D

Dalrymple, Alexander. Alexander Dalrymple (1737–1808), hydrographer to the East India Company and to the Admiralty, began his career as an East India Company writer posted to Madras in 1753. His geographical and surveying knowledge developed during voyages from Madras to Borneo, the Philippines, and China in the early 1760s, from which manuscripts of his running coast surveys and measured port plans survive. In London after 1765 he continued research into the counterpoise theory of a great southern continent, resulting in *An Historical Collection of the Several Voyages and Discoveries in the South Pacific Ocean*, published in 1769–71. He was nominated by the Royal Society in 1768 to lead the Transit of Venus expedition, but, after a misunderstanding between the Royal Society and the Admiralty over command of the ship, declined to take second place under a naval officer. James Cook was subsequently appointed both commander and Royal Society observer.

Between 1769 and 1771 Dalrymple published charts and navigational memoirs from his 1760s voyages; he maintained a technical correspondence with the French hydrographer Jean-Baptiste-Nicolas-Denis d'Après de Mannevillette over evidence for the positions of Indian Ocean islands from 1767 until the latter's death in 1780; and in 1774 and 1775 he issued a series of *Plans of Ports in the East Indies* from his own collection of manuscripts. His use of a borrowed John Arnold chronometer on his 1775 voyage to Madras showed him the value of accumulating coherent series of longitude observations at sea for recommending best tracks to follow at different seasons and for constructing accurate charts. He advocated a complex form of chronometer log-keeping with tables of winds and weather and consistently recommended Arnold's chronometers for use at sea. He later transmitted the wind scale he derived from John Smeaton's calibration of windmill sails to the young Francis Beaufort, who subsequently adopted it once he had succeeded Dalrymple as hydrographer.

In April 1779 Dalrymple offered himself "for examining the Ships' Journals" accumulating in East India House, proposing to publish charts and nautical instructions (quoted in Cook 1992, 1:104). He held this responsibility on an annual retainer of £500 for the rest of his life. He devised a scheme of coastal charts intended to run from the Mozambique Channel to the China Sea and during fifteen years published almost 600 plans of ports, coastal surveys, and views for incorporation in that scheme (fig. 192). Difficulties in reconciling observations in earlier deduced-reckoning journals, and the lack of reliable longitude data, brought to a standstill his efforts to draw accurate charts of the Indian Ocean.

An active member of the Royal Society and its affiliated dining club, and increasingly geographical advisor to government officials on such matters as George Vancouver's voyage, supply routes to Nootka Sound, Charles Cathcart's embassy to China, the southern whale fishery, and the Hudson's Bay Company project to export sea otter pelts to China, Dalrymple was appointed hydrographer to the Admiralty in 1795. The post, which he held in parallel with his East India Company responsibility, was created for him, ostensibly to organize an accumulation of manuscript charts and plans but in reality to give official status to the advice he was providing to the government. In 1800 he introduced engravers and a proofing press to the Admiralty, producing, among 150 copperplates, two series of proof charts for the south coast of England but without either budget or resources to publish them.

Meanwhile he continued his East India Company charts and nautical directions, culminating in 1806 with *Collection of Nautical Memoirs and Journals*. In the fourth (1806) edition of *Essay on Nautical Surveying* he issued for the first time much material intended for his unfinished 1780s manual "Practical Navigation."

The controversy that marred Dalrymple's last years, leading to his dismissal from the Admiralty and perhaps hastening his death in 1808, arose from changes in the Admiralty's expectations for the office of hydrographer

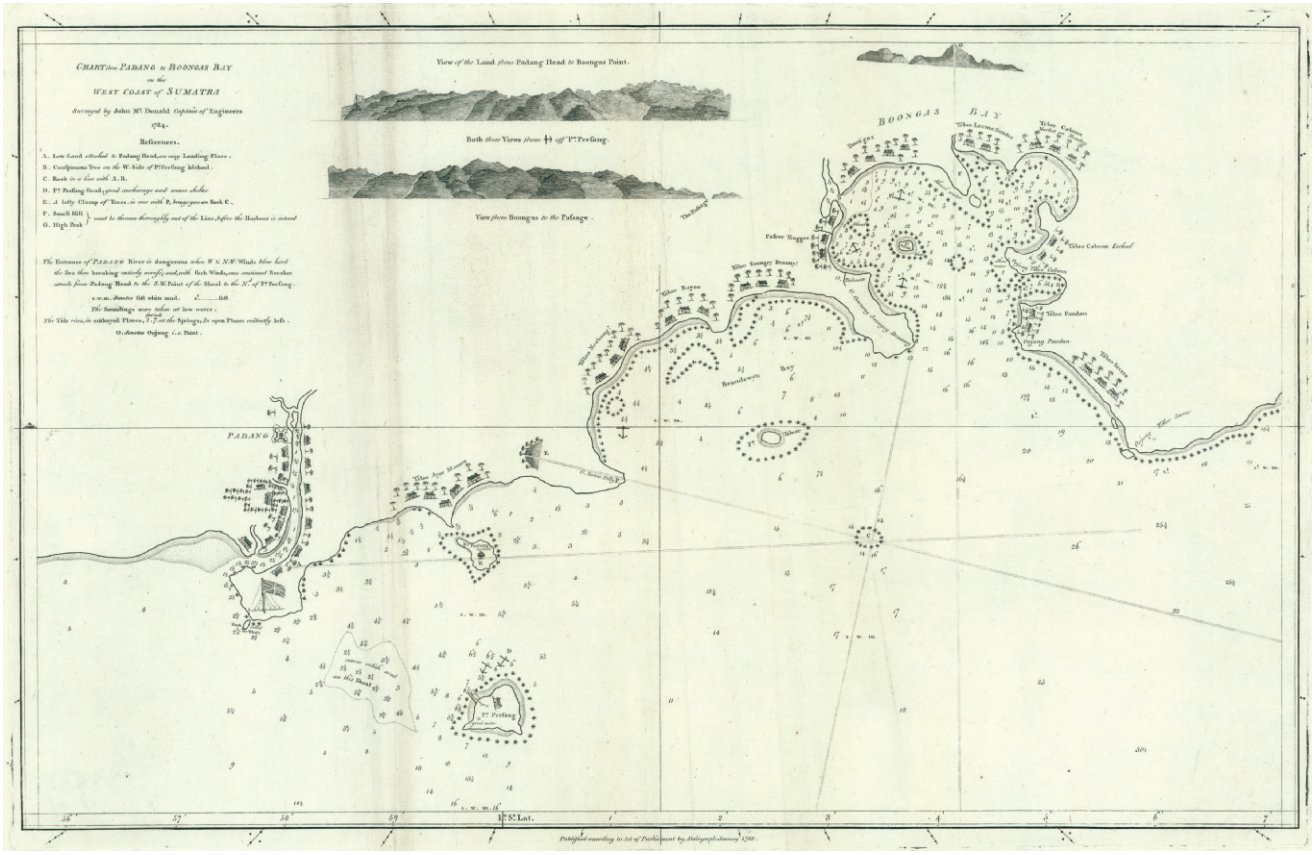

FIG. 192. ALEXANDER DALRYMPLE, *CHART FROM PADANG TO BOONGAS BAY ON THE WEST COAST OF SUMATRA* (LONDON, 1788). Printed chart, scale ca. 1:25,000. This chart exemplifies the manuscript source material (port plans and detailed coast surveys) that Dalrymple gathered and published to contribute to his effort to produce charts of the coasts from the Mozambique Channel to the Red Sea and represents his demanding standards for quality of engraving, with particular emphasis on the topography of the coastal view.
Size of the original: 28 × 45 cm. Image courtesy of the National Library of Scotland, Edinburgh (EMW.b.2.13[265]).

and from his intransigence in deflecting them. Tasked in 1807 to compile "a compleat set of all Charts published in England," he declined the supplementary request to evaluate them because, as commercial charts, they generally lacked authorities, and because he was unfamiliar with the coasts they covered (Cook 2008). He recommended a committee of naval officers to advise on charts for fleet use, and this Chart Committee began to regulate more closely his activities, particularly the prioritization of charts for engraving. The issue chosen by the committee to ease Dalrymple into retirement was that of the security copies he had made in 1795 of charts from Joseph-Antoine-Raymond Bruny d'Entrecasteaux's voyage: he consistently refused to relinquish them to the committee on grounds of confidentiality and was dismissed on 28 May 1808. He died three weeks later, probably of a heart attack induced by his fierce reaction to dismissal.

Dalrymple's library of geographical works, his nautical papers, and his published charts, plans, and memoirs were his tangible legacy and went by his will to form the core of the Admiralty Library and Hydrographic Office collections. The East India Company declined the copperplates of his charts and plans, almost four hundred of which were later reissued by the Admiralty. Though versed in navigation and survey, Dalrymple's importance is as an accumulator, compiler, editor, and publisher of charts and nautical memoirs, both for the East India Company and the Admiralty's nascent Hydrographical Office.

ANDREW S. COOK

SEE ALSO: East India Company (Great Britain); Hydrographical Office, Admiralty (Great Britain); Marine Chart; Marine Charting: Great Britain; Sounding of Depths and Marine Triangulation

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Danish West Indies. The Danish West Indies (now the U.S. Virgin Islands) were the colonial apex of Denmark's Atlantic triangular trade. The Vestindisk-guineisk Kompagni (Danish West India and Guinea Company, 1671–1754) settled St. Thomas in 1671 and St. John in 1718. In 1733 it purchased St. Croix, the largest of the islands, from France. Its shareholders were promised plantation land on St. Croix in return for their obligatory reinvestment. The land was to be distributed by lottery, so the directors ordered the division of the best land into lots not only of uniform dimensions but of equal value. Cartographically inexperienced local officials attempted to comply with these requirements as expeditiously and with as few survey lines as possible; the result was a strikingly regular grid of rectangular properties. The grid was easy to visualize and draw, so the earliest maps amounted to little more than arrangements of largely blank rectangles representing plantation lots. Actual topographic survey was neglected. The origins of this system thus shared none of the grandly rationalistic and geographical vision of the rectangular survey systems subsequently adopted in the United States and elsewhere (Hopkins 1992a, 70; 1992b; 1992c, 168–69; 1993a, 101–2).

St. Croix's eighty square miles proved surprisingly difficult to map. A succession of officers worked on the cadastral survey, but the first Danish map of the entire island was not completed until 1750 (fig. 193). This was mainly the work of Lieutenant Johann Cronenberg. It is an extraordinarily informative map, far more so than any other contemporary agricultural record for the island: besides topography and hydrography, it purports to show every major structure in rural areas, including slave dwellings, and the outlines of individual fields of sugar cane and cotton. Cronenberg's uncertain rendering of the northwestern coast confirms that he constructed his map from the inside out, building on the plantation grid. Where no plantations had yet been taken up, in the steep hills of the Northside quarters, there were no lines of access along plantation boundaries, no traverses, and thus no standard geometric blocks to work with. Cronenberg's depiction of the harbor approaches was quite detailed, and it appears that his map was passed to the Danish nautical charts authority and then forgotten. It survives only in a single manuscript copy (Hopkins 1989).

A much simpler map of St. Croix, *Tilforladelig kort over eylandet St. Croix udi America* by Jens Michelsen Beck, was published in Copenhagen in 1754, just when the Danish Crown dissolved the company and took over the administration of the colony. Beck's map showed neither relief nor land use; indeed, its main element was the rectangular survey system. This simple line engraving proved useful for cadastral purposes: a number of prints survive, with manuscript annotations and color depicting changing patterns of landownership (Hopkins 1993a). Crown officials apparently referred to Beck's map in the course of an audit of landownership on St. Croix in 1759 (Hopkins 1992a, 73).

A military engineer, Peter Lotharius Oxholm, was sent to survey the defensive works on all three islands in the unsettled international climate of the American Revolutionary War. He produced plans and perspectives of the fortifications and large-scale maps of the towns. In 1794, Oxholm, by that time a wealthy planter, while working on a highly remarkable agricultural census in the administrative context of Denmark's abolition of its Atlantic slave trade, completed a new topographic map of St. Croix. Like Cronenberg and Beck, he relied extensively on the regular geometric framework supplied by the original plantation survey, although he personally knew it to be rife with inconsistency. The Royal Danish Academy of Sciences and Letters, Kongelige Danske Videnskabernes Selskab, declined to publish the map in its national topographic series because its fine detail made it prohibitively expensive to engrave. Oxholm published it himself in 1799 (Hopkins 1993b; Hopkins, Morgan, and Roberts 2011, 92–94).

Oxholm also mapped the more sparsely populated St. John in 1779 and 1780; he published this map, too, in 1800. He did not map St. Thomas, of which a map of unknown provenance, published by Gerard van Keulen in 1719, was found serviceable throughout the eighteenth century (Hopkins 1993b, 31, 41–43, 53).

The most important map of the territory around the Danish slaving forts on the Guinea Coast near Accra was compiled in 1802 by Peter Thonning, a natural historian of typically catholic eighteenth-century geographical interests. He was sent there shortly before Denmark's abolition of the Atlantic slave trade took effect to assess the potential of the territory for large-scale plantation agriculture on the West Indian model. Earlier depictions of the Danish position in West Africa had amounted to no more than strings of named dots along a straight line representing the coast. At least sixteen manuscript versions of the map survive, the last dated 1847, evidence of Thonning's reliance on the repeatedly updated map in advocating a major new African colonial endeavor within the Danish central administration. However, Denmark's African colonial plans never really recovered from the economic and territorial devastation of the

FIG. 193. JOHANN CRONENBERG AND JOHANN CHRISTOPH VON JÆGERSBERG, "CHARTE OVER EILANDET ST. CROIX UDI AMERICA," 1750. Pen-and-ink and watercolor copy by C. v. Holten, 1:32,000. The map displays the island's topography, the cadastral grid, the names of plantation owners or tenants, plantation buildings, slave dwellings, and cultivated fields (sugar cane in yellow, cotton in pale blue, and provision grounds or pasture in grey stipple), as well as woods and bush (in green).
Size of the original: 101.5 × 144.5 cm. Rigsarkivet, Copenhagen (Søkort-Arkivet, Map A18/049). Image courtesy of Geodatastyrelsen, Nørresundby.

Napoleonic Wars. When the African forts were sold to Great Britain in 1850, an annotated copy of Thonning's map was attached to an English governor's report of his tour of this new addition to the British imperial atlas (Hopkins 1998, 2013).

DANIEL HOPKINS

SEE ALSO: Denmark and Norway; Property Mapping

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De Brahm, William Gerard. William Gerard De Brahm was born on 20 August 1718, in Koblenz, Germany, where his father was a court musician to the Elector of Triers. Nothing is known of his education, but from his accomplishments and writings it must have been appropriate to his social station, following the educational precepts of the Enlightenment. After a successful period of service in the imperial army, where he rose to the rank of captain engineer, De Brahm surrendered his commission and renounced his Roman Catholic faith in order to marry. In 1751, with a new wife, De Brahm was placed in charge of a large contingent of displaced German Lutherans being transported to the colony of Georgia in America.

Having arrived, De Brahm's talents as a military engineer and surveyor soon brought him to the attention of colonial administrators in Georgia and neighboring South Carolina. In 1752 he was summoned to South Carolina and commissioned to design and oversee the construction of a comprehensive system of fortifications for Charleston. Later he would serve as an interim surveyor general in South Carolina's colonial government. In 1756 he journeyed deep into the Cherokee heartland to design and direct the construction of historic Fort Loudoun in what is now eastern Tennessee.

When the Georgia Trusteeship's government ended and a royal government was established in 1754, De Brahm was appointed as one of the colony's two "Surveyors of Land," or surveyors general (De Brahm 1971, 15). De Brahm played a key role in designing schemes of defense and building fortifications in Georgia, where he had acquired large landholdings. Many of the maps and plans he drew for these and his other projects are extant and reveal his considerable ability as an engineer and surveyor-cartographer.

De Brahm's finest hour was in early 1764, when he received commissions to serve in two newly created offices, of surveyor general of lands for the colony of East Florida and surveyor general for the Southern District of North America. In the latter position he was responsible for the surveying and mapping of Britain's colonial empire extending from the Potomac River in the north to the Florida Keys in the south. The publication by Thomas Jefferys in 1757 of De Brahm's much-lauded *A Map of South Carolina and a Part of Georgia* (fig. 194) did much to commend De Brahm as qualified for this important imperial post.

Taking up residence in St. Augustine, De Brahm produced a truly impressive collection of maps and reports that were forwarded to London during the period 1765–71. Late twentieth-century researchers who employed them in historical ecological reconstructions found De Brahm's maps to be amazingly accurate and thorough and not improved upon until the coming of the U.S. Coast Survey a century later.

While conducting hydrographic surveys along Florida's eastern coast, De Brahm became impressed with the strength of the Gulf Stream. Regrettably the outbreak of the American Revolution interrupted his in-depth research on the current and saw him made a prisoner-at-large upon landing in Charleston. De Brahm was allowed to return to England, where he suffered an extended period of ill-health, before finally returning to America, where he settled outside Philadelphia in 1791. After De Brahm died there in 1799, his scientific and navigation instruments were sold. Thomas Jefferson was pleased to purchase De Brahm's universal equatorial telescope for his own use in 1792.

LOUIS DE VORSEY

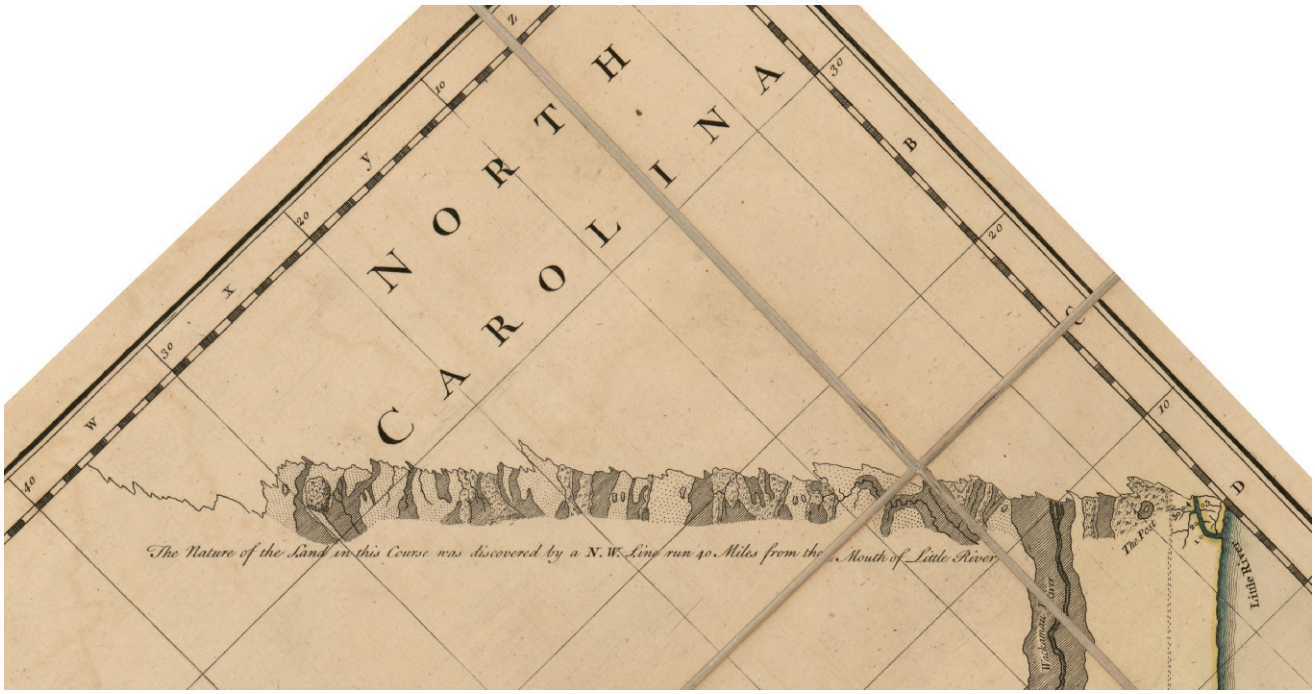

FIG. 194. DETAIL (ROTATED) OF THE BOUNDARY BETWEEN NORTH CAROLINA AND SOUTH CAROLINA ON DE BRAHM'S *A MAP OF SOUTH CAROLINA AND A PART OF GEORGIA,* 1757. This careful delineation of the course of the Little River exemplifies De Brahm's concern for delineating landscapes. Size of the entire original: 135 × 122 cm; size of detail: ca. 17.1 × 33.0 cm. Image courtesy of the Geography and Map Division, Library of Congress, Washington, D.C. (G3910 1757 D4).

SEE ALSO: Administrative Cartography: British America; *Atlantic Neptune, The*; British America; Gulf Stream; Topographical Surveying: British America; Trade and Plantations, Board of (Great Britain)

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De Vorsey, Louis. 1976. "Pioneer Charting of the Gulf Stream: The Contributions of Benjamin Franklin and William Gerard De Brahm." *Imago Mundi* 28:105–20.

Decoration, Maps as. The role of maps as decorative devices in domestic and public interiors in Europe is touched upon throughout this volume, particularly in those instances where public display was part of a map's raison d'être, as was often the case with urban mapping, property mapping, and administrative cartography. The following essay considers examples largely found in British settings, evoking parallels certainly to be found in other regions.

Shortly after Arthur Dobbs, surveyor general of Ireland, was appointed to the post of governor of North Carolina in January 1753, he commissioned James MacArdell to engrave his likeness (fig. 195). Like many subjects of eighteenth-century portraitists, Dobbs was shown with props that reflected his interests and his significant lifetime achievements as surveyor general and as governor of North Carolina. Thus, he was posed with a globe in the background, holding a protractor in one hand, signifying a worldview appropriate to his station. The map held in his other hand has been identified as being of North Carolina, subtly implying his firm grasp on his authority as governor vested in him by the Board of Trade.

Maps and globes were also used as a symbolic device in two-dimensional art to represent gender. The painting of the Thomas Bateson family (1762) features Bateson's daughters holding objects associated with their gender: music and flowers. The Bateson sons, on the other hand, are portrayed actively studying the globe; one of the sons points to the globe while the other holds a map in his hands (fig. 196). Maps, charts, atlases, and globes were considered important symbols of the enlightened gentleman. As important as they were for documenting new discoveries, promoting settlement, and recording boundaries, they were equally regarded for the intellectual aura that they invoked. The display of maps on walls visually distinguished learned men from those less

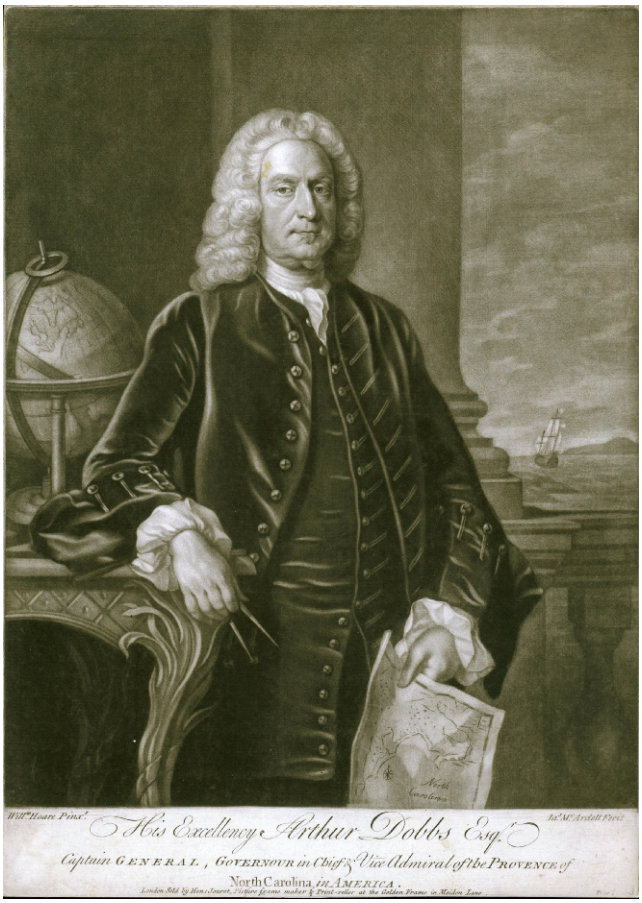

FIG. 195. *HIS EXCELLENCY ARTHUR DOBBS ESQ*R, CA. 1753–65. Engraved by James MacArdell after a painting by William Hoare, London; black-and-white mezzotint. Size of the original: ca. 35 × 25 cm. The Colonial Williamsburg Foundation, Museum Purchase (accession #1995-205).

well educated. Just as maps were included as symbolic representations on an artist's canvas or an engraver's plate, they were used expressively on the walls of public and domestic spaces with full appreciation of the ideas and associations they embodied.

Household inventories, private correspondence, newspaper advertisements, and visual sources provide clues for where and how maps were hung. In 1720, London printseller Thomas Bowles advertised "large Mapps upon Cloath for Halls &c." Several decades later, Peter Griffin advertised that he also sold "all sorts of Maps both Foreign and English" and "fitteth up Gent. halls, or Large Rooms wth Maps or Prints on Rolers" (Clayton 1997, 23, 110). Both advertisements document the preference for hanging large maps mounted on cloth and rollers in the hall. In the sixteenth and seventeenth centuries, halls generally served as the primary space for dining, entertaining, and socializing. They were generally large and often were the first space that most visitors encountered. Not only did Griffin suggest that this was a suitable location in which to display his wares but by characterizing them as "Gent. halls," he recognized them as a masculine space within the house.

American colonists, eager to adopt English trends in architecture, fashion, and furnishings, also subscribed to the notion of the hall as a masculine space. In 1737, Edward Moseley's map of North Carolina was advertised in the *Virginia Gazette* as "a very large Map, (being Five Feet long, and Four Feet broad, on Two Sheets of Elephant Paper) it's not only Useful, but Ornamental, for Gentlemans Halls, Parlours, or Stair-cases" (9–16 September 1737, 4; Brückner 2011, 420). The high visibility of these spaces provided gentlemen with an opportunity to display objects that reflected their station in society.

Maps were less frequently hung in rooms associated with female activities. By the first decades of the eighteenth century, separate rooms for dining became an essential element of domestic architecture in England and the American colonies. Virtually from their inception, dining rooms assumed a masculine character while parlors, on the other hand, were considered more feminine spaces (Girouard 1978, 203–6, 233). Masculine associations were implied in dining rooms by the choice of architectural appointments and the use of simplified, less-embellished household furnishings, such as the Doric order, favored by Thomas Jefferson at Monticello, and likened to "a certain *masculine* and natural beauty" (Fréart 1664, 10). Household inventories that listed the contents room-by-room frequently recorded maps in this location. In many cases maps were itemized immediately before or after fireplace tools, suggesting that they hung over the mantle, usually the primary focal wall of a room. In 1679, London mapseller John Garrett described a map on rollers as "a fit ornament for a chimney piece" (quoted in Barber 1990, 2). In the inventory of household goods taken at the death of Norborne Berkeley, fourth baron de Botetourt, royal governor of Virginia from 1768 to 1770, John Henry's *A New and Accurate Map of Virginia* of 1770 was listed in the dining room of the governor's palace, immediately after the fireplace equipment and ceramic figurines located on the mantle shelf. Since two desks and a writing table were also included among the furnishings of the room, it is likely that in addition to dining in this location, the governor conducted business there as well. The prominent position that this map assumed in the room that likely served as the cultural and intellectual center of the Palace is significant given that the mapmaker's son, Patrick Henry, was one of the driving forces behind the resolves against the Stamp Act. It is likely that by choosing to hang Henry's map in such an important location, the governor was attempting a diplomatic show of support for the Virginia colonists.

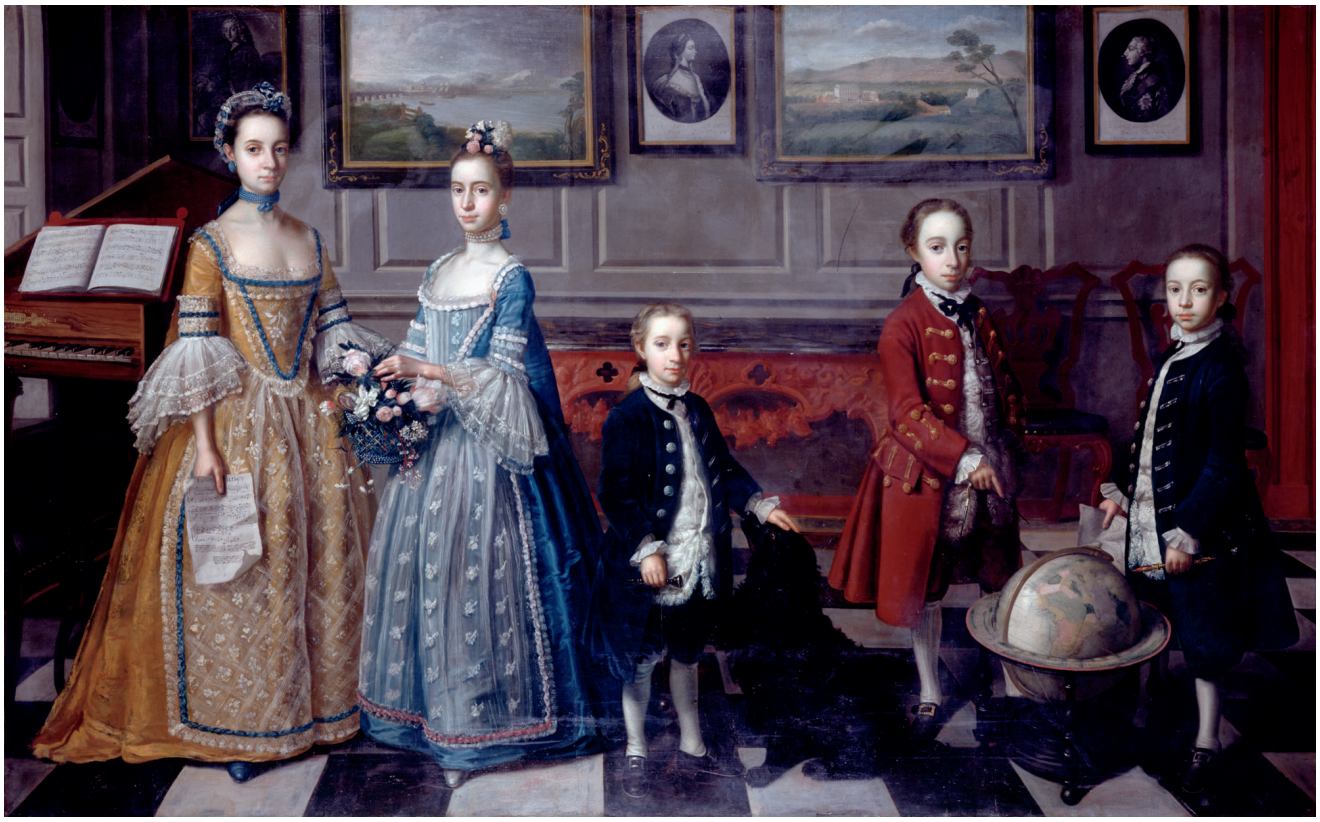

FIG. 196. *THE FAMILY OF THOMAS BATESON, ESQ.*, 1762. Attributed to Strickland Lowry, Belfast; oil on canvas. Size of the original: 163.7 × 264.0 cm. Collection Ulster Museum, © National Museums Northern Ireland, Belfast (BELUM.U1664).

Walls of libraries and studies, where men retreated to pursue their intellectual interests, were also frequently hung with large maps (fig. 197). In 1701, Virginian William Fitzhugh left the family portraits and "the Large Mapp in my Study" to his eldest son (Fitzhugh 1963, 379). As typified in the wording of Fitzhugh's will, most colonial American inventories and wills rarely identified maps by their actual title, therefore it is difficult to determine whether specific geographic regions or types of maps were preferred for more private spaces, such as libraries, over those that were chosen to be displayed in more visible locations. One notable exception to this was the previously mentioned household inventory of Virginia's governor, Baron de Botetourt. In addition to making a significant political statement by hanging Henry's map of Virginia in the dining room of the governor's palace, the other maps that the governor chose to hang in the public rooms of the house were geographically relevant to the colony, while the map described hanging in Botetourt's library was simply identified as a "Map of North and South America" (Botetourt Papers, Virginia State Library and Archives, Richmond, Virginia). Botetourt's library provided him with a venue in which to privately study and reflect upon his personal interests, thus it is likely that he chose to hang a map that included a broader geographical range than those selected for the public rooms in the palace.

Large wall maps were necessary for shops and government offices to conduct business and administer policy, and for teaching purposes in academic buildings. In his 1790 catalog, Carington Bowles noted that his "FOUR-SHEET MAPS . . . are very useful ornaments for halls, entries, stair-cases, compting-houses, public-offices, academies, &c." (Bowles 1790, 11). Though Bowles listed the titles of the maps that he considered suitable to hang in these locations, it is far more difficult to document the presence of specific maps in nondomestic interiors than for domestic spaces since inventories and orders for goods rarely survive for them. In these instances, visual sources provide the primary resource. The interior of a Dutch shipping merchant's establishment depicts maps possibly useful to the business nailed directly to the wall (fig. 198). One is a world map, and the other appears to be a depiction of the Mediterranean, perhaps an area in which this firm traded. Though the geography depicted on the rolled maps over the fireplace in the board room of the Admiralty (fig. 199) is

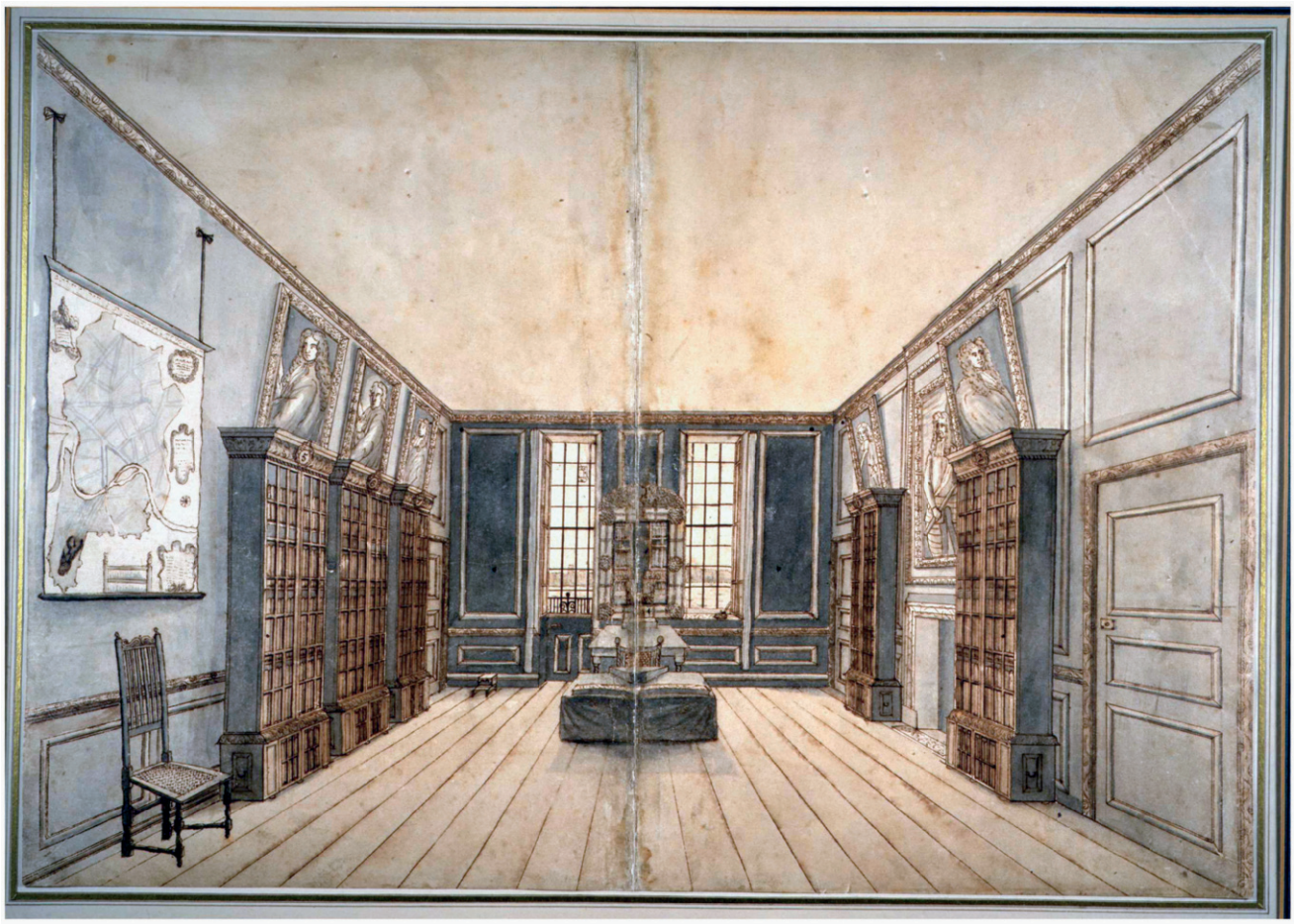

FIG. 197. THE LIBRARY OF SAMUEL PEPYS'S HOUSE, BUCKINGHAM STREET, LONDON, CA. 1693. Attributed to Sutton Nicholls, London; watercolor on paper. Pepys decorated his study with the *Nvova pianta et alzata della citta di Roma* (1676) by Giovanni Battista Falda. Size of the original: 33.3 × 48.6 cm. By permission of the Pepys Library, Magdalene College, Cambridge.

unknown, this view provides an invaluable suggestion for how maps were hung in British government offices.

The publication in 1733 of Henry Popple's monumental *A Map of the British Empire in America* offered a colonial opportunity for public display of maps. The commissioners of the Board of Trade instructed that copies be sent to each of the colonial capitals in America, with the likely intent that they be used in capitol buildings or state houses. In 1749, Benjamin Franklin ordered two copies of Popple's map, adding "there must be some other large Map of the whole World, or of Asia, or Africa, or Europe, of equal Size with Popple's to match it; they being to be hung, one on each side the Door in the Assembly Room; if none can be had of equal Size, send some Prospects of principal Cities, or the like, to be pasted on the Sides, to make up the Bigness" (Franklin 1959–, 3:77). Franklin's desire to surround a smaller map with additional views to complement the large size of Popple's map emphasized the functional and decorative role of the wall map (Brückner 2017, 127–35).

MARGARET BECK PRITCHARD

SEE ALSO: Household Artifacts, Maps on; Iconography, Ornamentation, and Cartography; Map Collecting; Medals, Maps on; Public Sphere, Cartography and the; Wall Map; Women and Cartography

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FIG. 198. INTERIOR OF A SHIPPING MERCHANT'S ESTABLISHMENT, PAINTED BY AUGUST CHRISTIAN HAUCK, 1783. Probably Rotterdam, watercolor on paper. Size of the original: ca. 30 × 39 cm. The Colonial Williamsburg Foundation, Museum Purchase (accession #1991-32).

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Defoe, Daniel. Daniel Defoe (1660–1731) includes a lengthy discussion about making and using world maps in his political satire disguised as a fantastic voyage to the moon, *The Consolidator* (1705). Much better known for his novels, *Robinson Crusoe* (1719) and *Moll Flanders* (1722), Defoe turned to writing and journalism after earlier failures as a merchant venturer.

A strong formative influence on Defoe was his education at the progressive academy near London of the nonconformist minister Charles Morton, whose curriculum included the new scientific approach of experiment and observation. When Robert Harley, speaker of the House of Commons, hired Defoe in 1704 to travel incognito around England polling public opinion, he consciously became a scientific observer of human geography. Vickers notes that Defoe described himself as "a walking map" (1996, 58). During the same journeys he also observed trade moving along routes to and from London, the city at the heart of the nation. In the 1720s Defoe would describe that vital circulation of commerce in nonfiction books, chiefly the *Tour thro' the Whole Island of Great Britain* (1724–26).

FIG. 199. *BOARD ROOM OF THE ADMIRALTY*, 1808. Engraved by John Hill and published by Rudolph Ackermann, London; hand-colored aquatint. See previous entry, p. 334. Size of the original: ca. 23.5 × 28.5 cm. The Colonial Williamsburg Foundation, Museum Purchase (accession #1991–10).

However, he had already employed the idea of mapping the living human landscape in 1705 in *The Consolidator*. By then, ancient beliefs that the moon mirrored earth had evolved into a conventional literary vehicle for veiled criticism of life on earth. Defoe's narrator recounts how he recently visited China, voyaged in a rocket ship to the moon, and encountered the technologically advanced civilization of Lunarians. They showed him magnifying glasses they used to view earth's constantly changing phenomena—such as war, state policy, and social inequity—as animated world maps. Defoe has the Lunarians debate the best projection for such maps and choose a double-hemisphere globular projection that allows an all-encompassing overview. They also decide that these complex human activities should be mapped on a series of single-theme maps rather than confusingly intermingled on one map.

Defoe's sources for his imaginings about Lunarian mapmakers can be surmised. His London intellectual environment included the Royal Society, publisher of a map by Edmond Halley showing scientific measurements of terrestrial magnetism as a visible geographical pattern (1701; see fig. 348). Halley had also captured the trade winds (1686; see fig. 776) and the tides (probably 1702) on maps (Thrower 1969). Defoe himself may well have looked through a microscope at the teeming

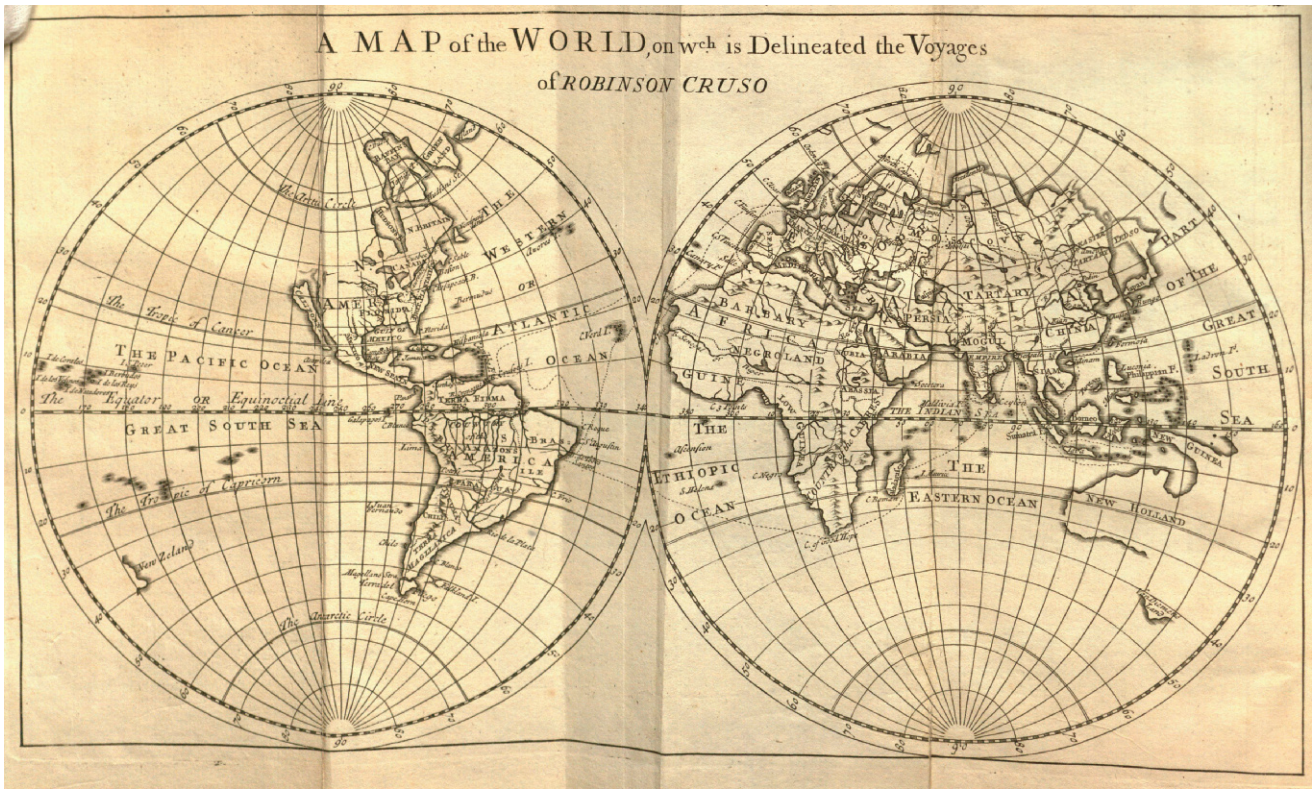

FIG. 200. *A MAP OF THE WORLD, ON WCH IS DELINEATED THE VOYAGES OF ROBINSON CRUSO*, 1719. This double-hemisphere world map showing Crusoe's fictional voyages mimics the maps engraved by Defoe's friend, Herman Moll, for nonfiction travel books and has been attributed to Moll. From Daniel Defoe, *The Farther Adventures of Robinson Crusoe* (London: Printed for W. Taylor, 1719). Size of the original: ca. 17.5 × 31.0 cm. Courtesy of Special Collections, Kenneth Spencer Research Library, University of Kansas Libraries, Lawrence.

miniature world in a droplet of water, an image that had been published in *Micrographia; or, Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses with Observations and Inquiries Thereupon* (1665) by Robert Hooke, the scientist curator of experiments at the Royal Society since 1662. *Micrographia* also discusses the use of telescopes in astronomical observation. Defoe was also friends with a leading London geographer, Herman Moll, who provided the map illustration for *The Farther Adventures of Robinson Crusoe* (fig. 200).

Although not a mapmaker himself, Defoe incorporated his observations of the emerging science of cartography in his books. He was a firsthand witness who presciently imagined how maps, along with other new scientific technology like the microscope and telescope, could extend human vision and empower their users to visualize natural and social environmental processes in action.

KAREN SEVERUD COOK

SEE ALSO: Halley, Edmond; Imaginary Geographies and Apocryphal Voyages; Travel and Cartography

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Delisle Family. Claude Delisle and his three sons, Guillaume, Louis, and Joseph-Nicolas—as well as Guillaume's son-in-law Philippe Buache—renewed the importance of map compilation by employing and perfecting methods developed in France. "By always pairing astronomical position with reports on voyages on sea and land and comparing the result found by these two means with the details afforded by the history and particular descriptions of the countries, [Guillaume] made very great progress in very short time" (Fréret 1726, 475). Claude had taught Guillaume the practice of scholarly history

through the rigorous critique of sources. Jean-Dominique Cassini (I) initiated Guillaume in the use of astronomical observations as demonstrated in Guillaume's 1700 *Mappe-monde* (fig. 201). While he did not carry out observations himself, Guillaume's brothers, Joseph-Nicolas and Louis (called Delisle de La Croyère), did.

The systematic collection of data, both current and ancient, characterized the work of the Delisles and allows one to follow the stages of their labor. Several scholars have successfully described these stages: Marie-Anne Chabin for Russia (1983), Lucie Lagarde for the Sea of the West and, more broadly, for North America (1989 and 1995), Nelson-Martin Dawson also for North America (2000), and Monique Pelletier for the Gulf of Mexico (2002). The Delisles interviewed travelers to complement written information: "Whenever [Guillaume] would meet a Syrian or an Armenian in Paris, he would question him and take him home to question him further; and as long as he was able to learn more about a single route or the distance and position of a few villages, he considered the time consumed in these conversations well spent" (Fréret 1726, 486).

Philippe Buache continued the Delisles' cartographic work and methods; for example, Guillaume's interest in the Mediterranean Sea resulted in a map by Buache published in 1737 by the Dépôt des cartes, plans et journaux de la Marine. The link from Europe and Asia to North America and an understanding of Russia also preoccupied this famous family.

CLAUDE AND GUILLAUME DELISLE Son of a doctor from Lorraine, Claude Delisle was born at Vaucouleurs (Meuse) on 5 November 1644. He studied at the Jesuit college in Pont-à-Mousson. Though licensed in law, he preferred history and geography and left Champagne in 1674 to become a much-esteemed professor in Paris. He wrote his own lessons and adapted them to the capabilities of his pupils, among whom was Philippe I, duc d'Orléans, brother of Louis XIV, later Regent of France (Dawson 2000, 21–25). In 1674, Claude married Marie Malaine, who bore Guillaume Delisle and his brother Simon-Claude, a historian, and who died ca. 1683–84. Claude then married Charlotte Nicole Millet de La Croyère, daughter of an *avocat* in the Parlement and mother of Louis and Joseph-Nicolas Delisle. They lived on the rue des Canettes, near the church and seminary of Saint-Sulpice (Chabin 1983, 13–14; Dawson 2000, 21, 23, 27). Of Claude's numerous children, only five reached adulthood. Claude instructed his three sons who became geographers that a geographer should not only know longitudes and latitudes, climates, and the paths of rivers, but also understand the foundations of political organization in the countries he studied (Chabin 1983, 16). He died in 1720.

Claude and Guillaume (b. Paris, 28 February 1675) worked together, as documents preserved in the Archives nationales de France attest. From 1700, Guillaume signed the printed maps compiled and published in the Delisle workshop. He began by drawing up general maps, "outlines of the representation of the earth," and completed them with more detailed maps "whose subject is growing when it is examined more closely" (Fontenelle 1728, 80). Guillaume entered the Académie des sciences as a student astronomer in 1702 and became associate astronomer in 1718 (his son-in-law, Philippe Buache, later held the post of geographer), and he used the observations assembled by the Académie for his geographical work.

The scientific character and originality of Guillaume's work manifested itself in a lawsuit pitting Claude and Guillaume against Jean-Baptiste Nolin. In 1700 Nolin had published a large world map titled *Le globe terrestre representé en deux plans-hemispheres,* which copied elements unique to a manuscript globe given by the Delisles in 1697 to chancellor of France Louis Boucherat; among these elements was the Sea of the West, a large gulf in Northwest America open to the Pacific (see fig. 746). Guillaume had sketched its contours on the "Carte de la Nouvelle France," which remained in manuscript (fig. 202). Dawson suggests that the Delisles remained discreet about the pseudo-discovery because they were not completely certain about it (Dawson 2000, 118–30), while Lagarde speculates that they wished above all to protect what they considered a state secret (Lagarde 1989, 25). To these hypotheses must be added the Delisles' jealousy toward Vincenzo Coronelli, who had produced the large globes for Louis XIV, and his engraver Nolin. Claude Delisle placed his thirty years of practicing geography against Nolin's forty years of engraving experience. The experts appointed for the lawsuit, Joseph Sauveur and François Chevalier, members of the Académie des sciences, distinguished between common geographic knowledge shared by all (based notably on data published by the Académie) and original geographic interpretation (based on collected heterogeneous documents). The latter interpretative work was unique to a cartographer and belonged to him alone (Broc 1970; Dawson 2000, 30–37). In 1706 the Conseil du Roi ordered Nolin to destroy his copperplates, but Delisle agreed to have only particular geographical elements erased (Lagarde 1989, 25); as shown on the impression kept by the Bibliothèque nationale de France (Département des cartes et plans, Ge AA 1259 Res), only the attractive décor remained untouched.

Guillaume Delisle's reputation was further enhanced when he was named *premier géographe*, reinforcing his family's connection with power. Louis XIV had asked him to prepare a list of maps for the education of the

FIG. 201. GUILLAUME DELISLE, *MAPPE-MONDE DRESSÉE SUR LES OBSERVATIONS DE M^RS. DE L'ACADEMIE ROYALE DES SCIENCES ET QUELQUES AUTRES ET SUR LES MEMOIRES LES PLUS RECENS* (PARIS, 1700). Size of the original: 43 × 66 cm. Image courtesy of the Bibliothèque nationale de France, Paris (Cartes et plans, Ge DD 2987 [84 B]).

FIG. 202. GUILLAUME DELISLE, "CARTE DE LA NOUVELLE FRANCE ET DES PAÏS VOISINS," 1696. The outline of the Mer de l'ouest (Sea of the West) may be seen. Size of the original: 48.8 × 64.0 cm. © Archives nationales (France) (Map/6/JJ/75/A/130/1).

dauphin, the future Louis XV. After the young monarch's accession to the throne in September 1715, Guillaume became his official geography tutor. "His work so pleased the king [then eight years old], that he rewarded him—by royal warrant on 24 August 1718—with the position of *premier géographe* [a new position], with a salary of 1,200 livres" (Fréret 1726, 484). Guillaume henceforth noted on his maps that they were intended first and foremost "for the king's use."

In the twenty-seven years between 1700 and 1726, Guillaume Delisle published about 120 maps, either as separates or as illustrations of other works. He produced about 20 historical maps; some concerning France and intended for the king's education remained unpublished (Goffart 2003, 240–42). In 1720 Guillaume stressed the original elements he had introduced in his maps: new contours for most of the world's coasts, the position of the Île de Fer in relation to the Paris meridian, and the improved layout of the northern portions of the globe. He also mapped the dioceses and provinces of France, using the work of the Académie and without conducting new surveys himself; as with his mapping of the world, he remained a compiler. Half of his work focused on Europe and half of his European maps concerned France. America in particular captured his attention: the location of the mouth of the Mississippi and the cartography of that great river; the representation of California, which resumed a peninsular shape in 1700; the cartography of the Gulf of Mexico in 1703; and a map of Louisiana in 1718. This work followed the evolution of relations between France and Spain, all the while serving France's colonial ambitions.

Like his father and his brother Joseph-Nicolas, Guillaume was interested in the Russian Empire; he

published maps of Moscovy and Tartary in 1706. Czar Peter I saw the map of Muscovy on his visit to France and on 17 January 1717 met Guillaume, to whom he showed some manuscript maps. In 1720 and 1721, the scholar received from the czar two maps of the Caspian Sea, on which he presented a report to the Académie in December 1721 (Chabin 1983, 58–65). Peter I and Guillaume died one year apart, in 1725 and 1726.

JOSEPH-NICOLAS DELISLE AND LOUIS DELISLE DE LA CROYÈRE Born in Paris on 4 April 1688, Joseph-Nicolas developed an interest in astronomy after seeing the total eclipse of the sun on 12 March 1706. He first practiced astronomy at the Paris Observatory with Jacques Cassini (II) and then under the cupola of the Palais du Luxembourg, though he was forced to leave at the end of 1715 (Isnard 1915, 35–36). Joseph-Nicolas became a student astronomer at the Académie des sciences in 1714, adjunct astronomer in 1716, and associate astronomer in 1719, having also obtained in 1718 the chair of mathematics at the Collège royal. He regularly communicated the results of his observations to the Académie.

Like Guillaume, Joseph-Nicolas was interested in the future of Russian geography. In 1721 he was officially invited to Russia by Peter I. He agreed, but confirmation was delayed and the corresponding contract was not signed until 25 June 1725 (after Peter I's death). Joseph-Nicolas was to establish an observatory in St. Petersburg and to work for that city's academy of science, Akademiya nauk, as a liaison to its Parisian counterpart. Arriving in St. Petersburg on 5 March 1726, he became the first professor in astronomy at the Russian academy, to which other foreigners (mainly Germans) belonged (Chabin 1983, 66–76). Joseph-Nicolas carried out numerous on-site observations, and he attempted to participate in the debate on the shape of the earth. His principal task was to establish a general map of the Russian Empire using the Delisle method of matching astronomical observations with measurements from travelers. He succeeded in assembling (not without difficulty) maps and reports by Russian geodesists sent into the field by Peter I.

In 1730, Joseph-Nicolas received from Vitus Bering the results of the explorer's first expedition. Delisle prepared materials for the second expedition, in which his elder brother Louis Delisle de La Croyère (b. ca. 1685?) participated; Louis had accompanied Joseph-Nicolas to St. Petersburg. Before his stay in Russia, Louis had visited Canada in 1718–19 and been named adjunct astronomer at the French Académie des sciences in 1725. During a voyage in 1727–30 through northern Russia, Louis made meteorological and astronomical observations that resulted in fairly accurate determinations of latitude and less dependable calculations of longitude (Klein 2001, 67–103). Louis joined Bering's second expedition, which departed in August 1733. He criss-crossed Siberia for seven years and married a Russian woman in August 1736 (Chabin 1983, 104–7; Dawson 2000, 23). After meeting Bering in Kamachatka, he set out for the Alaskan coast under the command of Bering's lieutenant Aleksey Il'ich Chirikov without disembarking. Louis died on the return to Kamchatka in the autumn of 1741.

Joseph-Nicolas rarely traveled in Russia. Nevertheless, in 1740 he made a trip to Siberia, having lost effective direction of the map of the Russian Empire in 1739. He tried to accelerate the completion of his cartographic work, and the Akademiya nauk published the *Atlas Rossiyskoy* (*Atlas Rvssicvs* = *Atlas Russien*) in 1745, which included a general map of Russia (see fig. 316) and nineteen specific maps. However, Joseph-Nicolas was accused of having delayed the production of the general map and of allowing confidential documents to reach France. He was permitted to leave St. Petersburg in 1747 and to bring some documents with him, but not all of the map copies he had made. Once back in Paris, the astronomer continued his observations at the Palais du Luxembourg. On 8 April 1750, he delivered a paper on the "Nouvelles découvertes au nord de la mer du Sud" to the Académie des sciences, which published it in 1752, accompanied by a map designed by Buache (see fig. 390). This map showed a strait linking the northern Pacific to the Arctic Ocean based on Joseph-Nicolas's Russian documentation. But the astronomer used a document whose authenticity he wrongly failed to question: the report of the putative 1640 expedition directed by a Spanish admiral whose very existence is questionable, Bartholomew Fonte (de Fuente). This expedition was supposed to have crossed a vast region situated west of Hudson Bay and Baffin Bay and north of the Sea of the West—the previous chimera of the Delisles (Académie royale des sciences 1754). Joseph-Nicolas's final major publication was the *Carte générale de la Géorgie et de l'Arménie* in 1766 (Allen 1956, 145–49). He retired in 1763 to the abbey of Sainte-Geneviève in Paris, where he died on 11 September 1768.

The reputation of the elder members of the Delisle family made the Russian adventures of the younger members possible. The cartographic work of Guillaume, upon which this reputation was largely founded, spread widely, thanks to the reprints by Buache beginning in 1745 and the editions produced throughout Europe: at Amsterdam by Covens & Mortier, Ottens, and Schenk; at Nuremberg by Homann; at Augsburg by Seutter and Lotter.

MONIQUE PELLETIER

SEE ALSO: Academies of Science: Akademiya nauk (Academy of Sciences; Russia); Bering Expeditions to Northeast Asia; Geographical Mapping: (1) Enlightenment, (2) France, (3) Russia; Imaginary

Geographies and Apocryphal Voyages; Map Trade: France; Sea of the West

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Denmark and Norway. After 1382, the kingdoms of Denmark and Norway were joined in a personal union. However, the imposition of Protestantism on Norway in 1536 significantly reduced the autonomy of the northern kingdom, a status reinforced in 1660 by the adoption of absolute rule by Frederik III; Norway would eventually be ceded to Sweden by the Treaty of Kiel (1814). To the south, the kings of Denmark were also dukes of both Slesvig (Schleswig), considered to be part of Denmark, and Holstein, an estate within the Holy Roman Empire; Prussia would eventually annex the duchies in 1864. Furthermore, Denmark and Norway also encompassed Iceland, the Faroe Islands, Greenland, the Danish West Indies (Virgin Islands), and Fort Tranquebar in India (from 1620).

These diffuse territories could not sustain a coherent Danish-Norwegian mapping tradition, and the historical literature is understandably fragmented. Each territory within the state was a distinct political entity. In particular, and despite its subordination to Denmark, Norway possessed its own political institutions and means of action and retained a degree of independence, certainly with respect to mapping. The two primary countries also offered quite different environments to be mapped: Denmark is relatively small and highly populated, with all areas lying close to sea level, whereas Norway is much longer, much less densely populated, and very mountainous. The establishment of absolutism in 1660—a response to the failures in the government and military that had led to the loss to Sweden in 1658 of the three Scanian provinces and their substantial tax revenues—meant that authority for most mapping projects lay with the Crown. But each king had his own particular interest, or lack thereof, in the sciences, arts, and cartography, so that no consistent cartographic policy could develop. The institutional weakness of the Danish Crown is evident from the ability of Johann Friedrich Struensee, the German-born personal physician to the mentally infirm Christian VII, to become de facto regent for thirteen months before being overthrown and executed in 1772.

Through the seventeenth century and to the end of the Great Northern War (1700–1721), Denmark waged a series of generally disastrous and financially ruinous wars with Sweden. State institutions were accordingly too weak to permit institutionally organized mapping endeavors. Most mapping projects across the state's diffuse territories were undertaken by individuals with little support; each project ceased when the surveyors died or got new jobs. In addition, map printing was discouraged because of a desire for secrecy during the many wars. Early cartographic activities in Denmark and Norway thus circulated in manuscript, not only detailed plans of property and fortifications but also the more general maps promoted by individuals and the state. Grand plans repeatedly fell through. The royal mathematician Johannes Mejer made a general map of Denmark for the king in 1650, but his plans for an atlas of Scandinavia were derailed by the defeat to Sweden in 1658; only his maps of Slesvig were ever printed. In Norway, the Dutch engineer Isaac van Geelkerck made numerous fortification plans, but his regional mapping of Norway is known only from a manuscript map of the entire realm probably prepared by Gottfried Hoffmann in about 1660 (fig. 203). The same situation applied to the Danish chartmaker Jens Sørensen, who, from 1687 to 1723, produced hundreds of high-quality maps not only of Danish waters but also of other Scandinavian areas; none of his maps was printed.

The need to increase tax revenues led to the organization of a national cadastre for Denmark in 1688. The

FIG. 203. THE DANISH-NORWEGIAN REALM. Gottfried Hoffmann, "Daniæ et Norvegiæ tabvla," 1660, dedicated to Frederik III (1658–60), also called the "Dano Norvego kortet." The text on the map and a comparison with other maps confirms that Hoffmann's map is based on Johannes Mejer's 1650 map of Denmark and Isaac van Geelkerck's map of Norway. Manuscript with hand-printed lettering formed from metal type.

Size of the original: 231 × 141 cm. Image courtesy of Det Kgl. Bibliotek; The Royal Danish Library, Copenhagen (KBK 1110-0-1650).

FIG. 204. MAP OF ICELAND. Þórður Þorláksson, "Islandia iuxta obsfrvationes [*sic*] longitudinum et latitudinum," 1668. Size of the original: 33.8 × 49.7 cm. Image courtesy of Det Kgl. Bibliotek; The Royal Danish Library, Copenhagen (NKS 1088b, 1a,2 folio).

original plan called for the cadastre to be based on detailed maps, but this was prevented by the lack of money and surveyors. All that could be accomplished, starting in the 1720s, was a series of surveys of the king's own properties to rationalize his tenants' supply of horses. These maps were only in manuscript.

The introduction of copperplate printing at the university in Copenhagen encouraged Peder Hansen Resen to attempt a grand detailed topography of Denmark, *Atlas Danicus*. Planned as multiple volumes with many maps, Resen had insufficient funds in 1677 to print more than five sets, each different, of 115 maps and urban plans. In the 1740s, Erik Pontoppidan's attempts to create *Den Danske Atlas* were more successful, but his maps were just poor copies of old Mejer maps and other older works with no new surveying and no new information.

But as a long period of peace set in after 1721, the state had the opportunity to invest in new institutions and endeavors. After 1750, mapping activities in Denmark and Norway steadily increased and became more organized. In Denmark, the key institution was the Kongelige Danske Videnskabernes Selskab. Founded in 1742, the academy started systematic mapping of the country in 1761 and published detailed maps from 1772 to 1841; it remained the national mapping agency until 1842. In Norway, the border dispute with Sweden eventually caused a military survey to be founded under the name Norges Grændsers Opmaaling (later, Norges Geografiske Opmåling) in 1793. At about the same time in Denmark, the army began to be involved in topographical surveying and mapping, since they could not accept the slow pace and inadequate terrain depiction of the civil surveyors, while the navy established a hydrographic office in 1784.

Maps of Iceland were for a long time based on the work of the Lutheran bishop of Hólar, Guðbrandur Þorláksson (Gudbrandur Thorlaksson) who had in about 1600 made the first map of Iceland used in Abraham Ortelius's atlases (Ehrensvärd 2006, 167–68). His grand-

son Þórður Þorlákssón (Thordur Thorlaksson), also a churchman, made several maps of Iceland and northern regions in 1666–70 (fig. 204), but these remained in manuscript and little known. The Danish state commissioned a new survey from Magnús Arason, which was completed in 1730–35 by the military engineer Thomas Hans Heinrich Knoff; Knoff's final maps were decreed state secrets and remained unpublished.

Greenland was very different, although part of Denmark. The first attempts to reach the country were not made until 1606 and later in 1650, but the voyagers stayed in the country for only a few days. In 1721 Hans Egede settled in the country, and then mapping activities started. Egede made two surveying trips on the west coast in 1723 and 1724 (Ehrensvärd 2006, 178). In his 1737 manuscript map, the western part was made by observation, while the eastern part was made from pure guesswork and information from the sagas. Not until 1907 was the coastline finally drawn.

HENRIK DUPONT

SEE ALSO: Administrative Cartography; Boundary Surveying; Celestial Mapping; Danish West Indies; Geodetic Surveying; Geographical Mapping; Map Collecting; Map Trade; Marine Charting; Military Cartography; Property Mapping; Thematic Mapping; Urban Mapping; Videnskabernes Selskabs kort (Academy of Sciences and Letters map series; Denmark)

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Dépôt de la Guerre (Depository of the War Office; France). The Dépôt de la Guerre, archival service of the *secrétariat d'État de la Guerre*, was created at the end of the seventeenth century. No original document exists with the precise date of its inception (Sarmant 2001, 21), but the date most commonly given is 1688, when François-Michel Le Tellier, marquis de Louvois, was minister of war (*Mémoire de l'armée* 1988, 8). Although the exact date may be relatively unimportant, it is helpful to situate its creation within the general history of the ministerial *département de la Guerre*. Rather than an institution created ex nihilo, the Dépôt de la Guerre emerged slowly over the course of the seventeenth century as an organizational evolution of an archival function (Sarmant 2001, 18–20). In this way, the Dépôt within the ministry of war is emblematic of the administrative history of France under the Ancien Régime: archival sections appeared at the end of a maturation process, accompanying the structuring and organization of ministries. From the end of the sixteenth century, the *secrétariats d'État* had become distinct entities, their functional and geographic purviews gradually established with greater precision. The offices of the *département de la Guerre* became more specialized with expanded staffs, progressively centralized power, and increased jurisdiction during the reigns of Louis XIII and, still more, of Louis XIV (Devos 1986). Louis XIV's wars, together with the activity of the Le Tellier family (Michel Le Tellier; his son Louvois; and his grandson Louis-François-Marie Le Tellier, marquis de Barbézieux, successive ministers of war between 1643 and 1701), continuously augmented the offices in the war ministry. Thus grew the need for a section dedicated especially to preserving the ministry's archives. The Dépôt de la Guerre was charged with receiving, classifying, ordering, and preserving the documents produced by the ministry itself or sent by generals in the field. Initially, a simple office under a single deputy installed in the Hôtel de Louvois answering directly to the minister, the *archives de la Guerre* were moved in 1701 to the Hôtel des Invalides by order of the new minister, Michel Chamillart (Sarmant 2001, 24). This move physically separated offices charged with maintaining archives from those treating current affairs, complementary, though distinct, functions heretofore closely linked. The true birth of the Dépôt de la Guerre can therefore be dated to the relocation of the archives (Gibiat 2001, 95n22).

Between the end of the seventeenth century and the beginning of the French Revolution, the role of the Dépôt de la Guerre evolved. To the traditional functions already described were added, little by little, new and notably cartographic activities. However, these activities only appeared later, at least in any official capacity. In fact, the Dépôt des cartes, previously dependent on the Bureau des fortifications, was joined to the Dépôt de la Guerre only around 1761. Before this time, the relations between the *ingénieurs géographes* in the field and the offices of the ministry of war were more direct and did not necessarily pass through the administrative structure of the Dépôt de la Guerre.

The works of the Dépôt contributed substantially to improvements in methods of topographic representation. Then, during the Revolution and the Empire, profound changes occurred at its core, due notably to the context of permanent war and the activity of the former *ingénieur géographe militaire* Etienne-Nicolas Calon. Calon was director of the Dépôt from 1793 to 1797 (Ract 2000, 99–128), when the Dépôt's mission focused on cartographic activities, with archival work becoming secondary.

Originally conceived as a depository for the archives of the ministry, the Dépôt de la Guerre witnessed grad-

ual diversification of its activities. Relying on the original documents it held, it became responsible for composing historical memoirs that recorded details of wars fought in past reigns and becoming, in a way, the official historian of the military campaigns of Louis XIV and Louis XV (Sarmant 2001, 24).

Moreover, the Dépôt was given other responsibilities apparently far removed from its initial missions. From the early eighteenth century, a separate depository existed for the maps and plans of the minister of war. The relocation of the archives in 1701 joined it to the Dépôt de la Guerre. By 1760 all the offices and services of the ministry of war were gathered together at Versailles in a purpose-built *hôtel* designed and constructed by the *ingénieur géographe* Jean-Baptiste Berthier (Ract 2002, 21–24; Baudez, Maisonnier, and Pénicaut 2010) (fig. 205). This unification of offices contributed to a distinct evolution in the activities of the Dépôt: the Dépôt des cartes et plans de la Guerre was henceforth the essential complement to the more traditional archives of dossiers and memoirs.

Another rapprochement of the 1760s was institutionalized in 1772: the *ingénieurs géographes des camps et armées du roi* were officially attached to the Dépôt de la Guerre (Ract 2002, 55). From this moment, the Dépôt was not only the repository of the ministerial archives and of the maps produced or purchased by the Dépôt des cartes et plans, but also the workshop (*atelier*) that produced numerous military maps. In this *atelier*, *ingénieurs géographes* refined their methods of topographic

FIG. 205. DESIGN OF THE HÔTEL DE LA GUERRE, MARINE ET AFFAIRES ÉTRANGÈRES. This is plate 24, one of twenty-seven plates engraved by Pierre Charles Ingouf the Elder around 1776 for a collection of Plans, coupes et élévations des Hôtels des Départements de la Guerre, des Affaires étrangères et de la Marine, gathered by Jean-Baptiste Berthier. The handwritten title describes the cross section of the Hôtel de la Guerre, telling us where the Dépôt de la Guerre and its archive of maps and plans were located on the third floor. Life inside the Hôtel de la Guerre in the 1770s is clearly visible, showing administrative offices cheek by jowl with technical offices of three ministries: the Dépôt de la Guerre, foreign affairs, and the Marine. Their staff included *ingénieurs géographes*, interpreters, even astronomers. The print depicts the veritable administrative and technological city in the Hôtel, with reception salons for visiting ministers located just above the basement storage area of models of weapons, canons, and other machines of war and an attic filled with letter presses for typographic printing and roller presses for the copperplates for maps.
Size of the original: 49.5 × 67.0 cm. © Service historique de la Défense, Vincennes (Section iconographique, cote: GR 7 M D 148, planche 24).

surveying. Thus the eighteenth century, especially the second half, saw the Dépôt progressively add significant cartographic activity to its initial mission. This coincided with the moment when maps were becoming the essential documents for decision making in mobile warfare, for which in-depth knowledge of a theater of operations was gleaned from a combination of officers' reports and surveys of terrain produced by engineers. The significance assumed by military topography during the reign of Louis XV coincided with the growing activity of the *ingénieurs géographes des camps et armées du roi* (Berthaut 1902; Ract 2002).

When the Dépôt emerged at the end of the seventeenth century, some military engineers were attached to the minister of war and engaged to prepare maps of the theaters of military operations. This small group numbered fewer than ten during the first half of the century: small in number and aging in this period, they did not enjoy a major role during the Wars of the Spanish Succession (1701–14) or the Austrian Succession (1740–48). But the Seven Years' War (1756–63) provided a veritable turning point, both for the Dépôt and its cartographic activity and for the *ingénieurs géographes*. Their chief, Berthier, was also the keeper of the maps and war plans in the Dépôt. He reorganized and renewed the corps of *ingénieurs géographes*, which reached its greatest strength under his leadership (there were around forty active *ingénieurs géographes* during the Seven Years' War). In the decade that followed the war (1763–72), he reinforced his control over the engineers, planning their work and going as far as demanding their personal allegiance. Protected by Étienne-François, duc de Choiseul, the nearly omnipotent minister of Louis XV during the 1760s, Berthier took orders from no one, not even the director of the Dépôt de la Guerre (Ract 2002, 17–56). The increase to eighty-five *ingénieurs géographes* active during the second half of the century was due to Berthier's impetus and his incessant labor.

Between the Treaty of Paris (1763) and the French Revolution, without a war to occupy them, the *ingénieurs géographes des camps et armées du roi* were nonetheless kept active by their involvement in the survey of the coasts and borders of France and in their contribution to formalizing topographical surveying methods (Ract 2002, 191–234). The maps and descriptive memoirs of territories surveyed by the Dépôt's *ingénieurs géographes* naturally enriched the holdings of the Dépôt de la Guerre. Ironically, because a large part of their cartographic production occurred in peacetime, between 1763 and 1791, the *ingénieurs géographes des camps et armées* found it increasingly difficult to justify their existence within the *département de la Guerre*. Their numbers were deliberately not maintained: the sums allocated to the Bureau des ingénieurs géographes continued to diminish from the early 1770s until the Revolution. Posts vacated by retirement were not filled with new recruits, and it was difficult to justify supporting a corps of *ingénieurs géographes militaires* in peacetime when the corps of *ingénieurs du Génie*, trained in the prestigious École du Génie de Mézières, was also performing topographical surveys. All these conspired in the de facto extinction of the corps of *ingénieurs géographes militaires*. Even a new name, *ingénieurs géographes militaires*, granted by an ordinance of 26 February 1777 (Corvisier-de Villèle and Ponnou 2002, XXVIII–XXIX), could not reinvigorate it. Although officially suppressed in August 1791, these engineers would take up service once again during the wars of the Revolution and the Empire. It was then that their methods of topographic survey and representation of territory elaborated and perfected during the second half of the eighteenth century would finally triumph. Indeed, the Dépôt de la Guerre and the heirs of the *ingénieurs géographes* of the Ancien Régime were the mainsprings of the Commission topographique of 1802, which codified cartographic representation of territory.

Although the cartographic production of the Dépôt de la Guerre in the eighteenth century was mainly that of the *ingénieurs géographes des camps et armées*, the Dépôt also conserved maps prepared by other branches of the military, which may be considered in two categories. First are the maps surveyed during war (Ract 2002, 149–80). These include reconnaissance of enemy terrain carried out in advance of armies, plans of troop camps and battlefields, and the representation of army movements during combat. This group also encompasses smaller-scale maps of regions traversed by armies. Engineers most often prepared these maps in urgent circumstances, sometimes under enemy fire. They were essential documents in a century in which siege warfare was ceding to mobile warfare, for which detailed knowledge of terrain was decisive.

The second group of maps in the Dépôt provided topographic coverage of the frontiers of France, mostly drawn up by its *ingénieurs géographes* or by general officers (Corvisier-de Villèle and Ponnou 2002, 116–228). Thus, by the end of the century, the ministry of war had at its disposal in the Dépôt very precise maps of frontier regions and coasts, most at a scale of 1:14,400, encircling the kingdom with topographic maps: from the frontiers in the north and in Flanders surveyed by the Naudin family at the beginning of the century (Corvisier-de Villèle 1995) to the Pyrenees in the south mapped by Jean-François de La Blottière around 1720; from the Dauphiné surveyed by Pierre-Joseph de Bourcet between 1748 and 1760 (Limacher 1963) to frontiers of the northeast; and finally, from the west coasts of Brittany and Normandy surveyed by the *ingénieurs géographes militaires* between 1771 and 1785

(Ract 2002, 181–234) to the frontiers of the Jura, the Franche-Comté, and Alsace mapped under the direction of the *ingénieur du Génie* Jean-Claude-Eléonor Le Michaud d'Arçon. Working in parallel, Cassini's civil engineers simultaneously mapped France at a scale of 1:86,400. However, it was the officers of the État-Major, distant heirs of the *ingénieurs géographes militaires* of the Dépôt de la Guerre, who were chosen in the next century to execute the map of France to replace that of Cassini. Several factors influenced this decision: the perceived preeminence of military cartographers in perfecting the geometry and aesthetics of map production; the renown they acquired during the wars of the Revolution and the Empire, both actively in armies as well as in the commissions entrusted with cartographic normalization and rationalization; and finally their fitness to maintain the secrecy that surrounded the details of frontiers.

The cartographic work of the Dépôt de la Guerre is just one aspect of this multifarious institution. Because of its numerous functions during the eighteenth century, it became a hybrid organism, serving as the archives of the ministry, as the workshop for production and conservation of maps, as the office for production of memoirs and military reports intended for the minister or the king concerning military operations in war or defensive adjustments in time of peace, and, finally, as the promoter of projects to improve communication in the frontier provinces, which continued to be a prerogative of the ministry of war at the end of the Ancien Régime (Ract 2002, 59–62). This dichotomy between archival function and cartographic production was exacerbated at certain moments in the history of the Dépôt, notably when François Eugène de Vault was the director (1761–90) while the *ingénieurs géographes* remained (until 1772) under the direct command of their chief, Berthier. This tension ultimately led to a reorganization adopted in the year IX [1802], when the topographical and historical departments were clearly separated. Already renamed in 1795 as the Dépôt Général de la Guerre, the Dépôt became, for nearly all the nineteenth century, an institution devoted essentially to the production of military maps.

PATRICE RACT

SEE ALSO: Administrative Cartography: France; Engineers and Topographical Surveys; Map Collecting: France; Military Cartography: France

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Dépôt des cartes et plans de la Marine (Depository of Maps and Plans of the Navy; France). France was the first European state to establish an official hydrographic service, such as exists today in nearly all maritime nations. On 22 September 1676, Jean-Baptiste Colbert, *secrétaire d'État à la Marine* from 1669, decided to assemble all extant maritime charts and their accompanying memoirs, entrusting the task to his son, Jean-Baptiste-Antoine Colbert, marquis de Seignelay (Chapuis 1999, 159). In 1681 an ordinance required captains to hand over their logbooks to the state in order to assemble geographic data for use in commerce or naval warfare. From 1699, all these nautical documents became part of the archives de la Marine, located in the Augustinian convent of the Petits pères near the Place des Victoires in Paris. Enriched in 1701 by the map collection of the *ingénieur géographe* Charles Pène, who oversaw production of *Le Neptune françois*, these hydrographic holdings rapidly increased. Finally, an *arrêt* from the Conseil de Marine (19 November 1720) created the Dépôt des cartes et plans de la Marine. A high-ranking naval officer was to be responsible for its administration (Chapuis 1999, 160). The *capitaine de vaisseau* Charles-Hercule

d'Albert de Luynes was the first named to this position on 19 November 1720.

The Dépôt's principal objective was to maintain the mass of manuscript documents and to ensure that they did not fall into the hands of competitors or enemies. To meet the needs of the Marine, the Dépôt also copied manuscript and printed maps (whether French or foreign) and kept their published cartography (mostly from Holland) up-to-date with the help of logbooks. Jacques-Nicolas Bellin was the first to assume this responsibility, becoming *ingénieur hydrographe de la Marine* on 1 August 1741. This appointment made him the de facto hydrographer or hydrographic engineer-in-chief, that is the head scientist of the Dépôt, although he never officially received the title of *ingénieur hydrographe en chef* despite soliciting it on numerous occasions. As was common in the first half of the eighteenth century, Bellin worked in the manner of a *géographe de cabinet:* instead of surveying waters himself, he compiled data received from sailors and travelers, creating maps on a medium to small scale, with few details.

The first map printed by the Dépôt did not appear until 1737, at which time the Dépôt only employed three people. It was a route map for the Mediterranean Sea (fig. 206) that incorporated longitude corrections effected between 1689 and 1700 by Jean-Mathieu de Chazelles, a principal author of the *Le Neptune françois* (Chapuis 1999, 170; 2007, 116–18). Other corrections from reliable sources were also included, synthesized by Philippe Buache from January 1735 on a manuscript map of the Mediterranean Sea on the Mercator projection (Pelletier 2007, 573–75). French reliance on foreign maps in wartime also motivated the Dépôt to prepare original French maps and thus assure national independence in hydrography. So from 1756, Bellin compiled increasing numbers of maps for successive versions of the *Hydrographie françoise*. The Dépôt had already printed forty-eight maps (in fifty-seven plates) between 1737 and 1758 (Chapuis 1999, 165), and the French collection of marine maps grew steadily.

After sixty-three years in the limited confines of the Augustinian convent, the Dépôt moved in 1762 to a separate building at Versailles, the Hôtel de la Marine, de la Guerre et des Affaires étrangères. The building, which had housed the Dépôt de la Guerre since 1761, had just been completed for *ministre* Étienne-François, duc de Choiseul (see fig. 205). This sojourn at Versailles would last only thirteen years. The Dépôt returned to Paris on 1 April 1775 (completing the move in June), into the royal priory of Saint-Louis de la Culture, rue Saint-Antoine (on the present site of the Lycée Charlemagne), remaining there until 1794, when it relocated to the Place Vendôme (Chapuis 1999, 166, 222, 492).

When Jacques-Nicolas Bellin died at Versailles (21 March 1772), the Dépôt recovered all the nautical documents kept by his widow. The day after his death, Giovanni Antonio Rizzi Zannoni was appointed as *ingénieur géographe et hydrographe de la Marine* and remained *ingénieur hydrographe en chef* until the end of 1775. His valuable knowledge of geodesy and trigonometry did not truly benefit hydrography. From the perspective of the Crown and the Marine, much more strategic were the posts of *inspecteur* (director) and *garde* (administrative and financial director), who were responsible for protecting the Dépôt's valuable documents (Chapuis 1999, 167–68).

The post of *inspecteur* was filled by a succession of high-ranking naval officers who assumed the administrative direction of the Dépôt in addition to their com-

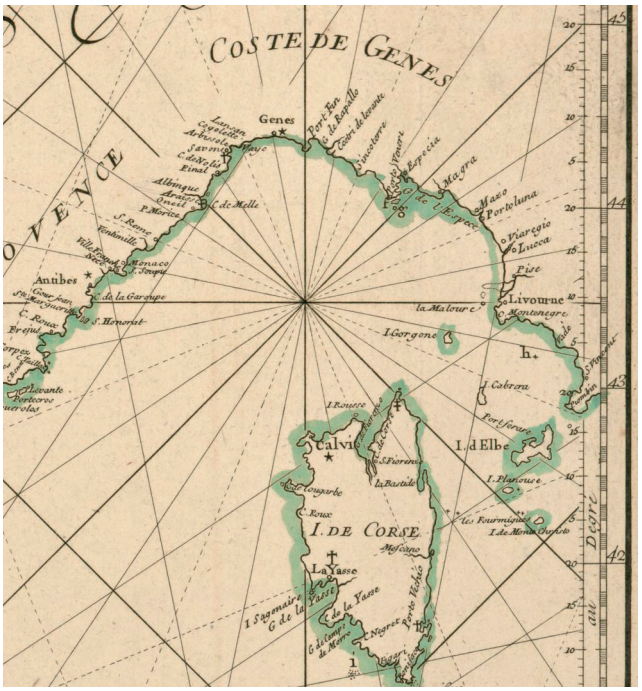

FIG. 206. DETAIL FROM JACQUES-NICOLAS BELLIN, *CARTE REDUITE DE LA MER MEDITERRANÉE POUR SERVIR AUX VAISSEAUX DU ROY* ([PARIS], 1737). First edition, engraved in three sheets, 1:2,740,000. This is the northeastern section of the first sheet of the first engraved map to appear from the Dépôt des cartes et plans de la Marine. Stars mark the places where latitude and longitude were determined by well-known astronomers. A simple cross signifies where a single latitude was calculated by the same astronomers; a rare double cross marks where the latitude was determined by the observation of skilled navigators. (Examples of all three can be seen on the island of Corsica at Calvi, Porto Vecchio, and Cap de Corse.) This principle of symbolizing a hierarchy of sources was a positive step forward in the compilation process, unusual in the hands of Bellin.
Size of the entire original: ca. 63 × 54 cm; size of detail: ca. 16 × 15 cm. Image courtesy of the Bibliothèque nationale de France, Paris (Cartes et plans, Ge DD 2987 [9645 B]).

bat obligations. An exception was Joseph-Bernard, marquis de Chabert, *lieutenant de vaisseau,* named *inspecteur adjoint* on 20 October 1758, and who, in fact, directed the Dépôt. He became *inspecteur du Dépôt* on 10 May 1776, five days before Charles-Pierre Claret de Fleurieu became *inspecteur adjoint*. These two men would constitute the driving force of the Dépôt until the Revolution, with Fleurieu replacing Chabert whenever the latter went to sea (Chapuis 1999, 315–17, 222–23). After a vacancy in the directorship beginning in summer 1792, owing to Chabert's emigration and the general disorganization afflicting other cartographic institutions, François-Étienne de Rosily became director and *inspecteur général* on 23 August 1795 until 1 January 1827.

As competent *officiers savants*, Chabert and Fleurieu not only administered the Dépôt but also became deeply involved in hydrographic questions. At the end of Louis XV's reign (1774), there were sixteen employees at the Dépôt, of whom seven were hydrographic engineers (in addition to the *inspecteur*, the *inspecteur adjoint*, the *hydrographe*, the *astronome*, and the *garde*) directly responsible for producing navigational maps. This was less than one-third of the Dépôt's total manpower, a ridiculously small proportion compared to the engineering corps who worked on topography or the Corps du Génie and the Marine (Chapuis 1999, 218–19). All of them, save two, were recruited in the year after Bellin's death. In the absence of any formal training structure, the principal avenues for recruitment were through family connections and patronage (Chapuis 1999, 220–21).

While the *inspecteur* and his *adjoint* concentrated chiefly on matters concerning the Dépôt and the state—especially scientific and technical questions, but not limited to hydrography—the true administrative and financial manager of the establishment was henceforth the *garde*, François-Pierre Le Moyne, whose *adjoint* from May 1780 was Jean-Nicolas Buache. Buache became the *premier ingénieur hydrographe* (the title used in those years for the *ingénieur hydrographe de la Marine,* the scientific director) from 1 October 1779. However, his nomination was kept secret for ten years, until 1 April 1789, out of consideration for Rigobert Bonne, who had received the title earlier (1 July 1776) but was perpetually in conflict with Chabert and Fleurieu (Chapuis 1999, 280). From a technical perspective, Pierre-François-André Méchain, *astronome hydrographe* in the Dépôt from 1772, is the staff member who stands out during the reign of Louis XVI. Dispatched on 26 May 1792 to join the project to measure the meridian between Dunkirk and Barcelona, he would not reassume his post at the Dépôt until February 1799. Méchain was the only individual at the Dépôt truly competent to conduct in-depth surveys in the field for the "Nouveau neptune françois," a production unfortunately soon interrupted and never completed (Chapuis 1999, 257–62).

In the overseas colonies, officers of the Marine were responsible for hydrography, although it was claimed that only one percent of them were truly capable of using hydrographic instruments and of employing methods that incorporated the best standards of the period (Chapuis 1999, 306). As for the great scientific expeditions, neither that of Louis-Antoine de Bougainville (1766–69) nor that of Jean-François de Lapérouse (1785–88) would choose their mapmakers from among the Dépôt's hydrographic engineers (Chapuis 1999, 262–64), which speaks to their lack of experience in practical surveying at sea. Not until the expedition of Joseph-Antoine-Raymond Bruny d'Entrecasteaux (1791–93) would an expedition leader turn to the Dépôt, when Charles-François Beautemps-Beaupré was chosen.

Except for two survey expeditions for the "Nouveau neptune françois," members of the Dépôt no longer frequented the coasts of France. The rare maps based on actual surveys along the coast or at sea were the fruit of local initiatives by the Marine or individuals, not the Dépôt, as compilation *de cabinet* remained the Dépôt's primary method of mapmaking (Chapuis 1999, 309–12). Bellin oversaw the engraving of an average of 3.29 plates per year between 1737 and 1772, and the Dépôt produced an average of 3.67 plates per year between 1773 and 1791. Considering the Dépôt's recruitment of hydrographic engineers in 1772 and 1773 and a Marine-funded budget that contained no incentive for profitability, this quasi-stagnation of map production was disappointing at a time when England's Alexander Dalrymple, hydrographer of the East India Company, was supervising the engraving of an average of 18 plates per year between 1765 and 1790 (Chapuis 1999, 194, 316). Nevertheless, the quality of the maps produced by the Dépôt after 1773 surpassed those of Bellin. Even if they resulted from compilation methods, the post-1773 charts were based on more verified and reliable data than Bellin's work. In December 1791 the Dépôt's collections included a total of 14,735 maps and plans in many forms and media (originals, duplicates, printed, manuscript, on thin tracing paper, on laid rag paper, mounted on linen); this figure did not include the printed charts intended for the Marine and for-sale or written works (Chapuis 1999, 313).

The demand for reliable sea charts came not only from the Marine. From the early eighteenth century, French maritime commerce had developed considerably. The Compagnie des Indes, established in 1719, was slow to create its own hydrographic service (1762), which it maintained for only eight years before its bankruptcy in January 1770. This service was directed by

Jean-Baptiste-Nicolas-Denis d'Après de Mannevillette, author of the *Le Neptune oriental* (1745), and strengthened by very active officers. In this period, the Dépôt was responding to growing demand for nautical documents for sale and fighting against private productions, the rigor of which left much to be desired. France became the first country to regulate the production and diffusion of marine maps. An *arrêt* of 5 October 1773 instituted effective supervision of hydrographic production under the sole direction of the Dépôt (Chapuis 1999, 190–91), an *arrêt* that still remains in force, defining one of the present missions of the French hydrographic service. Every private publication would henceforth require the Dépôt's prior authorization. The principle of transparency of sources was also instituted, as still exists today under the supervision of the International Hydrographic Organization. The Dépôt also received an exclusive privilege (18 August 1775) for the engraving and printing of maps, with the authorization to have counterfeit plates and exemplars seized. Finally, an ordinance of 28 October 1775 organized the commercial structure within the Dépôt, consisting of a central establishment that could supervise and provide maps to commissioned local agents for sale at guaranteed low prices throughout the country (Chapuis 1999, 192–94). From its creation (30 September 1776), this Entrepôt général was entrusted to Jean-Nicolas Buache, who sold it, along with his own geographical stock, in 1780 to Jean-Claude Dezauche; this was a complicated negotiation, and the part of it concerning the Entrepôt was completed in 1781.

The extraordinary cost of hydrographic missions at sea—together with the conservation and production of maps and their distribution to the Marine, the *marine de commerce*, and the commercial market—could be sustained only by a government unconcerned with profitability. This understanding gave birth to the first notion of a public hydrographic service. Titled the Dépôt général de la Marine for several decades from 1800, the Dépôt became the Service hydrographique de la Marine in 1886. In 1971 it became the Service hydrographique et océanographique de la Marine (SHOM), the oldest active hydrographic service with juridical continuity.

OLIVIER CHAPUIS

SEE ALSO: Académie de marine (Academy of Naval Affairs; France); Map Trade: France; Marine Chart; Marine Charting: (1) Enlightenment, (2) France

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Design, Map. See Art and Design of Maps

Down Survey. See Irish Plantation Surveys

Dutch East India Company. See Verenigde Oost-Indische Compagnie (VOC; United East India Company; Netherlands)

Dutch West India Company. See West-Indische Compagnie (WIC; West India Company; Netherlands)