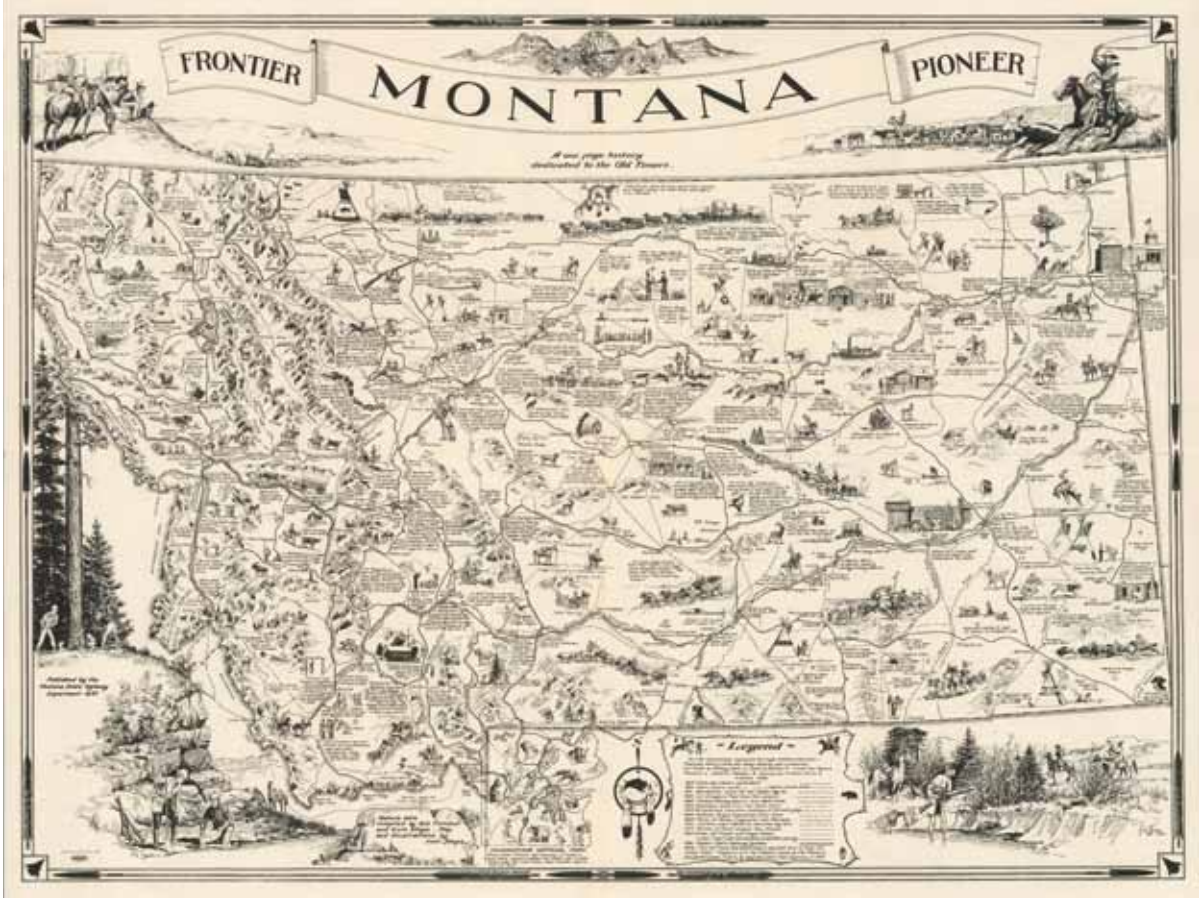


Fig. 1 Irvin Shope, 'Frontier Montana Pioneer, A One Page History Dedicated to the Pioneers', 1937. Published by the Montana State Highways Department. 41 x 55 cm / 16 x 21 ½ in. Courtesy David Rumsey Map Collection www.davidrumsey.com

Fig. 2 Louise E. Jefferson, 'Americans of Negro Lineage', 1946. Published by Friendship Press Inc., New York. 73 x 95 cm / 28 ½ x 37 ½ in. Courtesy David Rumsey Map Collection www.davidrumsey.com

period would later, in 1979, become a major exhibition at the Smithsonian Museum. He finally settled with his family in 1920 in Carmel and soon after began making his classic maps 'Grand Canyon', 'California', and the 'Monterey Peninsula', maps that are today considered his most collectable.

But perhaps the greatest development we see in American pictorial cartography is the introduction of women artists in to the field. Even prior to the Second World War, that would draw women into roles that they'd never held before, American pictorial mapmakers such as Ruth Taylor White, Elizabeth Shurtleff, Sally DeLong, Ethel Chun and Louise E. Jefferson opened new cartographic frontiers. Whether detailing the local character and history of a region, illustrating the re-imagined world of the air age, or documenting ethnic cultures, women were now engaged creatively and getting their work published.

The aforementioned Louise E. Jefferson (1908–2002) produced several thematic pictorial maps that looked at indigenous American tribal lands and the many ethnic groups that made up the US in the 1940s. Her famous map 'Americans of Negro Lineage' is a prize example (Fig. 2). A founding member of the Harlem Artist's Guild and daughter of an engraver for the US Treasury, she was a fine artist and freelance illustrator. The National Council of Churches, Urban League, NAACP and the Friendship Press, where she became its art director, were among her clients. Jefferson's vision of integration and community were inherent in her works. Her illustrated book of songs, *We Sing America* (1936), which featured black and white children playing together, was targeted by Eugene Talmadge, then Governor of Georgia, to be burned because it encouraged racial integration. Fortunately, Louise would live long enough to see both integration and her work celebrated.

Even late-bloomers in life like businessman and artist, Ernest Dudley Chase (1878–1966) would leave behind a career in the greetings card industry in his forties to try his hand at making pictorial maps. While based in Winchester, Massachusetts, he went on long trips, with camera in hand, to capture images for his map vignettes. He was dissatisfied with the many

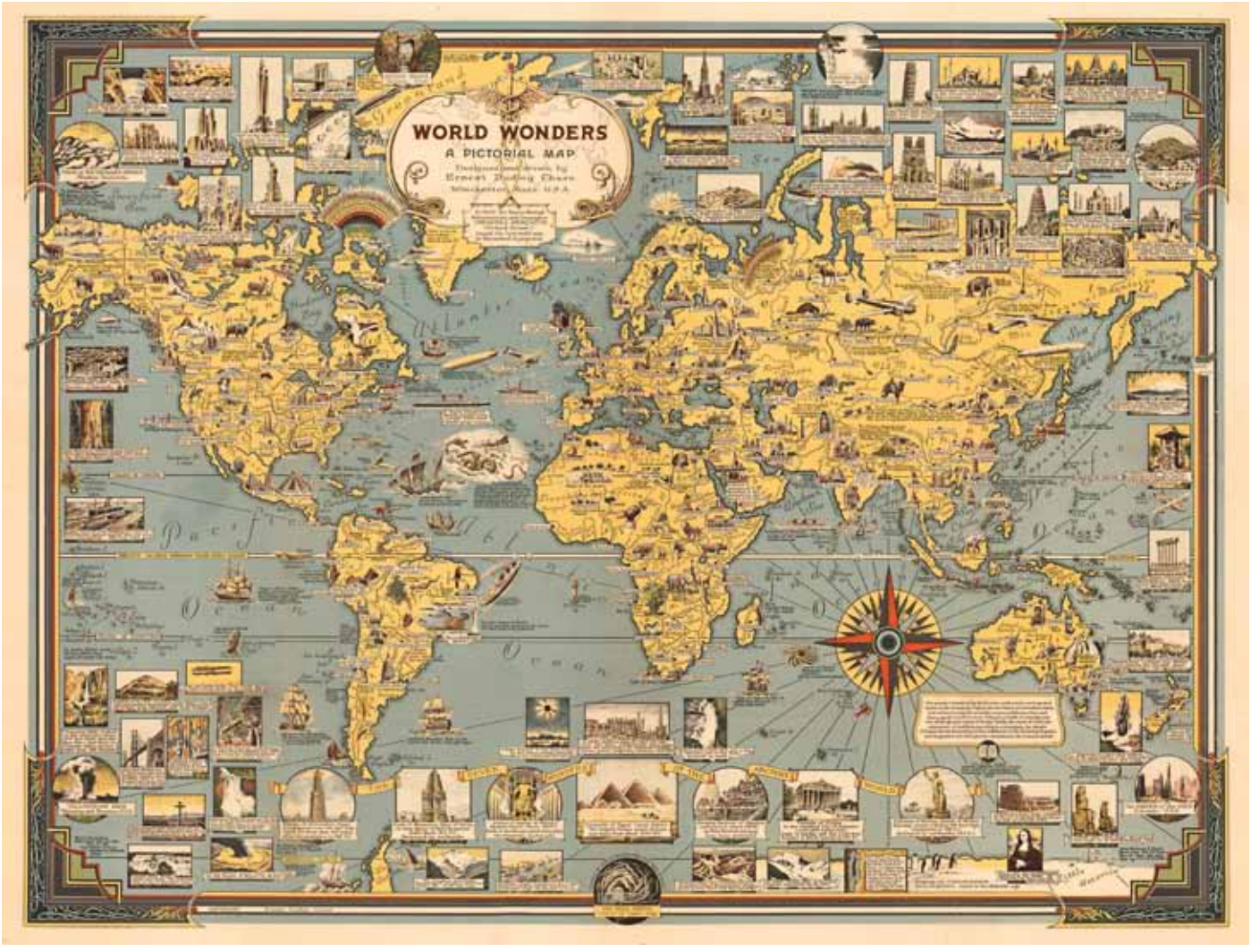
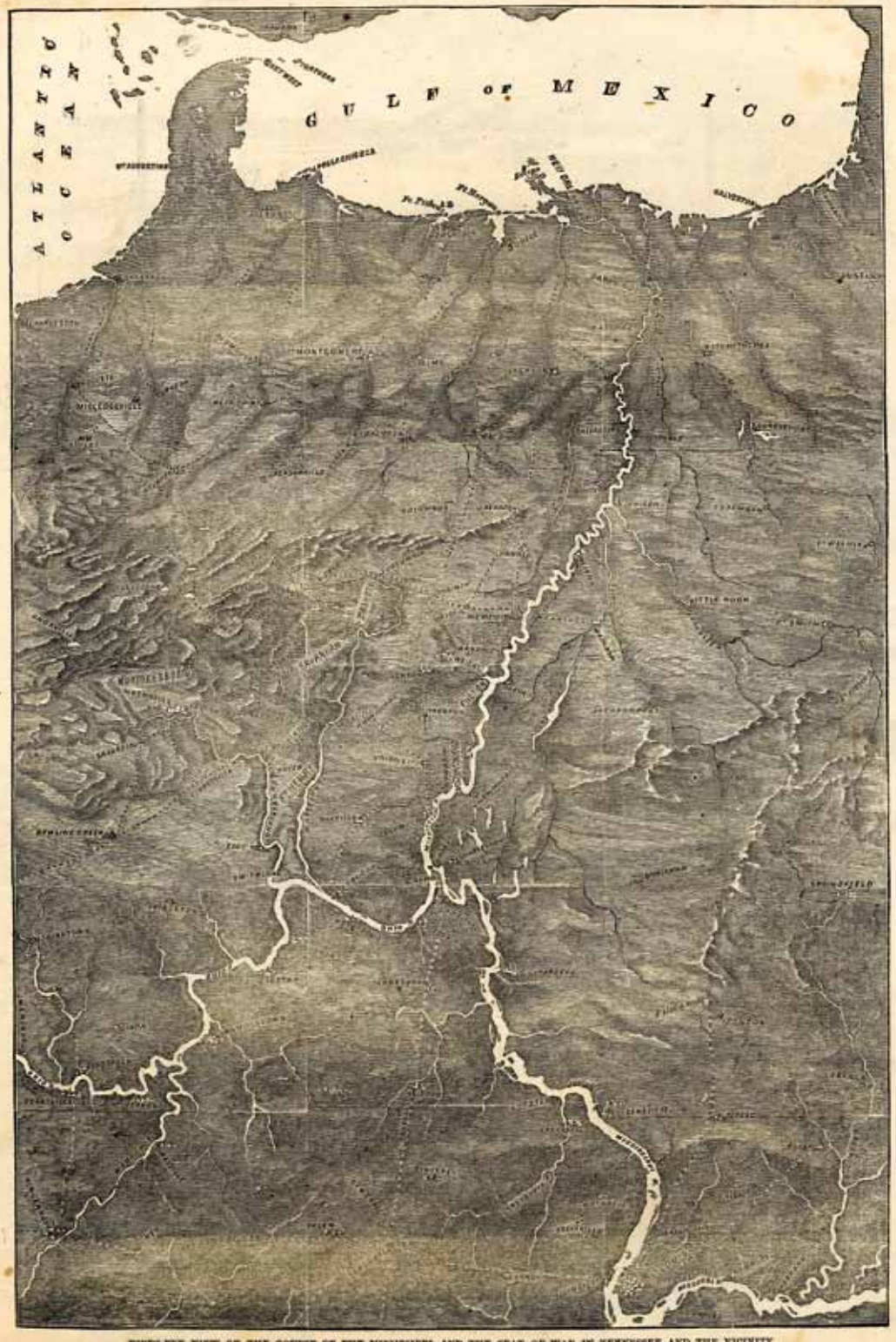


Fig. 3 Ernest Dudley Chase, 'World Wonders, A Pictorial Map', 1939. Winchester. Mass. 72 x 96 cm / 28 x 37 ½ in. Courtesy David Rumsey Map Collection www.davidrumsey.com

Opposite **Fig. 4 'Bird's-eye View of the Course of the Mississippi and the Seat of War in Tennessee and the Vicinity', published in *Harper's Weekly* 5 April 1862.**

'inferior' examples of pictorial maps he encountered at the time. His ability to organise visual material to convey a message, a skill he acquired in the card industry, was useful. And while his initial works of the 1930s were in format and content much like the illustrated maps of European newspapers fifty years prior, he grew into his own style creating unique perspectives with maps such as his 'World Wonders' (Fig. 3), 'Pictorial Map of Loveland' (1943), or 'The Story Map of Flying' (1942).

The growth of American pictorial cartography, as a genre, produced some unique contributions and innovations as it exposed the culture and diversity of regional viewpoints. During the mid-nineteenth century, bird's-eye views gave an idealised view of a town or place with the intention of promoting land sales and settlement. J. Bachmann's 'View of New Orleans' (1851) is one such instance. It captures an overview of the town, on which you can identify some key roads, but it lacks definition when compared to the well articulated steamboats plying the Mississippi River. These early bird's-eye maps became more than just a visual sales pitch; in time they became the way we envisioned ourselves. They captured what we hoped to look like, at our best. As these views evolved, they lost their over-generalised simplicity and took on an accuracy that introduced detail of roads, buildings, drainages, and even land quality. Now you saw not just a town that looked attractive, but you could spot a vacant parcel of land not far from the



BIRDS-EYE VIEW OF THE COURSE OF THE MISSISSIPPI, AND THE SEAT OF WAR IN TENNESSEE AND THE VICINITY.

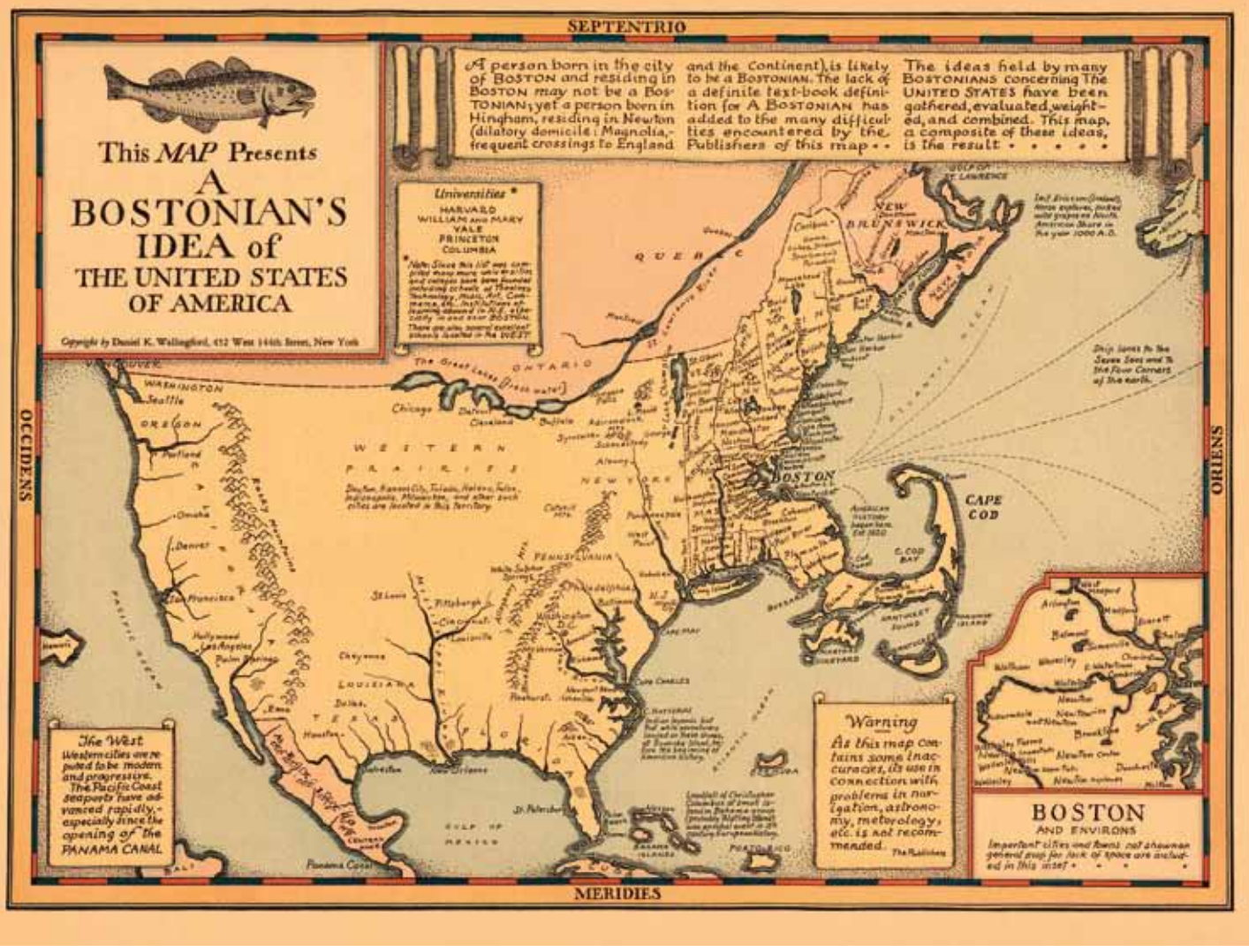


Fig. 5 Daniel K. Wallingford, 'This Map Presents A Bostonian's Idea of the United States of America', 1930, 31 x 42 cm / 12 x 16 ½ in. Courtesy David Rumsey Map Collection www.davidrumsey.com

creek, that had good promise for a garden, and wasn't far from the school. Richard Compton's 'Pictorial St Louis' (1875) is made up of 110 individual views that fit seamlessly together giving an overview of the city that is at once macro and micro. It is clear from this type of elevated and refined bird's-eye view, that the location isn't a sentimental ideal, but a place of actual activity and perhaps, of great practical potential to the viewer.

As this genre evolved, some interesting variant stages of development occurred in which new approaches were used. Sometimes these regional bird's-eye views would experience distortion and stretching in order to convey information in the confines of a specific layout. A fine example of these strange perspectives is the *Harper's Weekly* 'Course of the Mississippi, and the seat of war in Tennessee...' (1862) (Fig. 4) which takes a strange vantage as if the viewer is floating high above some portion of Missouri looking down toward the south, with the far southern reaches of the nation curling upward in the background. This distortion works well to show not only context of the battleground areas for people who might not have ever travelled too far from their county of birth, but also conveys a good bit about the terrain. Such manipulated views, free of the constraints of any projection offered a means to visually explain geographic connections, and may be a distant antecedent to another unique idea in which exaggeration was exploited.

One pictorial sub-genre that gained momentum in the late 1920s could be called the 'perspective-as-seen-by' maps, where regional prejudices and preferences warped the map to reflect how people thought about themselves and their nation. Done in a tongue-in-cheek style, full of puns, the land mass was inflated and

diminished to show regional sentiments. Sometimes they caught a developing community's changing perception of itself such as early twentieth-century Greater Los Angeles, or Florida. Perhaps the first of these works was by Daniel K. Wallingford in 1928 showing the 'New Yorker's Idea of the United States' and the 'Bostonian's Idea of...' (Fig. 5). These maps would evolve slightly over several editions, reaching greatest distribution in the late 1930s and '40s. It became a popular format for many similar maps: 'Greater Los Angeles and the rest of United States...' (1939), 'Map of the United States as Californians See It' (1947), or the 'Official Texas Brags Map of North America' (1948). This playful approach planted the seed that later would develop into the prejudicial bird's-eye views as those produced by Saul Steinberg in the 1970s for the covers of *The New Yorker* magazine. In all of these 'perpective-as-seen-by' bird's-eye maps there is an intentional distortion that renders a more 'honest' view of how the land was regarded by its denizens.

From an expedient way to explain how to get to a food supply to get your tribe though Winter to whimsical views and ennobling maps that bring dignity to the history of a people or region, the pictorial approach in cartography has offered a spectrum of ways to think about place and the people who have occupied it. Appearing from almost the beginning of mankind's exploration of the world, without much formal organisation or structure, pictorial cartography gives a means to wrestle with and express the subjective experience of interacting and understanding the world around us.

Curtis Bird *lives in the foothills of the Rocky Mountains, and owns The Old Map Gallery with his wife Alanna, in scenic downtown Denver. A longtime fixture in the heart of the city, the Gallery specialises in antique and vintage maps, casting as wide a net as it can to include the best cartographic representations that have been achieved. From the age of discovery to the age of space exploration, The Old Map Gallery focuses on man's changing perception of geography and his place in it.*

Antonio Lafreri [Carta Marina] Olavs Got. Benigno Lectori... 1572.

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YOU WRITE TO US

Which state is my Fred Rose map?

I very much enjoyed reading your article 'Mistaken attribution: Identifying the works of Fred W. Rose' in the recent *IMCoS Journal*, (Autumn No. 146).

I hope you can answer questions about my Rose map. Figure 2 in your article has the author as 'by F.W.R.'. My copy reads 'by F.W. Rose'. Is my copy a first state, second issue? How many other issues are there of the first state? Was the map depicted in Figure 3 [of your article] published after my map?

John W. Docktor, USA

Rod Barron replies with a discovery

Thank you for your message and I am delighted that you enjoyed reading my article on the serio-comic maps of Fred W. Rose in the most recent issue of the *IMCoS Journal*.

I always find the classification of plates/states/issues/variants etc a bit of a minefield of terminologies, so here's my own explanation on the positioning of your map in the tentative engraving/publishing chronology of Rose/Bacon 1877 *Serio-Comic War Maps* that I have compiled and which I hope makes sense.

In my opinion, Fig. 2 as illustrated in my article is almost certainly the first appearance/first issue of the map, being what I should perhaps more precisely have termed the first Plate, first State of the *Serio-Comic War Map for the Year 1877*.

You will note that the map is identified as being 'By F.W.R.'. There is a reference to this first 'F.W.R.' issue in an announcement in the *Aberdeen Journal* on 18 June 1877, though the earliest newspaper announcement of the *Serio-Comic War Map*'s first publication that I have found so far is in the *Liverpool Mercury* of 9 June 1877.

According to my tentative publication chronology, your map is the next in sequence, being pulled from the exact same lithographic plate but revised with a reworked inscription below the unchanged map title, the former now reading 'By F. W. Rose'.

Comparing the two states/maps, it is clear the whole of this third line has been burnished and newly engraved, the 'By' in your example being considerably larger in size than the 'By' in the previous 'F.W.R.' state.

So I would identify your example as the first plate, second state of the *Serio-Comic War Map for the Year 1877*.

There is a provincial newspaper announcement (*York Herald*) of 25 June 1877 referencing the fact that the author of the map is now identified as F.W. Rose, so confirming the likely timing of the revision between the two states.

As far as I can tell from close inspection and comparison of the two above states side by side, this is the only discernible change to the engraving of this first plate.

I have come across further examples of both states of this first plate in which the English key has been pasted over with a separately printed German translation, indicating that the map was also being targeted at a wider Continental audience and seemingly from a relatively early stage in proceedings.

I currently identify just the above two states of this first plate.

However my tentative chronology of subsequent plates/states of the 1877 *Serio-Comic War Map* has been thrown into some confusion just in the last two or three weeks, through the surprise discovery of a hitherto completely unknown and unrecorded variant which appears to be a printing from a larger sized new (second) plate.

This unrecorded variant – entitled *Revised Edition Serio-Comic War Map for the Year 1877* – has unusual curved/rounded line borders at top left and top right, has only an English key in the lower left corner (in my example pasted over with a French translation of the underlying English text) and, perhaps most surprising of all, is wider by about an inch when compared to the more familiar example that is illustrated in Fig. 3 of my article.

So I would currently term this newly discovered variant as being the second plate, first state.

There is clear evidence in the tell-tale signs of burnishing and ghosting that I have now detected after making a far more detailed and close-up inspection of two examples of the *Revised Edition* (Fig. 3) that this newly discovered variant is actually pulled from the same plate as the example illustrated in Fig. 3. What appears to have happened is that this new second plate

was subsequently cut down in size slightly and further reworked to produce the *Revised Edition Serio-Comic War Map for the Year 1877 (*Fig. 3).

So, in the light of these recent discoveries, I would now denote Fig. 3 in my article as: second plate, second state.

Given the apparent patterns of continual revision that seem to characterise the engraving/publication chronology of these 1877 maps, it is perfectly possible there is, as yet, an unidentified intermediate state between the above two states of the second plate still to be found and identified, which might perhaps appear with just the English key in the lower left corner and without the additional German language panel added in the upper left.

That is something that one certainly witnesses with the two different states of the *Avenger* map (Fig. 4) initially without and then with the supplementary German language panel added.

As far as I have been able to discover, the first plate, first state (my Fig. 2) and second state (your map) were published and revised in quick succession during the course of June 1877.

The unrecorded variant – the new second plate, first state – must have been engraved and probably in print by early/mid July 1877.

It is not clear whether it is this second plate, first state or the second plate, second state (Fig. 3) which is the map described in the announcement in the *Hampshire Advertiser* of 28 July 1877 (see p. 18 of my article). We know it is definitely the second plate (*Revised Edition*) from the fact that the newspaper announcement specifically mentions an Octopus tentacle extending towards the city of Khiva, which with several other strategically important settlements, including Samarkand, east of the Caspian Sea, are all now clearly marked and identified for the first time on this new (*Revised Edition*) plate.

Whatever the facts, it is certain that the engravers and lithographers in G.W. Bacon's map department must have been working almost flat out in the summer months between June and July 1877 revising, (re)engraving and printing/distributing all these different *Serio-comic* and *Allegorical War* map plates and in such quick succession and over such a relatively short time frame!

I do hope this tentative engraving and printing chronology for the 1877 map makes a little more sense to you now.

Rod Barron, Barron Maps, UK

Rhine Leporellos – New Website

A number of years ago IMCoS held its Annual Symposium in Germany (September 1993) and one component of the trip was a cruise down the Rhine from Mainz to Coblenz. I remember looking on amazed as Kitty Liebreich unfolded a long map showing the course of the river. The map was actually a panorama almost two metres long but only 20-25 cm wide. This sort of map is commonly known as a leporello.

I was so fascinated by this map that over the course of the next ten-fifteen years I amassed a moderate collection of these river panoramas. My intention was always to catalogue them similarly to the carto-bibliographic approach I used for the Devon county maps. I had other things on my mind and, although I acquired more maps and more information over the years, my project was put on the back burner.

Recently I decided to sell my collection; but this would require cataloguing what I had – and I had a good number of the different maps I knew to be available. Hence, my long-forgotten project came to mind. Subsequently I have spent the last few months building a platform to publicise this little-known map type and to catalogue the various maps and their states. It is very much a website in the making and I would welcome any input any of your readers could provide.

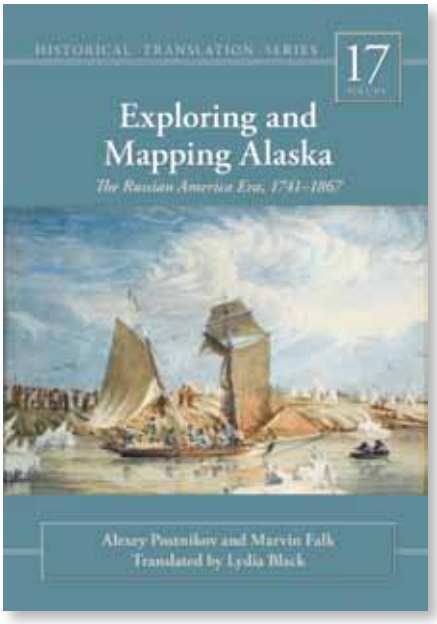
The website is actually using a blog platform as this is easy to use and does not cost an annual fee which many sites charge. I have listed all the maps using a system devised by Alfred Sattler in the 1990s and this includes relief Rhine panoramas without illustrations (Category B) and those that included them (Category C) as well as those types that he felt needed extra attention such as Experiments (D). Simplification (E) was followed by photolithography (H) and colour printing (I). I have not doggedly followed Sattler and have included many leporellos which he missed as well as showing a few precursors.

I am sure that your readers will find the blog worth a quick browse and those who attended the IMCoS trip all those years ago may remember the exhibition *Flüsse im Herzen Europas* in Bad-Godesberg. I would welcome advice and supplementary information. The website is www.kitthemaps-rhinepanoramas.blogspot.de

Kit Batten, Stuttgart, Germany

BOOK REVIEWS

Exploring and mapping Alaska: The Russian American era, 1741–1867 *by Alexey Postnikov and Marvin Falk. Translated by Lydia Black. Fairbanks: University of Alaska Press, 2015. ISBN 978-160-223251-8. Cloth, 450, 75 maps, illus. US $75.*



The publication of this book is an achievement worthy of wonder. Its origin is years ago, when Richard A. Pierce, publisher and scholar of many books on Russian America, and Alexey Postnikov, a research fellow of the Russian Academy of Sciences noted for his excellent writings on Russian maps and explorations of Siberia and the North Pacific, agreed on the simultaneous publication of this book in Russian and English editions. Pierce engaged Lydia Black, his colleague at the University of Alaska, Fairbanks, to translate the Russian text. In 2000 Postnikov's *Russkaia Amerika v geograficheskikh opisaniiakh i na kartakh, 1741–1867* (*Russian America in Geographical Descriptions and Maps, 1741–1867*) was published in Russia by the Institute of Historical Sciences of the Russian Academy of Sciences. Pierce died in 2004. Black kept working on the translation. Before she died in 2007 she entrusted her rough translation to Marvin Falk, asking him to 'English' it and see the book through publication.

Translating a book from one language to another is a challenge; revising a roughly translated book to update it and bring it into its most readable form is a monumental task. Another major problem hindered work on this book: the illustrations that Postnikov used in the Russian edition were unavailable to Black and Falk, being in Pierce's estate. Postnikov could not replace them. What could be done? The miracle worker here is Marvin Falk who replaced or substituted images for this encyclopedic book and got it published in the *Rasmussen Library Historical Translation Series*. It is a beautiful memorial to Dick Pierce and Lydia Black, two of the finest scholars of Russian America in our times. Furthermore it makes available Postnikov's excellent research; it is a credit to Marvin and a gift to us.

Chapter one is short: 'The Russian Advance Toward the Pacific Ocean' beginning in the sixteenth century. An interesting theory in this section is that the eastern movement of the Russian *promyshlenniki* and Cossacks was less detrimental to the Siberian peoples than were the early contacts between Europeans and the indigenous peoples of America. The author writes that the movement was slower and the newcomers settled in with the native peoples more readily. The Russian settlers collected geographic information from the Siberians. Three black and white maps and one coloured map document this chapter, the ones used in the original Russian edition.

The question posed in the title of Chapter two 'Are America and Asia Joined?', I would suggest, was answered in the first chapter, with the reproduction of the Ivan Lvov's 1710 map which shows no land connection between Siberia and eastern lands. Peter the Great gave Lvov's maps to the German mapmaker Johann Baptist Homann, engaging him to make maps based on Russian information. Here, as in other places of the text, readers may wish for reproductions of maps that are discussed in the narrative. I am an advocate of the thesis that Peter knew more about the geography of northeastern Siberia than is generally recognised, and reproductions of some of the maps discussed here would have been welcome. Postnikov believes that Peter did not have proof of the separation of Asia and America: 'For a long time Peter I was engaged in formulating plans to solve, once and for all, the question of whether a strait existed between Asia and America'. Peter's purpose in sending Vitus Bering on the First Kamchatka Expedition is debated and Postnikov provides an excellent summary of it and the controversy

surrounding it, noting particularly the role played by Joseph Nicolas Delisle and his maps.

In Chapter three, 'Mapping the Distribution of Water and Land in the North Pacific (1750–1800)' the problem of access to Postnikov's illustrative materials is evident. The Russian original has over fifty maps and the English translation just twenty-two.

From 1750, for more than a quarter century, the Russians mapped, explored and settled the North Pacific in peace. The arrival of Captain James Cook in the summer of 1778 changed the situation. His visit and subsequent visit to China led to the disclosure of the lucrative sea otter trade between Russia and China. Soon other Europeans arrived bent on trade. Secrecy versus publication is an issue well discussed in this chapter. Cook and his men mapped as they sailed, comparing their discoveries with the maps they had obtained from Bering's expeditions. In October 1778 Cook visited Unalaska, where he exchanged geographical information with Gerasim Izmailov, who had manuscript maps of the region. Other expeditions followed, importantly, George Vancouver's at the end of the eighteenth century. Maps incorporating Russian and Western European information subsequently revealed the face of the North Pacific. This chapter provides an excellent summary of an exciting period of mapmaking.

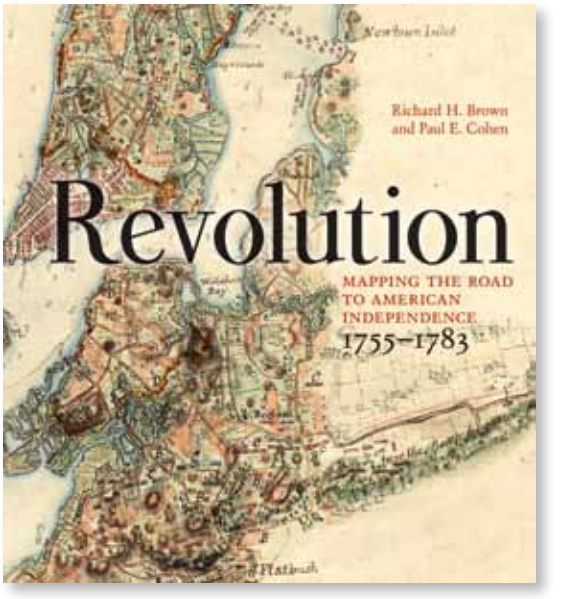
Chapter Four, 'The Exploration and Cartography of Russian America (1799–1867)' opens with the formation of the Russian-American Company. With that event the gathering of geographical information by Russians intensified. Postnikov discusses how it was collected: by Orthodox Church missionaries; through the explorations and maps of Russian fur traders; in reports of naval expeditions; and from information collected by company officials. With other Europeans adding to the Russian cartographic materials, the North Pacific began to be presented more clearly on European printed maps.

On the Russian side, Mikhail Tebenkov's *Atlas of the Northwest Coast of America*, published in 1852, is an outstanding example of Russian cartographic work on the North Pacific. In January 1845 Captain Tebenkov became the chief manager of Russian colonies in America. He had been in the Russian colonies for more than twenty years and had collected and made many charts of the region. His own geographical information and the maps of others (for example, Krusenstern, Litke and Beechey) were the foundation for his great Russian publication. Published at the close of Russian presence in America, his atlas shows more detail on the interior of the northern lands than most maps of the time.

In 1864 Prince Dmitri Petrovich Maksutov took over as manager of the Russian colonies in America, with preparations for the looming sale of Russian America to the United States as his main charge. The final chapter of the book concerns the sale of Alaska. A short conclusion titled 'Russian Heritage and the Influence of Geographic Explorations in Alaska' completes the text. A great book!

Carol Urness, Minneapolis, USA

Revolution: Mapping the road to American independence 1755–1783 *by Richard H. Brown and Paul E. Cohen. New York and London: W. W. Norton and Company, 2015. ISBN 978-0-393-06032-4. HB, 160, illus. 60 maps. US $75.*



The American Revolution has been narrated by numerous historians, military and nonmilitary alike. Most, however, have not used maps as their primary narrative device. Authors Richard H. Brown and Paul E. Cohen's contribution to this body of literature has been 'told through a series of historic maps'. *Revolution* is an excellent resource of maps and plans created by military surveyors and used by officers in the field during the French and Indian War and the American Revolution. They are the focus of the book and the narrative supports the visual images displayed;

maps, portraits and other ephemera provide a pictorial record of the conflicts that resulted in the establishment of the United States of America. Manuscript and published maps have been sourced from over twenty private and public collections, many of them shown in publication for the first time. Approximately twenty-one battles and campaigns are highlighted including: Braddock's March, Battle of Lake George, Lexington and Concord, the battles for Charleston and Yorktown. The battles and campaigns illustrated are printed so that viewers can easily read a map's text while following the printed discussion. (At times you may need a magnifying glass, but which map collector hasn't had to use one?)

Revolution is divided into three sections: the 'French and Indian War', 'Between the Wars' and the 'American Revolution'. Readers are encouraged to 'study' the introduction to understand the map narrative presented and to appreciate the value of the maps selected. Outstanding are those from the King George III Topographical Collection at the British Library and the remarkable manuscript and printed maps from Lieutenant General Hugh Percy, 2nd Duke of Northumberland's collection archived at Alnwick Castle, England. Both men had a keen interest in cartography, as reflected by their collections.

Each section opens with beautifully presented images that leave the reader in no doubt about the book's focus and upcoming content. 'A New and Accurate Map of the English Empire in North America: Representing their Rightful Claim as confirm'd by Charters, and the formal Surrender of their Indian Friends: Likewise the Encroachments of the French…' published by the Anti-Gallican map introduces the French and Indian War analysis. British and French tensions 'were evident in maps drawn by cartographers before and during the French and Indian War… but the Anti-Gallicans extended and dramatised' John Mitchell's 1755 map of the British colonies in North America. Robert Sayers and William Herbert published this 'masterpiece of propaganda' in the same year. Interestingly, this pro-British map included insets designed by French cartographer Jacques Nicholas Bellin; the six smaller ones 'accurately foreshadowed the future points of conflict between Britain and France'. In this section, too, the failed British campaign of Braddock's March of 1755 is well described, and this reviewer spent a great deal of time poring over the maps while reading the accompanying text.

'Between the Wars' provides students of the American Revolutionary War a great favour by discussing British military engineers and their work in America during the interwar period. British engineers and artillery officers 'left a visual record of North America… and many of them were graduates of the Royal Military Academy at Woolwich where they were trained and expected to be competent topographers'. Bernard Ratzer's plan of New York is discussed and the copy shown is from the King's collection.

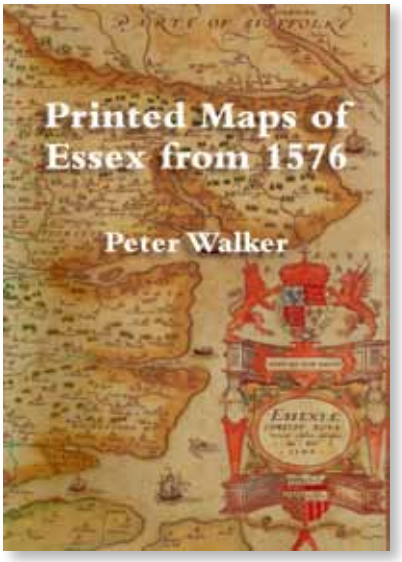
Despite the fact that most of the maps featured in 'The American Revolution' are housed at the Library of Congress, Geography and Map Division, Brown and Cohen decided to highlight Lord Percy's manuscript map of the war's first battles: Lexington and Concord. Their discussion of the battles for Charleston captured the reviewer's interest. The maps will help readers understand why the British had such a hard time in 1776 travelling South Carolina's 'Rebellion Road', the waterway leading to Charleston and why they chose not to coordinate a frontal attack in their 1780 campaign for Charleston.

Revolution's anecdotal stories are entertaining and ensure that this isn't a dry tome filled with minute information only understood by the hardiest military historian. The authors discuss how Yale University obtained its copy of the 'Carte de la Campagne en Virginie du Major General M de la Fayette…' in 1956; rebel leader John Hancock's hesitancy to leave Lexington in April 1775. He had received a gift of a freshly caught salmon that he didn't want to abandon. Brown and Cohen include in this section Charles Blaskowitz's manuscript map 'A Plan of Progress of the Royal Army from their Landing at Elk Ferry to Philadelphia…' (1777) which was not known of until it appeared for sale at auction in 2012, showing that there are forgotten maps still waiting to be discovered, to the delight of map collectors around the world.

Students of the American Revolution will find *Revolution* a natural fit for their libraries; it is an excellent reference resource that will capture the interest of the expert and the beginner, alike.

Cassandra Farrell, Virginia, USA

Printed maps of Essex from 1576 *by Peter Walker, Chelmsford Friends of Historic Essex (Essex Record Office), 2016. ISBN 978-0-9502100-2-5. PB, xiv, 88, 37 illus. STG £12.50.*



This book on Essex maps certainly has an attractive design and comes in a handy format (I am an advocate of the A4 page), and conforms to one chosen by a number of other carto-bibliographers. Published in paperback with only 88 pages and a full cover illustration (Saxton of course), it is an appealing book to pick up and read.

I must admit to being slightly frustrated, however, when I opened this book. As a collector of county maps, I found the title did not fully reflect the contents. Peter Walker has produced a very comprehensive and appealing handlist of the maps held by the Essex Record Office and I would have appreciated a sub-title making this clear. Once the subject matter is understood it is evident that this book will be of immense interest to those checking on ERO's holdings.

This publication has been produced in co-operation with the Friends of Historic Essex and they will be well satisfied with this listing covering, as it does, almost every map of Essex contained within the county archives. That means that not only are county maps included but also maps of the area such as Mercator's map of 1595, as well as road maps produced by Ogilby, Gardiner and Senex which have been all compiled in the first section of the book together with details of any photostats held where originals are lacking and even the odd manuscript map (or photocopy thereof). The book's organisation is clear and logical with a short introduction in which reference is made to county maps, but these are not listed in any separate way. There is an explanation of what is included in the listing; manuscript maps of farms and or other small areas such as a village are excluded, as are some OS maps. One is left to assume that all other maps and charts of Essex can be found here.

Each map is catalogued according to a standard entry and ascribed an identifying number through the handlist, and the corresponding number of the map itself can be found as the last entry. Hence *C7.1* is John Speed's map of the county in its 1610 version and will be found under *MAP/CM/8/1, 4* with 1, 4 signifying there are two separate copies. Scale, size and date of issue are also included here. As all maps, regardless of type, are listed chronologically county collectors will be disappointed that there is no correlation to the works of R. A. Skelton or D. Hodson. The scope is wide, C2.1 to C2.7 for example are all maps based on John Norden including a manuscript map (C2.1), reproductions, photographs and monochrome photostats and later facsimiles/reprints with additions carried out in the nineteenth century. Not all map titles are given.

The introduction includes a short overview of the eight original surveyors of the county, i.e. those who produced their own survey and were not solely relying on the work of others. Amongst these are John Oliver, John Warburton and the alliance of John Chapman and Peter André who are rarely covered due to their limited output. An interesting inclusion here is a short account of surveying techniques. Given the restricted scope of this book this is an added bonus.

The eight later sections of the book are dedicated to maps of the whole county, Colchester, Southend-on-Sea, Epping Forest, as well as Other Towns, London, Coastal and River and also Ordnance Survey maps (one inch and smaller only). Unfortunately there is no index to help one find a particular map; I found an interesting entry (Lenny) but forgot to make note of its reference and then spent a lot of time looking for it again (I finally found it using the online search). The illustrations give the map number but not the handlist reference number.

The book is copiously illustrated with 37 illustrations, which are all in colour, and include four double-page examples. The quality of the photographs is first class. There are complete maps as well as detail sections of important maps. I did feel that the selection could have focused a little more on the unusual rather than the well known. For example, Saxton and Bowen

and other county mapmakers are well represented but little known printers and publishers, or the ERO's unique holdings could have been represented. John Oliver, although born and working in London, produced only six county maps and his example of Essex is listed but not illustrated and would have been of interest to a wider public. Likewise, J. Woodward's 1799 map, S. Dickson's 1844 county map or road map, or J. G. Lenny's manuscript map are not shown. I particularly appreciated the inclusion of Ogilby's 1678 map of the county and also liked James Dean's large 'Ichnography of Colchester' for this reason. George Wise's circular map, 95 mm in diameter, sounds intriguing and, as a local artisan, more information on his work would have been interesting.

Peter Walker has covered maps from 1576 to 1972 (a much later cut-off date than many other lists) in the main section and even later in subsequent chapters when taking copies and facsimiles into account and he has to be congratulated on his efforts. At only £12.50 every researcher visiting the ERO should be encouraged to acquire one.

Kit Batten, Stuttgart, Germany

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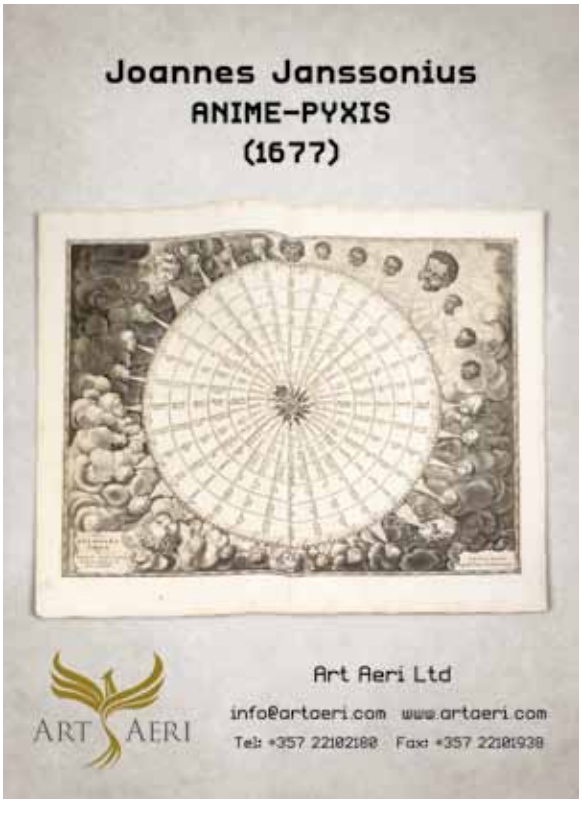

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