
MERIDIAN



A Journal of the
MAP AND GEOGRAPHY ROUND TABLE OF THE AMERICAN LIBRARY ASSOCIATION

No. 14 1998

TABLE OF CONTENTS

Articles

- Richard Hakluyt, Elizabethan Voice of Discovery* page 5
By Louis De Vorsey, Jr.
- American School Atlases and Geographies with Maps in the Barnard Collection* page 13
By Jeffrey H. Kaimowitz
- Institut Geographique National - France* page 23
By Jean-Philippe Grelot
- Most Complete Collection of Sanborn Maps Will be Available On-Line* page 29
By Marla Krauss

Et Cetera

- Calendar* page 2
- Editorial* page 3
- Index to Advertisers* page 2
- Announcements* page 32

CALENDAR

ALA Midwinter Meeting:

Philadelphia Jan. 29-Feb. 3, 1999

International Miami Map Fair:

Miami Feb. 6-7, 1999

ALA Annual Meeting:

New Orleans June 24-July 1, 1999

International Conference on the History of Cartography

Athens July 11-16, 1999

IFLA Annual Conferences:

Bangkok Aug. 19-28, 1999

Meeting and Exhibit announcements should be sent to the Editor.

NEXT ISSUE

Women in Cartography

Millie the Mapper and Beyond: the Role of Women in
Cartography since WWII *Judith Tyner*

Tribute to Helen Margaret Wallis, 1924-1995
Norman J.W. Thrower

Maps and Women
Ute J. Dymon and Margit Kaye

Research Note: Women in Cartography
Alice C. Hudson

Sweeping the Skies: Some Celestial Ladies of the 17th -
19th Centuries *Mary McMichael Ritzlin*

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INDEX TO ADVERTISERS

MAGERT page 4, 34
MAPLINK page 12
Merriam Webster back cover
Miami Map Fair page 31
UNC Press page 33

Editorial

This has been one of the most difficult Meridian issues to compile. When I became Editor two years ago I planned several theme issues hoping that would make the task of gathering articles an easier one. This particular issue was intended to concentrate on "International Mapping Agencies," and I had asked Gary North, formerly of the U.S. Geological Survey and supporter of map libraries, to call upon his many contacts. We had intended to have the countries discuss their mapping products, copyright issues, and their transformation to digital information. Gary had the issue organized within six months, had agreements from several countries to participate, and we both felt confident the issue would be a successful one.

As the issue deadlines began to loom, the issue began to unravel and Murphy's Law began to take over. Each foreign country and one commercial firm who had offered to compile an article on Russian mapping, none named to save the guilty, chose to ignore the deadlines and eventually only France was gracious enough to submit an article.

Thanks must also go to our good friend Alice Hudson who, in talking to Lou DeVorse, was able to get his fine article on Richard Hakylut. I had contacted Jeffrey Kaimowitz sometime ago to encourage him to write an article on Barnard Collection at Trinity College. With some good fortune we are able to bring you this issue, albeit later than usual and smaller than we had planned. Despite our earlier concerns, this issue brings you information on the mapping of France and their transition to digital, a wonderful article on Richard Hakylut, and a description of school atlases and geographies in one of America's special collections.

David Cobb
October 1998

MERIDIAN

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The Portolan

Journal published three times per year with original articles, meeting summaries, book reviews, cartobibliography, and notices of meetings and events of interest. Sent worldwide. (Past contents list at web site below.) **Contact:** Mr. T. Sander, Washington Map Society, PO Box 10793, Burke, VA 22009-0793

Local and Regional Meetings and Field Trips: Nine per year, normally at Geography and Map Division, Library of Congress. Also at New York, Baltimore, Richmond, Williamsburg, and more.

Scholarly Writing Award: Annual Ristow Prize for Cartographic History and Map Librarianship. **Contact:** Dr. John Docktor, 150 South Strathcona Drive, York, PA 17403-3833

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Web Site: <http://www.cyberia.com/pages/jdocktor/washmap.htm>

John Carter Brown Library Research Fellowships

The John Carter Brown Library will award approximately twenty-five short- and long-term Research Fellowships for the year June 1, 2000 - May 31, 2001. Short-term fellowships are available for periods of two to four months and carry a stipend of \$1,200 per month. These fellowships are open to foreign nationals as well as to U.S. citizens who are engaged in pre- and post-doctoral, or independent research. Graduate students must have passed their preliminary or general examinations at the time of application. Long-term fellowships, primarily funded by the National Endowment for the Humanities (NEH) and the Andrew W. Mellon Foundation, are typically for five to nine months and carry a stipend of \$2,800 per month. Recipients of long-term fellowships may not be engaged in graduate work and ordinarily must be U.S. citizens or have resided in the U.S. for the three years immediately preceding the term of the fellowship.

It should be noted that the Library's holdings are concentrated on the history of the Western Hemisphere during the colonial period (ca. 1492 to ca. 1825), emphasizing the European discovery, exploration, settlement, and development of the Americas, the indigenous response to the European conquest, the African contribution to the development of the hemisphere, and all aspects of European relations with the New World, including the impact of the New World on the Old. Research proposed by fellowship applicants must be suited to the holdings of the Library. All fellows are expected to relocate to Providence and be in continuous residence at the Library for the entire term of the fellowship.

Several short-term fellowships have thematic restrictions: the Jeannette D. Black Memorial Fellowship in the history of cartography; Center for New World Comparative Studies Fellowships for research in the comparative history of the colonial Americas; the Alexander O. Victor Memorial Fellowship in early maritime history; the Ruth and Lincoln Ekstrom Fellowship in the history of women and the family in the Americas; the William Reese Company Fellowship in bibliography and the history of printing; and the Touro National Heritage Trust Fellowship for research on some aspect of the Jewish experience in the New World before 1825. Maria Elena Cassin Fellowship are restricted to scholars who are permanent residents of countries in Spanish America.

The application deadline for fellowships for 2000-2001 is January 15, 2000. For application forms and fuller information, write to: *Director, John Carter Brown Library, Box 1894, Providence, RI 02912. Tel.: 401-863-2725. Fax: 401-863-3477. E-mail: JCBL_fellowships@brown.edu. Web site: <http://www.JCBL.org>*

Richard Hakluyt, Elizabethan Voice of Discovery

Louis De Vorsey, Jr.
Professor Emeritus of Geography,
University of Georgia

*"For he who proclaims the praises
of foreigners, rouses his own
countrymen, if they be not dolts."*

*Richard Hakluyt of Oxford,
Englishman, 1587.*

*"Thy Voyages attend,
Industrious Hakluyt!
Whose reading shall inflame
Men to seek fame;
And much commend
To after times thy wit."*

*To the Virginian Voyage,
Michael Drayton, 1605.*

Spacecraft "Voyager One" blasted off on its heralded mission to Jupiter and beyond on September 5, 1977. Realizing that Voyager was destined to soar beyond our solar system, space scientists installed a recorded greeting from the people of planet Earth. Preceding a brief message, in fifty-five different languages, addressed to any possible denizens of distant space, a gold plated disc played an introductory statement from the then Secretary-General of the United Nations; he was, you may recall, Kurt Waldheim, an Austrian speaking on behalf of the then 147 member states. He spoke in English!

Many readers will react to this revelation with little if any surprise.

The globe-girdling reach of the English language today is a much discussed topic. English is the language of aviation's airspace, the lingua franca of cyberspace and tongue of globalized commerce and industry. The "English Speaking World" seems destined to expand more rapidly than cartographers can chart its spread.

How different conditions were only four centuries before the launching of Voyager One when, in 1577, Richard Hakluyt (1551?-1616), a young Oxford graduate with a passion for geography, met with one of Europe's leading cartographers, Abraham Ortelius(1527-98), the Flemish publisher of the first atlas, *Theatrum Orbis Terrarum* (Theater of the World). That their conversation was carried on in Latin will come as no surprise, the England of Oxford don Richard Hakluyt was peopled by a tight, inward-looking island society where fewer than five million spoke the lilting language of Shakespeare. On the Continent and in more remote parts only a relative handful of non-English merchants and diplomats would have made any effort to master the English language. For all intents the "English Speaking World" of the sixteenth century was England. No matter how we view it, the rise and spread of English is a remarkable success story. It should, however, be kept in mind that its rise to the level

How different conditions were only four centuries before the launching of Voyager One when Richard Hakluyt met with one of Europe's leading cartographers, Abraham Ortelius.

For all intents the "English Speaking World" of the sixteenth century was England.

of global lingua franca was in no way inevitable nor the product of accident or good fortune.

To understand how the language and influence of the English came to spread over the world like the paint shown in the Sherwin and Williams corporate logo, it will be useful first to review a few highlights of the Age of European Discovery as they transpired in the century preceding Elizabeth Tudor's ascendancy to the English throne in 1558. For our review the birth in 1451 of the man who launched the world into that Age, Christopher Columbus, will provide a good beginning. Although severely and unfairly maligned during the recent quincentenary of his first landfall in the Bahamas, Columbus's accomplishment ranks as one of the truly signal events in all of world history.

During the period when he was seeking royal backing for his scheme, Columbus had made overtures to England's King Henry VII. Although nothing came of those negotiations Henry subsequently licensed another Genoese navigator named John Cabot to undertake a similar scheme to sail west to the islands and coasts of Asia. In 1497 Cabot became the first to sail across the Atlantic by the northern route since the days of the Vikings five hundred years earlier. No significant store of portable wealth accompanied Cabot on his return but King Henry awarded a handsome 10 pounds, "to hym that found the new isle."

In February, 1498, Cabot received a second patent from the English monarch allowing him to lead an expedition to the "Loande [land] and Isles of late found." According to a contemporary report Cabot intended to sail south along the coast he had found until he reached Cipangu [Japan] where he felt the jewels and spices of world trade originated. Once in Japan he would set up a trading enterprise that would make London "a more important mart than Alexandria." Unfortunately he

never returned from the voyage and his fate remains unknown. Many experts have argued, however, that the Juan de la Cosa map of 1500 bears evidence of Cabot's exploration of the coast south of Newfoundland. Of course la Cosa, like Cabot and Columbus, was unshaken in his belief that the coast he captioned "mar descubrieto por inglese" (Sea discovered by the English) and arrayed with English standards was that of eastern Asia.

With such an early start in the race for overseas possessions, it is surprising to find just how indifferent the English were toward overseas exploration and colonization during the half century following Cabot's discovery in 1497. As Samuel Eliot Morison pithily observed, Henry VII and his successors frequently claimed sovereignty over North America but did nothing to "nail it down." This English indifference remains without a satisfactory explanation to the present day. Some historians have tried to explain it with the spurious argument that a Protestant England had fewer fast days and thus was less concerned with the rich fisheries that drew the southern Europeans to Cabot's "New Found Land." On first hearing it sounds plausible but closer scrutiny fails to support this contention. A study of Frobisher's manifests for his 1578 voyage, for example, reveals that he provisioned for an average of fourteen fast days per month. Perhaps the better explanation lies in the steady and long-term Tudor policy of avoiding conflict with Spain, the sixteenth-century Superpower of Europe. It was a policy firmly cemented into an alliance by the marriage, in 1554, of Mary Tudor to Philip of Spain. Nor did the death of Catholic Mary and accession of Protestant Elizabeth in 1558 signal a break with Spain.

Elizabeth I, "Gloriana" to poets and courtiers, was every inch her father's daughter and, in stormy council meetings, she could use oaths

Unfortunately, he never returned from the voyage, and his fate remains unknown.

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In geopolitical terms, England was alarmingly insecure with an unfriendly Scotland hovering on her northern boundary...

that would have made Henry VIII proud. She is reported to have told one councilor, whose advice was condescending to her sex, "Had I been born crested, not cloven, you would not speak thus to me." Not that she didn't play the sex card for all the political leverage it could command. She garnered ten serious proposals of marriage including one from Philip of Spain himself. And who could blame her for steering a cautious course? In geopolitical terms, England was alarmingly insecure with an unfriendly Scotland hovering on her northern boundary, while toward the wider continental front and world overseas she looked out at a frequently hostile France flanked by the Hapsburg dominions of Philip II and those of his neighboring colonial power, Portugal.

But this is not to imply that England's wool merchants and adventurers had taken no interest in overseas commerce. They certainly had, and this is where the name Hakluyt first enters the mainstream of this essay.

The Hakluyt to whom I allude was Richard Hakluyt, a lawyer, and, as we shall see, the elder of two Elizabethans bearing that name. From his chambers in London's lawyerly precinct, the Middle Temple, the elder Richard Hakluyt had emerged as what we today might term a geographical consultant. He was an important adviser to both Frobisher's and Sir Humphrey Gilbert's northern voyages. One of the more fascinating surviving documents from his hand is a letter to the cartographer Ortelius outlining a suggested format for an improved world map. Our limited space will not allow for a full review of the elder Hakluyt's suggestions to Ortelius, but his final sentence is worthy of quotation:

In this way you will perform a most acceptable service to a number of English lawyers, to the students of

both Oxford and Cambridge Universities, and to the citizens of London, and you will produce a map that will sell better in every European city than any other kind.

Sir Humphrey Gilbert and his associates are known to have been making use of the great world map published by Ortelius in 1564. It was very large, about five feet across, and drawn on a heart-shaped or cordiform projection. Because of this projection the 1564 map greatly distorted shapes and directions, hence lawyer Hakluyt's request for a map based on a cylindrical projection that could be mounted on vertical rollers for easier handling and study.

Although Ortelius's elegant cordiform world map left something to be desired by the elder Hakluyt and his commerce-driven clients, it proved to be inspirational when viewed by his young cousin and namesake who first saw it during a visit to his chambers in 1568. That cousin was, of course, the man whose works are celebrated in this essay, Richard Hakluyt the younger, clergyman and geographical publicist — the "Elizabethan Voice of Discovery" of our title. In the "epistle dedicatory" to the 1589 edition of his *Principal Navigations*, the younger Hakluyt wrote of remembering when, as a youth and Queen's scholar at Westminster School:

it was my happe to visit the chamber of Mr. Richard Hakluyt my cosin, a gentleman of the Middle Temple, ... when I found lying upon his boord certeine bookes of Cosmographie, with a universall Mapped: he seeing me somewhat curious in the view therof, began to instruct my ignorance, by shewing me the division of the earth into three parts after the olde account, and then according to the latter, & better distribution into more: he pointed with his wand to all the knownen Seas, Gulfs, Bayes, Straights, Capes,

From his chambers in London's lawyerly precinct, the elder Richard Hakluyt had emerged as what we today might term a geographical consultant.

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In many respects the career of Richard Hakluyt the younger can be seen as a continuation in the path pioneered by his lawyer cousin who has been honored as "the first professional geographer in England's history."

While biographical details on the younger Hakluyt are sketchy, he appears to have been born in c. 1551, in London.

Leaving the academic precincts of Christchurch in no way dampened Hakluyt's love affair with geography.

Rivers, Empires, Kingdomes, Dukedomes, and Territories of ech part with declaration also of their speciall commodities, & particular wants, which by the benefit of traffike, & entercourse of merchants are plentifully supplied. From the Mappe he brought me to the Bible ...

In many respects the career of Richard Hakluyt the younger can be seen as a continuation in the path pioneered by his lawyer cousin who has been honored as "the first professional geographer in England's history." Rather than the law, however, young Hakluyt took holy orders and was ordained deacon and priest by the Bishop of Salisbury in 1578, the year after his interview with Ortelius that was mentioned above. As he wrote in the epistle dedicatory quoted above, Richard the younger attended Westminster School in London during the period 1560-1570.

While biographical details on the younger Hakluyt are sketchy, he appears to have been born in c. 1551, in London where his father was in the leather business. From 1570 to 1578 he attended Christchurch, Oxford, receiving B.A. and M.A. degrees. In the words of his epistle dedicatory, the geographical enlightenment he experienced in his cousin's chambers:

tooke in me so deepe an impression, that I constantly resolved, if ever I were preferred to the University, where better time, and more convenient place might be ministered for [geographical] studies, I would by God's assistance prosecute that knowledge and kinde of literature,

Once admitted to Christchurch College he:

fell to my intended course, and by degrees read over whatsoever printed or written discoveries and voyages I found extant either in the Greeke, Latine, Italian, Spanish, Portugall,

French, or English languages, and in my publicke lectures was the first, that produced and shewed both the olde imperfectly composed, and new lately reformed Mappes, Globes, Spheares, and other instruments of this Art for demonstration in the common schooles, to the singular pleasure and generall contentment of my auditory.

Leaving the academic precincts of Christchurch in no way dampened Hakluyt's love affair with geography. As he continues in his "epistle dedicatory":

... and by reason principally of my insight in this study, I grew familiarly acquainted with the chieftest Captaines at sea, the greatest Merchants, and the best Mariners of our nation: by which meanes having gotten somewhat more than common knowledge, I passed at length the narrow seas into France with sir Edward Stafford, her Majesties carefull and discreet Ligier [ambassador], where during my five yeeres abroad with him in his dangerous and chargeable residencie in her Highnes' service, I both heard in speech, and read in books other nations ... extolled for their discoveries and notable enterprises by sea, but the English of all others ... either ignominiously reported, or exceedingly condemned.

This last was a stinging prick to a growing national ego but, launched from Hakluyt who had recently returned from a long sojourn in Paris where he had served as chaplain and intelligence agent in Queen Elizabeth's embassy, it had the ring of truth and merit about it. As he wrote, "he who proclaims the praises of foreigners, rouses his own countrymen, if they be not dolts."

In 1582, Hakluyt brought out the first of his many publications designed to shake the English from their lethargy in the arena of overseas expansion and colony building. Titled, *Divers Voyages Touching the Discoverie of America, and the Islands Adjacent*, it aimed at putting on

record all that was available to Englishmen describing eastern North America, beginning with King Henry VII's patent to John Cabot and carrying through to Ribaut's accounts of Florida. In his preface dedicated to Sir Philip Sydney, Hakluyt begins in his characteristic vein by stating:

I marvaile not a little ... that since the first discoverie of America (which is now full fourscore and tenne yeares) after so great conquest and plantings of the Spaniards & Portingales there, that we of England could never have the grace to set fast footing in such fertile and temperate places, as are left as yet undiscovered by them. ... I conceive great hope, that the time approacheth and now is, that we of England may share and part stakes ... both with the Spaniarde and the Portingale in part of America, and other regions as yet undiscovered.

When Hakluyt met with Abraham Ortelius some years before, the Low Country cartographer had told him that "if the wars of Flanders had not been, they of the Low Countries had meant to discover those parts of America and the North West Strait." Hakluyt suspected that Ortelius had come to England expressly "to pry and look into the secrets of Frobisher's voyage."

Ministering to the spiritual needs of England's ambassador to the French court from 1583 to 1588 in no way diminished Hakluyt's ardor for geography. It was this period, while he was still actively promoting Sir Humphrey Gilbert's voyage to Newfoundland, that historians regard as marking the birth of the British Empire. In a letter Philip Sydney sent to Sir Edward Stafford, dated July 21, 1584, Sydney confided "We are half persuaded to enter the journey of Sir Humphrey Gilbert very eagerly, whereunto your Mr. Hakluyt hath served for a very good trumpet." Sydney might well have

considered himself lucky for not sailing since it was an adventure that took many lives including Hakluyt's former Oxford roommate, Stephen Parmenius, and Gilbert himself. Had the Queen not assigned Hakluyt to the Paris embassy he would have, in all likelihood, accompanied Gilbert to the New World and possibly met his death.

While in London Hakluyt, on behalf of Gilbert's half-brother, Sir Walter Raleigh, presented the Queen his famous essay "The Discourse on the Western Planting." It has been characterized as a logical and persuasive pamphlet not meant for the public eye but rather to win over the Queen and provide her chief advisor, Sir Francis Walsingham, with a textbook on colonization. In the words of George B. Parks, doyen of American Hakluyt scholars, "If evidence were needed that the young geographer had attained his recognition, this fact would be evidence enough." Raleigh's choice of Hakluyt, the same authority emphasizes, "stamps him as the acknowledged penman of the expansion." As a sign of her royal appreciation, the Queen presented Hakluyt with a prebendary in Bristol Cathedral, a sinecure well chosen to forward both his ecclesiastic and geographic careers. Bristol, it should be recalled, then ranked second only to London as a center of English overseas interest and activity.

Parks took pains to make clear the fact that Hakluyt's Paris posting "kept him as close to colonial enterprise as if he had gone to America instead." In point of fact, Hakluyt went to France to discover America. French exploring experience on America's eastern seaboard was extensive. Verrazano had coasted from Georgia to Newfoundland for the French king in 1524 and proved the existence of the North American

In 1582, Hakluyt brought out the first of his many publications designed to shake the English from their lethargy in the arena of overseas expansion and colony building.

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Paris was also an excellent base from which to tap Spanish and Portuguese sources of New World intelligence.

Upon his permanent return to England, Hakluyt devoted himself for the next year to collecting and editing what he intended to be a permanent record of English achievement in the arena of discovery and exploration.

continent; in 1534-35 Jacques Cartier explored the Gulf and River St. Lawrence; and, in 1562-65 Jean Ribaut and René Laudonniere established colonies on Port Royal Sound and the lower St. Johns River only to inspire Spain to settle St. Augustine and consolidate her hold on northern La Florida. Paris was also an excellent base from which to tap Spanish and Portuguese sources of New World intelligence. It was the focal point for intrigues by Dutch and Portuguese rebels seeking to throw off the Spanish yoke,

While in Paris Hakluyt funded local publishing enterprises including Martin Basanier's *L'histoire notable de la Floride*. As Hakluyt himself wrote, "I had caused the four voyages of Ribaut, Laudonniere and Gorgues to Florida, at mine own charges to be printed in Paris." He also sponsored Basanier in publishing a French translation of Espejo's voyage to New Mexico. In 1587 Hakluyt translated into English and published in London, Laudonniere's accounts under the title, *A Notable Historie Containing Foure Voyages Made By Certayne French Captaynes unto Florida*, as well as his own Latin version of Peter Martyr's *De Orbe Novo ... Decades*, dedicated to Sir Walter Raleigh. The impressive "Map of the New World" by Philips Galle appeared with Peter Martyr's *Decades*. Based on a Spanish original and compiled in Antwerp it includes data from Frobisher's north-western voyages, Drake's circumnavigation, and Raleigh's colonial adventure on the Outer Banks (the name "Virginia" makes its first appearance on a printed map here). In his dedication to *Decades*, Hakluyt stated that this map contained "all the chief places in the book, to serve as a plumb-line, mindful of the true saying, that geography is the eye of history."

Upon his permanent return to England, near the end of 1588, Hakluyt devoted himself for the next year to collecting and editing what

he intended to be a permanent record of English achievement in the arena of discovery and exploration. Writing of this yearlong effort Hakluyt revealed:

What restless nights, what painfull days, what heat, what cold I have endured; how many long and changefull journeys I have travelled; how many famous libraries I have searched into; what variety of ancient and modern writers I have pursued...albeit thysself canst hardly imagine, Yet I daily experience do find and feel.

It was, to say the least, an effort crowned with success for at the end of the year 1589, Hakluyt brought forth his first edition of *The Principal Navigations, Traffiques, Voyages & Discoveries of the English Nation* (FIGURE 1). J.A. Froude, author of *The History of England from the Fall of Woolsey to the defeat of the Spanish Armada*, spoke for historians when he termed Hakluyt's *Principal Navigations*, "the great prose epic of the modern English nation," Hakluyt had joined the ranks of Marlowe, Shakespeare, Johnson, Spenser, Raleigh and Bacon in trumpeting the cry that the English under Elizabeth I were "searching the most opposite corners and quarters of the world, and, to speak plainly, encompassing the vast globe of the earth more than once, have excelled all nations and peoples of the earth."

In 1598-1600, Hakluyt brought out a second edition of his *Principal Navigations* in three volumes with additional material designed to bring the chronicle to the end of the sixteenth century. Although he included medieval sources and contemporary published accounts, the bulk of the work consists of previously unpublished narratives which he collected and edited in the prodigious effort he described above. This is not to say that *Principal Navigations* is simply a record of geographical exploration, it is more - thanks to the considerable amount of

THE PRINCIPALL NAVIGATIONS, VOIAGES AND DISCOVERIES OF THE

English nation, made by Sea or ouer Land,

to the most remote and farthest distant Quarters of
the earth at any time within the compasse

of these 1500. yeeres: Deuided into three

seuerall parts, according to the po-
sitions of the Regions wherun-
to they were directed.

The first, containing the personall trauels of the English vnto *Iudea, Syria, Arabia, the riuer Euphrates, Babylon, Balsara, the Persian Gulfe, Ormuz, Chaul, Goa, India,* and many Islands adioyning to the South parts of *Asia*: together with the like vnto *Egypt*, the chiefest ports and places of *Africa* within and without the Streight of *Gibraltar*, and about the famous Promontorie of *Buona Esperanza*.

The second, comprehending the worthy discoveries of the English towards the North and Northeast by Sea, as of *Lapland, Scrickfinia, Corelia*, the Baie of *S. Nicholas*, the Isles of *Colgoieue, Vaigats*, and *Noua Zembla* toward the great riuer *Ob*, with the mightie Empire of *Russia*, the *Caspian Sea, Georgia, Armenia, Media, Persia, Boghar* in *Bactria*, & diuers kingdoms of *Tartaria*.

The third and last, including the English valiant attempts in searching almost all the corners of the vaste and new world of *America*, from 73. degrees of Northerly latitude Southward, to *Meta Incognita, Newfoundland*, the maine of *Virginia*, the point of *Florida*, the Baie of *Mexico*, all the Inland of *Noua Hispania*, the coast of *Terra firma, Brasill*, the riuer of *Plate*, to the Streight of *Magellan*: and through it, and from it in the South Sea to *Chili, Peru, Xalisco*, the Gulfe of *California, Noua Albion* vpon the backside of *Canada*, further then euer any Christian hitherto hath pierced.

Whereunto is added the last most renowned English Navigation,
round about the whole Globe of the Earth.

By Richard Hakluyt Master of Artes, and Student sometime
of Christ-church in Oxford.



Imprinted at London by GEORGE BISHOP
and RALPH NEWBERIE, Deputies to
CHRISTOPHER BARKER, Printer to the
Queenes most excellent Maiestie.

1589.

FIGURE 1. Title Page. *The Principall Navigations...* By permission of the Houghton Library. Harvard University.

This is not to say that *Principal Navigations* is simply a record of geographical exploration. It is more-- thanks to the considerable amount of source material Hakluyt included in the form of merchant's letters, reports on trade, and political correspondence.

source material Hakluyt included in the form of merchant's letters, reports on trade, and political correspondence. Clearly he was endeavoring to stimulate interest in overseas trading opportunities and extending markets, as well as the utilization of foreign products, all for the benefit of England's domestic economy. As Hakluyt urgently phrased it "the time approacheth and is now, that we of England may share and part stakes (if we will ourselves) both with the Spanish and the Portingale in part of America and other regions as yet undiscovered."

It was not without good cause that the highly regarded compiler of that indispensable reference, *Bibliotheca Americana: A Dictionary of Books Relating to America from its Discovery to the Present Time*, Joseph Sabin, wrote "A fine set of this grand series of voyages is one of the desiderata in an American collection...It is difficult to overrate the importance and value of this

Hakluyt's chief memorial is the 150-year-old "Hakluyt Society," dedicated to carrying on the publishing tradition he pioneered 400 years ago.

extraordinary collection."

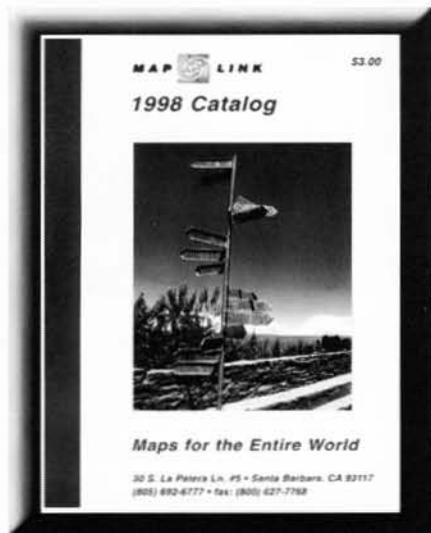
This essay began with a view of how, thanks to the energies and genius of those Elizabethans like Hakluyt, Raleigh, Drake, Gilbert, Frobisher, Hawkins and Shakespeare, the English language was carried to the farthest corners of the world where it grew and spread to become today's global language. We saw how, in our own lifetimes, English has leapt the shackles of gravity to reverberate through the cosmos.

Like so many of the lesser historical figures of the Elizabethan Age, Hakluyt left no likeness or portrait, so it is impossible to put a face to his words. Nor can we pay homage at his last resting place. He lies in Westminster Abbey in an unmarked grave. Hakluyt's chief memorial is a living one. It takes its form in the 150-year-old "Hakluyt Society" dedicated to carrying on the publishing tradition he pioneered 400 years ago.

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·subset , convert formats, and download selected portions of the dataset; and,

·launch new queries based on selections.

The Harvard Map Collection's Massachusetts Electronic Atlas represents a prototype of this service that runs on a single (albeit large) geospatial data object.

Distributed Laboratory Environment

For users with more extensive analysis needs, the Laboratory will provide access to localized analysis facilities with full-fledged analysis products such as ArcView, ArcInfo, ERDAS Imagine, and robust non-commercial tools. The path between the data repository and the analysis product will be preprogrammed, so that patrons can focus on the substance of their analysis instead of mundane technical issues of moving

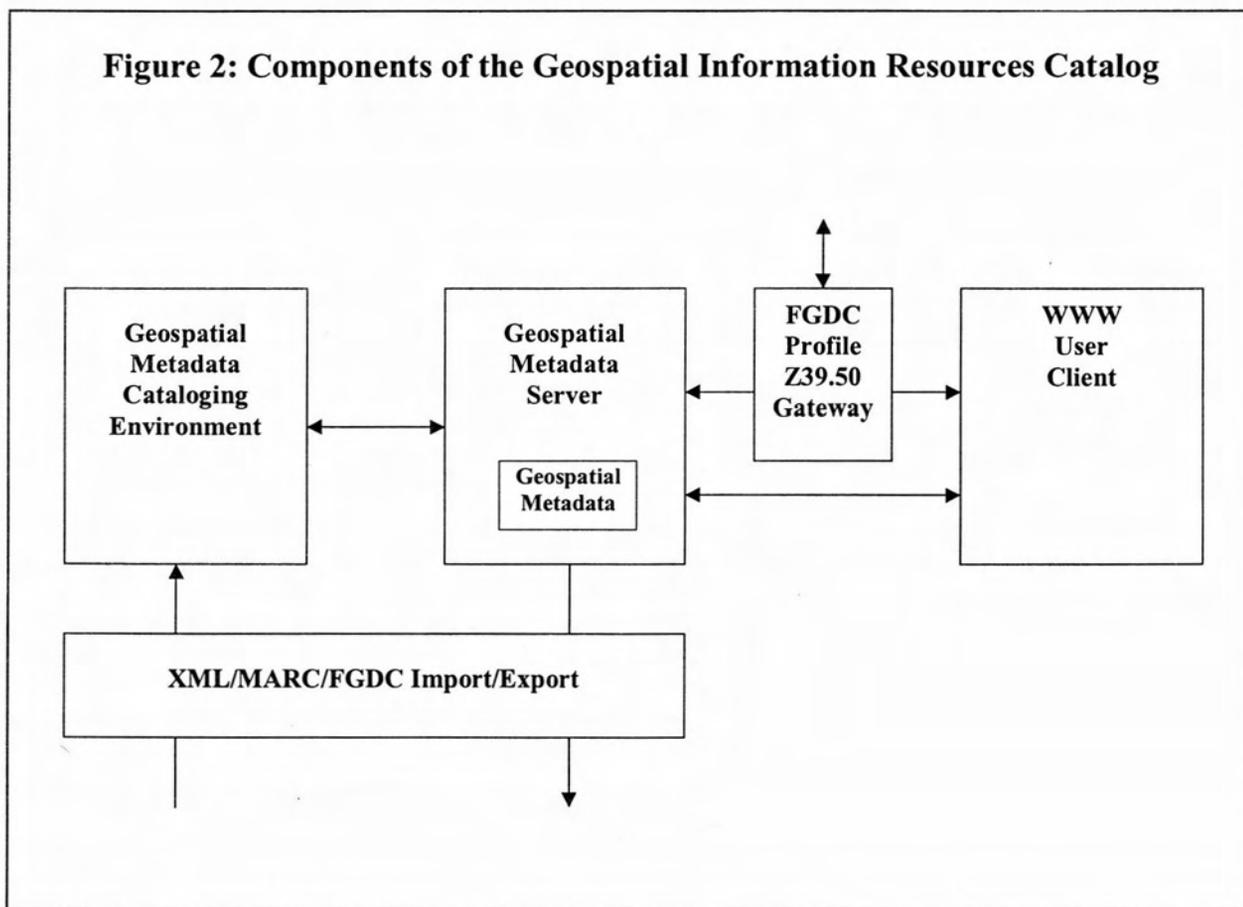
files from one location to another and translating data from one format to another. These facilities will be located in both library and laboratory settings. Local and remote reference staff will assist users with the data and the analysis systems. Users who have tasks that are especially complex or that require large resources will find solutions here. This combination of centralized data, query, and map servers with powerful managed clients will enable users at Harvard to create state of the art maps and geospatial analyses.

There will be three "point of presence" categories for the distributed laboratory environment:

·Supported points of presence are public workspaces equipped with a geospatial data analysis workstation and supported by on-site staff that can assist users with the mechanics of using the data and software.

The Laboratory will provide access to full-fledged analysis products such as ArcView, ArcInfo, and ERDAS Imagine.

Figure 2: Components of the Geospatial Information Resources Catalog



...her simplified system of maps "daguerreotypes on the memory a lively and accurate impression of the map, which can never be effaced..."

scale: *Cornell's Companion atlas to Cornell's High School geography comprising a complete set of maps, designed for the student to memorize, together with numerous maps for reference, etc.* (New York: D. Appleton and Company, 1857, c1856).¹ Cornell notes in her Preface that her simplified system of maps "daguerreotypes on the memory a lively and accurate impression of the map, which can never be effaced and in half the time usually allotted to the study, imparts a greater amount of well digested geographical knowledge than can be obtained by any other course."

Another solution, which was cheaper and more convenient for customers, was an integrated atlas and geography. An early representative of this type is Luke Drury's *A geography for school: upon a plan entirely new, consisting of an analytical arrangement of all the great features of nature, particularly adapted to an atlas of forty luminous and concise maps...* (Providence, R.I.: Printed by Miller & Hutchens, 1822, c1821). Its convenience, however, was hampered by the printing practices of the day, whereby the maps were produced by intaglio engraving and the text by letterpress, and thus all the maps are gathered together in the back. A little later in the century, with the widespread use of wood engraving and other relief processes like cerography, it became possible to print cheaper unified productions combining letterpress text with maps and illustrations. Francis McNally's *An improved system of geography, designed for schools, academies and seminaries* (New York: A. S. Barnes & Co., 1855), includes 30 maps facing the text with appropriate questions and has at the back statistical tables. Similar, but with more attractive maps and illustrations, is David M. Warren's *The common-school geography: an elementary treatise on mathematical, physical, and political geography...* (Phila-

delphia: H. Cowperthwait & Co., 1858, c1857), which includes hand-colored maps in the text and partially color-printed maps on separate plates.

All the colored maps in *Guyot's grammar-school geography* by Arnold Guyot (New York: Charles Scribner's Sons, 1880) are color-printed, reflecting progress in the printing arts. Guyot, European trained and a professor at Princeton, takes an objective scientific approach to his material. Still more impressive from a production standpoint, but more tendentious, is Alex Everett Frye's *Grammar school geography* (Boston: Ginn, 1902). Frye comments in his Preface: "In this book, man is the central thought. Every line of type, every picture, every map, has been prepared with a single purpose, namely, to present the earth as the home of man,—to describe and locate the natural features, climates and products that largely determine his industries and commerce, as well as his civic and other relations, —thus bringing reason to bear on the work."

Levels and Series

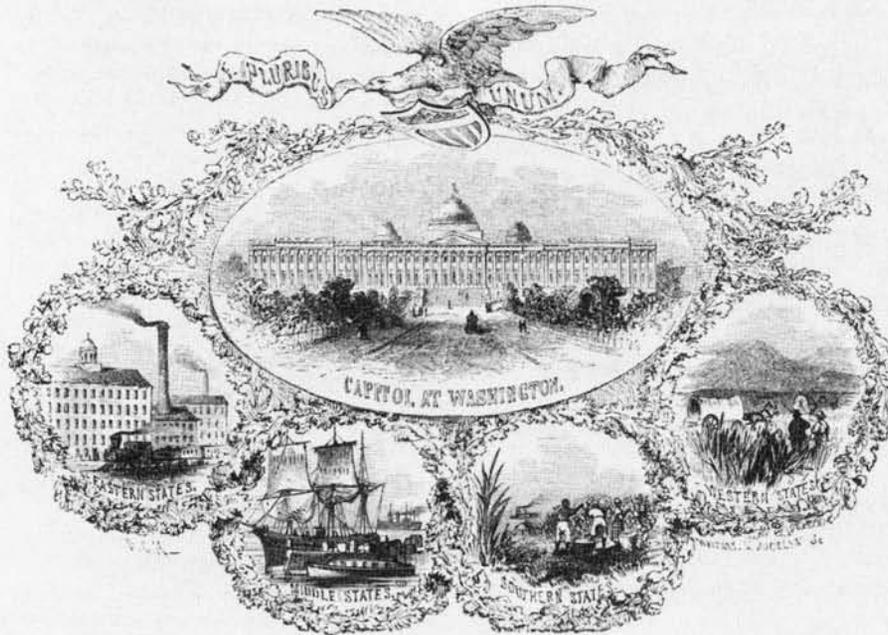
Geographies and atlases were written to accommodate children at various levels in their educational development. Typical of the most elementary is one by Samuel G. Goodrich: *Peter Parley's method of telling about geography to children; with nine maps and seventy-five engravings, principally for the use of schools* (Hartford: F. J. Huntington, 1835; c1829). The book is very small in format (14 cm.), the print is large, and the maps are very simple. Each lesson is followed by a series of questions. In 1850, Goodrich issued *A primer of geography* (New York: George Savage, c1850). It has a fuller text and is somewhat larger in format (20 cm.), with much more sophisticated illustrations and maps outlined in red. For presentation of material, it employs the catechetical method of question and answer so

A little later in the century, with the widespread use of wood engraving and other relief processes like cerography, it became possible to print cheaper unified productions combining letterpress text with maps and illustrations.

"In this book, man is the central thought. Every line of type, every picture, every map, has been prepared with a single purpose, namely, to present the earth as the home of man..."

CORNELL'S INTERMEDIATE GEOGRAPHY.

SECOND BOOK OF THE SERIES.



GENERAL DEFINITIONS.

LESSON I.

What is Geography?

Geography is a science which treats of the various natural, political, and mathematical divisions of the earth's surface.

What is the Earth?

It is the planet which we inhabit.

Of what is the earth's surface composed?

It is composed of land and water.

In what proportion are these elements distributed?

The land forms about one-fourth, and the water three-fourths of the surface of the earth or world.

What is meant by Natural Divisions of the earth's surface?

Those divisions which have been formed by nature.

What is meant by Political Divisions of the earth's surface?
Those divisions which have been made by man.

Is an island a natural, or a political division?

It is a natural division.

What kind of a division is a state?

A political division.

What kind of a division is a river? A peninsula?

What kind of a division is a continent? A lake?

What kind of a division is a hemisphere?

It is a mathematical division.

What is that branch of Geography called, which describes the various natural divisions of the earth's surface?

It is called Natural or Physical Geography.

FIGURE 1. Sarah S. Cornell. *Cornell's intermediate geography: forming part second of a systematic series of school geographies; designed for pupils who have completed a primary or elementary course of instruction in geography...*(New York: D. Appleton, 1856, c1855.) P.3



THIRD REVISED EDITION.
 MITCHELL'S PRIMARY GEOGRAPHY.
 AN
 EASY INTRODUCTION
 TO THE
STUDY OF GEOGRAPHY:

DESIGNED FOR THE
 INSTRUCTION OF CHILDREN
 IN SCHOOLS AND FAMILIES.



ILLUSTRATED BY
 MORE THAN ONE HUNDRED ENGRAVINGS,
 AND
 FOURTEEN COLOURED MAPS.

BY S. AUGUSTUS MITCHELL.

PHILADELPHIA:
 THOMAS, COWPERTHWAIT & CO.
 1853

FIGURE 2. Samuel Augustus Mitchell. *An easy introduction to the study of geography, designed for the instruction of children in schools and families* (Philadelphia: Thomas, Cowperthwait & Co., 1853). Title page.

The Roswell C. Smith geography includes a number of small maps of major metropolitan areas from around the world.

popular in the 19th century.

A typical full series of geographies would include a primary, intermediate, and high school atlas. A good example is that of Sarah S. Cornell: *Cornell's primary geography, forming part first of a systematic series of school geographies* (New York: D. Appleton & Company, 1855, c1854), *Cornell's intermediate geography: forming part second of a systematic series of school geographies; designed for pupils who have completed a primary or elementary course of instruction in geography...* (New York: D. Appleton, 1856, c1855.) (FIGURE 1), and *Cornell's high school geography, forming part third of a systematic series of school geographies, comprising a description of the world; arranged*

with special reference to the wants and capacities of pupils in the senior classes of public and private schools; accompanied by a large and complete atlas, drawn and engraved expressly for this work (New York: D. Appleton and Company, 1856). The first two volumes in the series include maps, but not the last which would have been supplemented by Cornell's atlas listed earlier. Other series authors represented in the Barnard Collection are David N. Camp, George W. Fitch and C. Woolworth Colton, Samuel G. Goodrich, James Monteith, Jesse Olney, William C. Woodbridge and Emma Willard, and Samuel Augustus Mitchell, whose extended series merits examination in a little more detail.

Samuel Augustus Mitchell

According to John A. Nietz, the geographies of Samuel Augustus Mitchell (1792-1868) had the widest circulation of any published in the United States before 1900.² Mitchell's geographies came out in two successive series, the first dating to the period between 1839 and ca. 1860 and the second dating from the 1860's to the 1880's, and their texts were revised continuously. Mitchell's first series, issued by the Philadelphia publisher Thomas, Cowperthwait & Co., commenced with a primary geography entitled *An easy introduction to the study of geography, designed for the instruction of children in schools and families* (FIGURE 2). The Barnard Collection has editions ranging from 1840 to 1859. The 1853 (c1852) edition, contains 176 pages, includes 100 wood engraved illustrations and 14 very simple hand-colored maps, and is 17 cm. tall. Presentation is both catechetical and expository, and covers historic as well as purely geographic topics. This was followed in the series by *Mitchell's intermediate or secondary geography: A system of modern geography comprising a description of the present state of the world, and its five great divisions, America, Europe, Asia, Africa and Oceanica, with their several empires, kingdoms, states, territories, etc.* (1853, c1852). Much larger in scale (32 cm.), it has 81 pages with 53 maps and many illustrations and is more strictly focused on the subject of geography than the primary text.

Following next in the same series is a set in two parts: a small scale text volume (17 cm.) in 336 pages (1853 ed.), *A system of modern geography comprising a description of the present state of the world*, and a larger atlas (31 cm.) of 32 maps. This title was immensely popular and was reprinted and revised repeatedly. From the point of view of detail, there is not much to choose between the *Intermediate geography*

and *A System of modern geography*, and it was probably a matter of teacher preference that determined which would be selected. From the point of view of marketing, Mitchell may have been trying to have it both ways, issuing a self-contained one volume school geography, which represented the future of geographic publishing, but keeping as well the familiar and likely more profitable two volume set as an available option. What was wanted was an advanced geography specifically intended for high school use, and though one was listed as in the press on the back of books in the Mitchell series, it never seems to have appeared. What did provide additional advanced reading for students of geography was the 600 pages of *Mitchell's geographical reader: a system of modern geography, comprising a description of the world, with its grand divisions, America, Europe, Asia, Africa, and Oceanica* (Philadelphia: Thomas, Cowperthwait, 1840). A supplementary text (140 p.) was *Mitchell's geographical question book, comprising geographical definitions, and containing questions on all the maps of Mitchell's School atlas, to which is added an appendix, embracing valuable tables in mathematical and physical geography* (Philadelphia: Cowperthwait, Desilver, & Butler, 1854, c1852).

Also included in the series was an atlas workbook: *Mitchell's atlas of outline maps, intended to be filled up by pupils studying Mitchell's school geography and atlas*. (Philadelphia: Thomas, Cowperthwait, & Co., 1839) with 6 maps. The purpose of the outline maps was to facilitate learning the geographical locations of important sites through a "hands-on" exercise. A blurb on the back of the 1839 edition of *A System of modern geography* states, "It is well known that no method fixes the form and relative position of Countries, Islands, &c. so well in

"It is well known that no method fixes the form and relative position of Countries, Islands, &c. so well in the mind of the learner as drawing Maps."

There seems to be no question that competition in the geography textbook field was continuous and intense.

From the point of view of marketing, Mitchell may have been trying to have it both ways, issuing a self-contained one volume school geography...but keeping as well the familiar and likely more profitable two volume set as an option.

MAKA-OYAKAPI. GEOGRAPHY.



PUBLISHED FOR THE DAKOTA MISSION.
SCRIBNER, ARSMTRONG & CO., 743 BROADWAY, NEW YORK.

FIGURE 3. Arnold Guyot. *Maka-oyakapi: Guyot's elementary geography in the Dakota language* by S.R. Riggs and A.L. Riggs. Published for the Dakota Mission (New York: Scribner, Armstrong, 1876). Cover.

On the cover it is identified as the "Connecticut edition," and it does indeed provide a special supplement on Connecticut.

the mind of the learner as drawing Maps. To draw them entirely, is a work of time, and what comparatively but few scholars ever attain the art of doing well: but the plan of finishing the outline Maps by inserting the required names from the finished Atlas, possesses all the advantages to be derived from Map-drawing, with a great saving of time."³ This method was very popular and succeeding authors of geographies like David N. Camp devised their books to make use of it. Mitchell also prepared an additional tool to facilitate use of his outline

maps: *Key for exercise on Mitchell's series of outline maps, for the use of academies and schools* (Hartford: Mather, Case, Tiffany & Burnham, 1841) in 106 p.

Marketing Geographies

There seems to be no question that competition in the geography textbook field was continuous and intense. It is therefore useful to observe the ways in which authors and publishers attempted to gain an advantage over their competition. One tactic was good design, such as to be observed in Joseph H. Colton's large atlas *Colton's common school geography: illustrated by numerous engravings and twenty-two study maps, drawn expressly for this work, and specially adapted to the wants of the class-room* (New York: Sheldon and Co., 1879, c1877). Taking advantage of progress in printing technology, the book is beautifully embellished with crisp illustrations and fine color-printed maps, and at the same time is carefully and tastefully laid out and presented. Another common method employed by authors and publishers to attract customers was to make their product appeal to more than one category of readers. Colton's atlas exhibits this strategy as does the atlas of Roswell C. Smith, *Smith's new geography containing map questions interspersed with such facts as an observing tourist would notice, which are followed by a concise text and explanatory notes...for the use of common schools in the United States and Canada* (Philadelphia: J. B. Lippincott and Company, 1860). At the foot of the title page is the statement "Over one hundred maps. With the whole forming a convenient and ready manual for families, counting-houses, and travelers."

Playing to niche markets was another approach. In Samuel Augustus Mitchell's New Series we find a copy of *A system of modern geography, designed for the use of schools and academies, illustrated by twenty-three copper-plate maps drawn*



FIGURE 4. Samuel G. Goodrich. *A national geography for schools* (New York: Huntington & Savage, 1846, c1845) "Globe map."

and engraved expressly for this work from the latest authorities and embellished with numerous engravings. Rev. Ed. (Philadelphia: E.H. Butler & Co., 1869, c1859). On the cover it is identified as the "Connecticut edition," and it does indeed provide a special supplement on Connecticut. Similarly, *Harper's school geography, with maps and illustrations prepared expressly for this work by eminent American artists* (New York: Harper & Bros., 1886, c1885) includes an extended section entitled: "Geography of New England, designed to accompany *Harper's school geography*, with maps of the states and illustrations prepared expressly for this work." Also directed toward a specific market, in this case the Confederacy, is Kensey Johns Stewart's *A Geography for Beginners...Palmetto Series. Illustrated with maps and engravings* (Richmond, Va.: J. W. Randolph, 1864). It is a reflection of the difficulties the South was encountering with its industries that this book, which has high production values, had to be printed in England. It is also interesting to note that though the text does give greater attention to the states of the South, the map of North America, apparently a stock item provided by the English printer, does not show the Confederacy as a separate political entity.

Another clientele was represented by those individuals using a language other than English. Thus we find a French version of one of Samuel G. Goodrich's geographies, *Géographie élémentaire, à l'usage des écoles et des familles, illustrée par 15 cartes et 30 gravures* (Philadelphia: E.H. Butler, 1857, c1855) and a translation into the Sioux language of one of Arnold Guyot's books, *Maka-oyakapi: Guyot's elementary geography in the Dakota language by S.R. Riggs and A.L. Riggs. Published for the Dakota Mission* (New York: Scribner, Armstrong, 1876) (FIGURE 3).

The addition of special maps or charts was another method of making books more appealing. Samuel G. Goodrich's *A national geography, for schools* (New York: Huntington & Savage, 1846, c1845), besides being illustrated with 220 engravings and 33 maps, had a flat "globe map" mounted on a stick in a pocket in the front cover (FIGURE 4). The Roswell C. Smith geography already noted includes a number of small maps of major metropolitan areas from around the world. The *Atlas on a new plan, exhibiting the prevailing religions, forms of government, degrees of civilization, and the comparative size of towns, rivers, and mountains* (Hartford: Oliver D. Cooke & Co., 1831) by William C. Woodbridge includes six small maps showing the environs and the cities (including some roads) of Philadelphia, Boston, Washington, New York, Charleston (S.C.), and Baltimore. In *Olney's school atlas*, issued in a number of editions from 1830 into the early 1840's, there is "A chart exhibiting the comparative size, population, form of government and number of square miles in each of the principal Empires, Kingdoms, &c. of the Globe" and also four vignettes displaying the "manner of building among different Nations, according to their civilization," "Savage"—an Indian village, "Half civilized"—Morocco or Canton [China], "Civilized"—Constantinople, and "Enlightened"—New York or Philadelphia (FIGURE 5)! Similarly, in William C. Woodbridge's school atlases from the 1820's to the 1850's, there is in the form of a map a "Moral & political chart of the inhabited world, exhibiting the prevailing religion, form of government, degree of civilization, and population of each country." It has five levels of civilization, adding "Barbarous" between "Savage" and "Half civilized."

Thus we find a French version of one of Samuel G. Goodrich's geographies...and a translation into the Sioux language of one of Arnold Guyot's books.

It is a reflection of the difficulties the South was encountering with its industries that this book, which has high production values, had to be printed in England.

In William C. Woodbridge's school atlases...there is in the form of a map a "Moral & political chart of the inhabited world."

The map of the earliest era shows only the Middle East, while the rest of the world is completely mantled in heavy clouds.

Map drawing required a different type of atlas...

It should be clear that atlases and geography textbooks offer important avenues for research into a variety of topics relating to 19th century America.

providing "A chronological picture of nations or perspective sketch of the course of empire" and displaying "The progressive geography of the world in a series of [10] maps, adapted to the different epochs [sic] of the history." The series of historical maps is particularly revelatory. The map of the earliest era shows only the Middle East, while the rest of the world is completely mantled in clouds. As historic time marches toward the modern era, more and more of the world is revealed. A somewhat later general historical atlas is *J.H. Colton's historical atlas: a practical class-book of the history of the world, comprising in a series of inductive lessons, the origin and progress of nations, their history, chronology, and ethnology...* By F.W. Hunt (New York: Ivison, Phinney & Co., 1860). Like the last atlas, the focus once again is on the western world, but the Colton atlas conveys much more information by combining maps facing detailed timelines.

Physical geography was also the subject of textbooks. Typical is David M. Warren's *A system of physical geography, containing a description of the natural features of the land and water, the phenomena of the atmosphere, and the distribution of vegetable and animal life, to which is added, A treatise on the physical geography of the United States* (Philadelphia: H. Cowperthwait, 1856). The book is illustrated and includes 20 maps and charts. As its title indicates, it covers geology, hydrology, meteorology, and organic life, with a special section on the United States. Authors of other physical geographies include Arnold Guyot, Matthew F. Maury, and William C. Woodbridge.

Map drawing required a different type of atlas. Mitchell's outline maps have already been noted. A more traditional approach is followed by George W. Fitch in *Fitch's chorography, designed for learners in geography, being a collection of plates prepared for delineating maps of the world ...with an introduction to the same*

(Brooklyn, N.Y.: A.M. Wilder ; New-York: D. Felt & Co., 1848). It includes twelve plates with lines of latitude and longitude on which specific maps were to be constructed. Ernest Sandoz followed the same approach, but provided 8 reusable drawing cards in *Guyot's slated map drawing cards drawn by E. Sandoz under the direction of Arnold Guyot* (New York: Charles Scribner, c1862). The blurb notes that "these maps are printed on a newly-invented smooth, silicious surface, from which slate-pencil marks can be effaced with a wet sponge..." A simpler method is expounded by E. A. and A. C. Apgar in *Apgar's geographical drawing book* (Philadelphia: Cowperthwait, c1873), which employs geometrical diagrams for drawing the maps.

Final Comments

It should be clear from this brief survey, which could cover only highlights of a much larger field, that atlases and geography textbooks offer important avenues for research into a variety of topics relating to 19th century America. The history and philosophy of pedagogy as it relates to the teaching of geography, the development of geographical knowledge, contemporary social and political attitudes and trends, the history and development of the printing arts, and the nature of publishing and marketing are areas that come readily to mind. The Barnard Collection constitutes a rich vein of primary source material available for exploration.

1. To indicate the first appearance of an edition, the copyright date, prefaced by the letter "c" is sometimes included.
2. John A. Nietz, *Old textbooks: spelling, grammar, reading, arithmetic, geography, American history, civil government, physiology, penmanship, art, music—as taught in the common school from colonial day to 1900* ([Pittsburgh]: University of Pittsburgh Press, 1961), p. 229.
3. Mitchell, Samuel Augustus. *A system of modern geography comprising a description of the present state of the world, and its five great divisions: America, Europe, Asia, Africa, and Oceanica, with their several empires, kingdoms, states, territories, &c ...* (Philadelphia: Thomas, Cowperthwait, 1839).

Institut Geographique National - France

Jean-Philippe Grelot
Director, Sales and Marketing,
IGN

Brief History

Institut Geographique National - France (IGN) is the French governmental mapping agency responsible for geodetic and topographic surveys resulting in the base map of France at 1:25,000 scale and related products. The IGN was created as a civil agency on July 1, 1940 as the successor of the French Military Survey which had completed the 1:80,000 geometric map of France during the 19th century.

When created in 1940, IGN operated on continental France and its overseas colonies, a total of 12,000,000 square kilometers. This was reduced to 550,000 square kilometers in the 1960s, but at the same time, IGN developed sales and marketing activities in Africa and the Middle East. IGN now has activities in Central Europe, Russia, Africa, the Middle East, Asia, and Latin America.

Organizational Structure

IGN has a statutory mission to carry out research, teaching, production, public dissemination of information, and management of information. It functions under the Ministry of Public Works but has a link to the Ministry of Finance. The IGN Board of Directors is essentially a steering committee and includes staff representatives and others from various ministries including Agriculture and Defense, from the French Space Agency, and from other

bodies. The Chair of the Board is named by the Minister of Public Works. IGN's Director General is appointed by the Council of Ministers.

The budget is 700 million French francs funded through a five year contract with the state. The state contributes 400 million directly. Of the other 300 million, 110 million francs are derived from the public at large, 145 million from the professional market (80 percent of which is public sector), and 35 million francs are generated from overseas activity.

Facilities

The staff is approximately 1,950 people. The main locations are in Paris and its suburbs with technical facilities (1,200 people), a school (*Ecole Nationale des Sciences Geographiques* - National School for Geographical Sciences), four research laboratories, a large store named Espace IGN (650 square meters), the National Airphotos Library with more than 4,000,000 airphotos, and a comprehensive map library with more than 1,500,000 maps. Other locations include the airfield with five photographic planes, a production line for space maps close to the French Space Agency, *Centre Nationale d'Etudes Spatiales* in Toulouse, five regional production centers, and fifteen sales offices.

When created in 1940, IGN operated on continental France and its overseas colonies.

Other locations include the airfield, a production line for space maps, and fifteen regional sales offices.

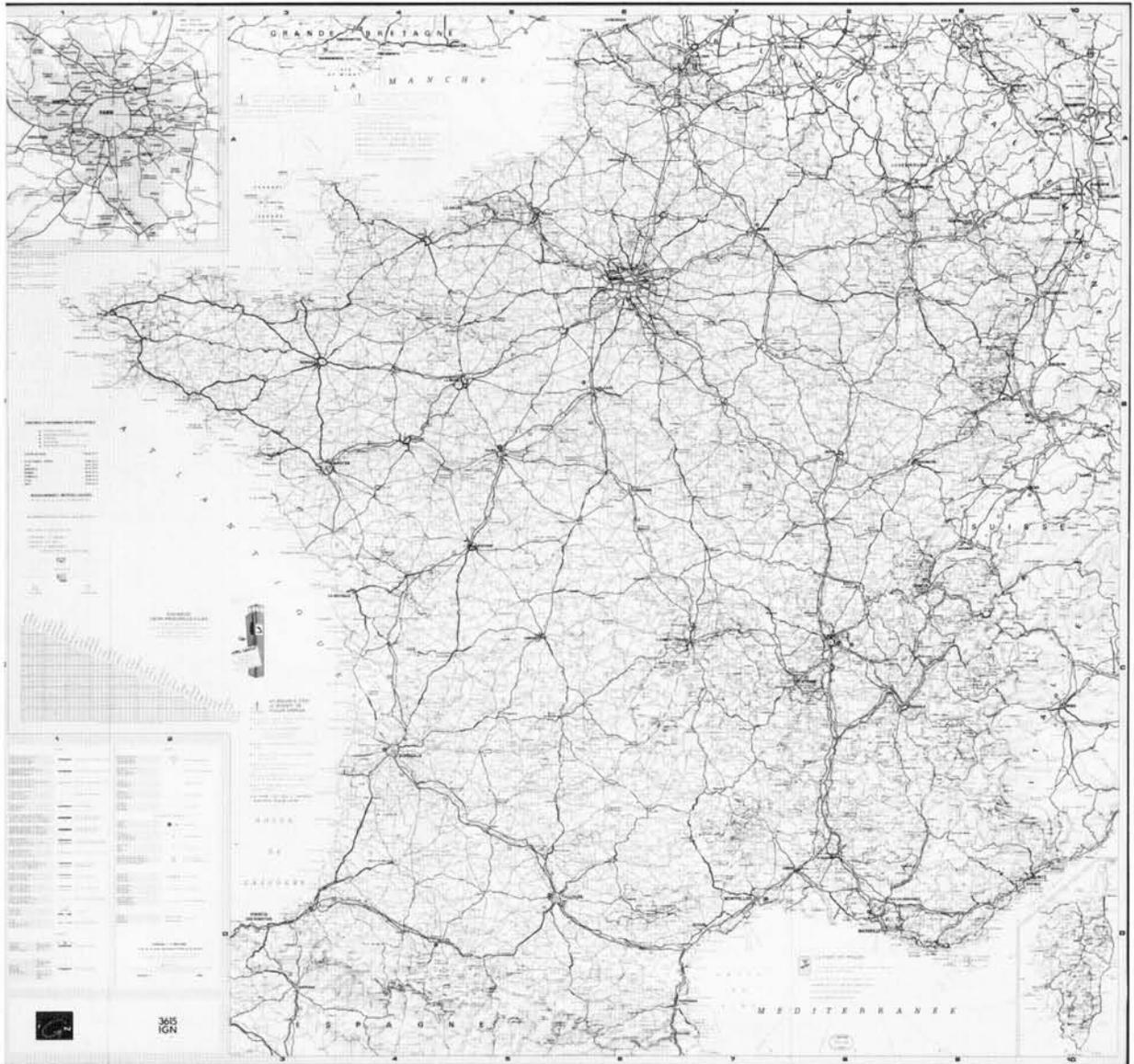
Operations and Production

IGN covers all survey and cartographic techniques. It has built a geodetic network with 70,000 points which is upgraded with a new GPS-compatible network based on 1,000 stations. It has built and maintains a leveling network with 300,000 points; their coordinates are available through a telematics service. Since the 1950s, all places in France are covered every five years with airphotos which are at 1:30,000 scale in panchromatic and are now at 1:25,000 scale in color.

BD TOPO and traditional surveying techniques are used to produce and update the 1:25,000 *Blue Series*.

From the photos is produced a database named *BD TOPO* with one meter accuracy, which is equivalent to a 1:10,000 scale map. This database is available over twenty percent of the territory covering sixty percent of the population. That database and traditional surveying techniques are used to produce and update the topographic base map at 1:25,000 scale named the *Blue Series*. From the 1:25,000 map series is derived a 1:50,000 series mainly used for military and thematic applications.

FIGURE 1. *France Routes. Autoroutes.* Scale 1:1,000,000. 1994, Ed. 21. By permission of the Harvard Map Collection.



At smaller scales, IGN has built *BD CARTO*, a database with ten meter accuracy updated frequently (every year for the road network). It publishes a number of map series from 1:100,000 scale to 1:1,000,000 scale, including the *ICAO Charts* at 1:500,000.

The production of databases and maps uses stereographic plotting and topographic surveys with digital equipment, conventional cartographic drawing, computer-aided drawing, and IGN printing and folding units.

In addition to all production lines, IGN school *Ecole Nationale des Sciences Geographiques* undertakes education and training for IGN staff and others in all surveying and mapping disciplines, from technician level to masters of sciences and PhDs. Four research laboratories are dedicated to geodesy (LAREG), survey instruments, image processing (MATIS), and database and cartographic processing (COGIT).

Products

The *Blue Series* is the topographic base map for France and was completed in the mid-1980s. It is updated every six to twelve years. From its initial 2,000 map sheets, 275 have been upgraded with tourist information and are known as the *TOP 25 Series*. These two series are quite popular for walking and cycling.

Other series are published as road and tourist maps: the *Green Series* at 1:100,000 scale with 75 map sheets being upgraded into *TOP 100 Series* with tourist information, *TOP 250 Series* at 1:250,000 scale with 16 map sheets, and road and thematic maps at 1:1,000,000 scale. In cooperation with local authorities, various associations and private publishers, IGN has developed the *IGN Special Map Series* for leisure activities with more than 200 maps: *Outdoor (Plein Air)*, *Regional Discovery (Decouvertes Regionales)*, *Culture and Environment, Events (Evenements)*, *France Overseas (Outre-mer)*, Eu-

rope, and *Countries and Cities Over the World (Pays et Villes du Monde)*. In 1998 two new series were published: city maps and regional maps covering each French department, the administrative level covering continental France with 96 units.

Indexes and Catalogs

The list of IGN maps available to the public is part of the IGN site on the Internet (<http://www.ign.fr>), with access by region and/or place name (36,000 names).

Sales

The main points of contact for acquiring IGN products are:

Espace IGN, the IGN map shop in the very center of Paris, where all IGN maps and products are sold:

Espace IGN
107 rue La Boetie
75008 Paris – France

IGN Sologne, a distribution service by correspondence for retailers and for end-users (advance payment is required):

IGN Sologne
Administration des Ventes
41200 Villefranche-sur-Cher
France
Fax: +33 2 54 88 14 66

IGN Distribution Division, for foreign distributors through annual agreements:

IGN – Departement Diffusion
107 rue La Boetie
75008 Paris
France
Fax: +33 1 43 98 85 05

IGN international official distributors are shown on the IGN internet site (<http://www.ign.fr>)

Australia:
Hema Maps
24 Allgas Stree
Slacks Creek 4127
P.O. Box 2660
Logan City D.C. 4114 – Brisbane
Fax: +61 7 290 04 78

The *Blue Series*...is updated every six to twelve years.

In cooperation with local authorities, various associations, and private publishers, IGN has developed the *Special Map Series* for leisure activities.

A full list of official IGN international distributors is available on the IGN web page at <http://www.ign.fr>

...IGN tries to ensure that it addresses the needs of the largest number of users.

Germany:
GeoCenter ILH
Schockenriedstrasse 44 a
D 70565 Stuttgart
Fax: +49 711 7 88 93 54

United Kingdom:
World Leisure Marketing
9 Downing Road
Wet Meadows Industrial Estate
Derbyshire – Derby DE21 6HA
Fax: +44 1 332 340 464
Internet site:
<http://www.map-world.co.uk>

USA:
MapLink Inc.
30 S. La Patera Lane – Unit 5
Santa Barbara, CA 93117
Fax: +1 805 692 6787
Internet site:
<http://www.maplink.com>

The economic relationship between users and the IGN facilitates the creation of a balance between supply and demand in terms of specifications, updating, and the evolution of products.

Distribution and Pricing
IGN international distribution currently covers Australia, Belgium, Denmark, Germany, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom, and the United

States of America. Official distributors having contracts with IGN receive a discount on French public prices excluding VAT (VAT on maps in France is 20.6%) and determine their own price lists.

One aim of IGN is that its cartographic products form the reference frame for planning and land management policies. As a result, IGN tries to ensure that it addresses the needs of the largest number of users. Yet the basic characteristics of geo-referenced data imply that, for a given region, the number of potential users is limited. Technical as well as human resources for making digital data available to users are still costly, especially because this still-emerging activity requires continuous and time-consuming technical support.

IGN, as a government organization, takes the role of initiator, facilitator, and regulator. As an initiator, it has to ensure the setting-up of the production facility; as a facilitator, it completes the production up to a defined minimal content; as a regulator, it guarantees the homogeneity of the cartographic infrastructure all over the French territory in spite of differences between regional economic status. And since digital data are intended for both national and/or local users, the French government has defined, through IGN budget, a mechanism combining national funding and funding by the users, consistent with the logic of public service. An important decision made by the French government was that the cartographic infrastructure is considered globally and not product by product since this results in a smoothing of investment and operational cycles.

The direct economic relationship between users and the IGN facilitates the creation of a balance between supply and demand in terms of specifications, updating and the evolution of products. This technical and economic compromise

FIGURE 2. Sales and Distribution Statistics, 1997

SERIES	SCALE	NUMBER OF MAP SHEETS	COPIES
Blue Series	1:25,000	1,650	950,000
TOP 25 Series	1:25,000	275	1,225,000
Outdoor Series	1:25,000 - 1:50,000	50	90,000
Green Series	1:100,000	75	750,000
TOP 250 Series	1:250,000	16	400,000
Regional Discovery	1:100,000 - 1:250,000	30	80,000
Culture and Environment	1:100,000 - 1:250,000	20	35,000
Road Map of France	1:1,000,000	1	250,000
France Overseas	Varies	20	80,000
Europe	Varies	56	100,000
Countries and Cities of the World	Varies	44	70,000



FIGURE 3. Portion of 1:25,000 Le Havre. Nonfleur topographic map. 1992. Ed. 4. By permission of the Harvard Map Collection.

has to conform with the constraints provided by the need of a national infrastructure. Its value is assessed in relation to all services given to end-users, most frequently through an evaluation of costs avoided by the national taxpayer by the charging mechanism.

According to this policy, IGN distributes its topographic and cartographic digital databases with a licensing system and a price list updated and published every year. The licensing system includes a basic fee depending on the number of users and the type of data, an optional maintenance and updating annual fee, and a royalty when maps are derived from the dataset and reproduced in quantities. The user is not allowed to produce maps from IGN material which could compete with existing IGN map series without IGN's prior specific consent.

The price lists for maps are determined in order to cover reproduction costs, storage, and distribution. They also now cover part of data collection and map maintenance.

Copyright and Royalty

Geographic maps are expressly mentioned in the (French) Code on intellectual property (Law n 92-597 of 1st July 1992, section L.112-2) as works of the mind likely to profit by the legal protection established by the said Code, as well as "plans, sketches and plastic works related to geography and topography." This is an extension of the previous law n 57-298 of 11th March 1957 on literary and artistic property, and is strictly in keeping with section 2-1 of the Bern Convention on literary and artistic works protection. However, the French Code does not

The licensing system includes a basic fee...an optional maintenance and updating annual fee, and a royalty when maps are derived from the dataset and reproduced in quantities.

give a precise definition for geographical maps. Let us try to explain.

IGN is a public government agency. One can legitimately wonder if the legal status of public organizations has some effect on the status of the data it produces. First of all, it should be noted that, in French law, the author of a work of the mind is invested with the same rights, regardless of legal status. Thus in the judgement made on 8th July 1992 by the Nanterre Court for the case *IGN vs. Grey Company*, IGN has been declared "eligible for exercising its rights under articles 3, 9 and 13 of the [intellectual property] law on joint creations." These three articles respectively define a list of intellectual creations, joint creations, and owners' rights for joint creations.

The particular texts concerning IGN (decree n 81-505 of 12th May 1981 and amendments) authorize it explicitly to receive royalties. They assign it the mission of distributing its own maps and databases without fixing any particular term or constraint on technical, economic, or financial aspects. Thus IGN is not seen as a part of the administration, but as a company which produces and disseminates, as other companies do, although having to undertake its activities as a public service. IGN, however, has great flexibility in the determination of its pricing strategies.

Technological Changes and Digital Cartography

Digital processing is the main challenge facing IGN. Field data collection and stereographic plotting of aerial photographs are performed through computerized production lines.

New 1:25,000 map sheets from both the *Blue Series* and the *TOP 25 Series* are produced in digital form from the topographic database *BD TOPO* through processes in vector format. The 1:50,000 map series and

1:100,000 *Green Series* and *TOP 100 Series* are updated by conventional techniques. The 1:250,000 *TOP 250 Series* has been scanned at very high resolution and is updated on a hybrid raster-vector system. The 1:1,000,000 road map of France is produced through a vector database updated annually.

The new series *Departements* is produced at 1:125,000 or 1:140,000 scale in digital form from the cartographic database *BD CARTO*. The city maps are produced at 1:10,000 in digital form from the database *Georoute* designed for car navigation systems.

One can see a very direct link between those professional databases and various map series, these being more and more derived from the databases.

Future

IGN has made large investments to build consistent and high quality databases: *BD TOPO*, *BD CARTO*, *Georoute*. Although they have been designed for professional applications in land planning, land management, road management, traffic control, urban planning, etc., they have considerable potential for map production and map products. IGN has now acquired significant experience in digital mapping and will use this opportunity for adapting its maps to changing customers.



The IGN is not seen as a part of the administration, but as a company which produces and disseminates...

Field data collection and stereographic plotting of aerial photographs are performed through computerized production lines.

The 1:1,000,000 road map of France is produced through a vector database updated annually.

Most Complete Collection of Sanborn Maps will be Available On-Line

Marla Krauss
Archivist,
EDR Sanborn, Inc.

The Sanborn Company (now a subsidiary of E Data Resources, Inc., Southport, CT) is the oldest continually operating mapmaking company in the United States. It has been surveying, drawing, and updating maps since 1867. Today, approximately one million extant Sanborn Maps attempt to represent an eyewitness description of over 12,000 communities across the country. Sanborn Maps exist for every state and, in some cases, for their territories prior to receiving state status.

In an effort to improve accessibility to this important historical resource, EDR Sanborn, Inc., also a subsidiary of E Data Resources, Inc., has made an agreement with the Library of Congress to scan the Sanborn Map collections of both organizations. Approximately one million maps will be made available electronically over the next several years through the Library of Congress web site. According to James H. Billington, Librarian of Congress, "We already have more than one-half million historical materials available on-line now, and this project represents a substantial addition to the educational and research value of our Web site."¹

Not only will the scanning project improve access to Sanborn Maps, but it will also help preserve the fragile originals by reducing the number of people handling them.

EDR Sanborn's interest in

Sanborn Maps stems from their usefulness in conducting environmental research. This project will enable EDR Sanborn to offer a wide range of on-line fee based services.

Scanning will be performed by staff of EDR Sanborn, Inc., using a large-format flatbed scanner. Images are created at 300 dots-per-inch and then converted to TIFF format. The TIFF files average about 130 MB each. They are then compressed with Multi-Resolution Seamless Image Database (MrSID) software. MrSID, a product of LizardTech, Inc., enables Internet users to zoom in on the image to view increasing amounts of detail. Viewers will be able to zoom in on any portion of the Sanborn Map they wish to see. The Library of Congress will work with EDR Sanborn to create a site devoted to the history and use of fire insurance maps, including explanations of how to use this unique form of American cartography.

D.A. Sanborn founded what became the Sanborn Company in 1866 to fulfill the fire insurance industry's need for accurate, detailed information for determining risk and establishing premiums. Increased urbanization in the nineteenth century created more opportunities for fires, many of which were devastating. More fires, coupled with the trend towards larger fire insurance companies, made the traditional individual inspection of

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Fire insurance companies needed an extraordinary amount of highly detailed information...

every property unfeasible. This created the need for the Sanborn Company which provided the information fire insurance companies required distilled down into a convenient and standardized form. Sanborn quickly grew to dominate the fire insurance map industry. By the late nineteenth century, it was the recognized leader of the field.

Fire insurance companies needed an extraordinary amount of highly detailed information, including: the size, shape and layout of a structure, the materials used in its construction, and its address. The use of any structure within a mapped area was almost always indicated, such as for theaters, saloons, stables, restaurants, schools, churches, residences and hotels. The maps record factory names and indicate the materials produced within the factory's buildings. The maps often note the type of goods and/or services provided in a store, such as dry goods, carpentry, and blacksmith shops. Other features shown include lot lines, street widths, water pipes, railroad tracks, and fire hydrants and cisterns.

Essentially, fire insurance companies needed a community to be reproduced on paper as closely as possible to how it appeared in real life. This necessitated a visit from a Sanborn Company surveyor who would travel to the town with measuring tape, pad and pencils to survey and draw the area. The surveyor then sent the notes back to the company and the map was reconstructed, by hand, from the notes. Surveyors regularly returned to the communities for updates on new construction and changed building usage. In the late nineteenth and early twentieth centuries, updates usually occurred about once every five to seven years. The Sanborn Company still makes maps in largely the same way it has since 1867.

Things are beginning to change, however. Traditional map making

and updating skills have been combined with GIS technology to create new products and services, including turnkey GIS consulting services. This has helped increase efficiency in many areas of production. The Sanborn Company also conducts special surveys according to specified requirements in addition to the standard map surveys. These changes have benefited such groups as government municipalities, architects, planners, engineers, and consultants—another change from the past when fire insurance companies represented their sole customer base. The traditional map surveying process, however, remains the same. If you look out your window, you just might see a Sanborn surveyor drawing up plans of your community.

Sanborn maps are widely recognized as one of the most valuable resources for tracing the development of America's cities and towns. According to Rebecca Lintz and Clark Secrest in *Colorado Heritage* magazine, "Many libraries and historical societies which are fortunate to own Sanborn Maps discover that the Sanborns are the most heavily consulted maps on the premises."²

Sanborn Maps are used for many different types of research, including: genealogy, environmental hazards, zoning, architecture, archaeology, economic history, and historical research. They are used by students, government officials, businesses, environmental researchers, preservation advocates, geographers, fire and police departments, and individuals with any of a multitude of interests. For example, homeowners often consult Sanborn Maps to help determine when their homes were built and how they changed through time. Perhaps the greatest appeal of a Sanborn Map is the way it provides a window onto past communities.

Furthermore, Sanborn Maps adhere to a uniform system of

This necessitated a visit from a Sanborn Company surveyor who would travel to the town with measuring tape, pad and pencils to survey and draw the area.

In addition to the standard map surveys, the Sanborn Company also conducts special surveys according to specified requirements.

mapping standards laid down by the fire insurance industry. This tends to normalize any bias in what was included in or excluded from the maps. Researchers benefit from this consistency because they can directly compare communities over space and time.

As a consequence, Sanborn Maps are currently found in many historical societies and libraries, including the Library of Congress where the Sanborn Company has been depositing its maps for copyright since 1883. The current scanning project is an outgrowth of the Library of Congress Geography and Map Division's Center for Geographic Information. EDR Sanborn, Inc., and the Library of Congress look forward to the benefits that the general public will gain from access to this important historical research collection.

Seventy-three years ago in the Sanborn Company's newsletter, Charles E. Doane discussed how he had to search in "cellars and attics of

many an old agency" to locate what he hoped to be a complete set of Boston Sanborn Maps for the Boston Planning Board. He pointed out the irony of creating such valuable maps without making any effort to preserve them. He said, "We should realize that Sanborn Maps are more than just insurance plans. They are nearer a complete report on each and every building at the time they represent. Some day their worth will be appreciated."³

Mr. Doane would be pleased to see that day has arrived.

1. Billington, James H. in "Library of Congress Announces Digital Map Project: Nearly One Million Maps to be On-line," [press release] November 26, 1997.
2. Lintz, Rebecca and Secrest, Clark. "Mr. Sanborn's Maps," Colorado Heritage. (Spring, 1997) 42.
3. Doane, Chas E. "Old Copies of Sanborn Maps," The Sanborn Survey. 5:1 (1925) 10.

Perhaps the greatest appeal of a Sanborn Map is the way it provides a window onto past communities.

He pointed out the irony of creating such valuable maps without making any effort to preserve them.

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Announcements

INTERNATIONAL MAP COLLECTORS SOCIETY (IMCoS) HELEN WALLIS AWARD

This is awarded each year to the individual who, in the opinion of the Selection Committee, has been responsible for cartographic contribution of great merit and wide interest to map collectors worldwide. Fifteen former winners include Valerie Scott, Kenneth Nebenzahl, Rodney Shirley, Catherine Delano Smith and Norman Thrower.

This year (1998) the winner is Susan Gole, who was presented with the Society's silver salver and receives a cheque for 300 pounds. The presentation was made by IMCoS President, Oswald Dreyer-Eimbcke at the Society's annual dinner held on 12th June at the Royal Overseas League in London.

IMCoS and the map world in general owe a debt of gratitude to Susan Gole. She served as Chairman of IMCoS from the Winter of 1989 until last year when she handed over to Jenny Harver. She continues to edit the IMCoS Journal, a job she took on in 1991, and is now serving the Society as International Chairman. This involves liaison and planning of all future IMCoS international symposia. This year's international event will take place in Japan in October.

Susan sets herself high standards and expects a high standard of others. She is thorough and very good at getting detail right. With her charm, sense of humour and good brain she can, and does, tackle everything. These qualities enabled her to successfully increase the activities of IMCoS on the international stage during her period as Chairman.

Susan is a collector of maps of India and she has written numerous books on the subject including *Indian Maps and Plans, the Mapping of Mughal India* and *Early Maps of India*. She was also granted the Cultural Foundation of Cyprus first fellowship in 1992 which enabled her to write *Maps of the Mediterranean Regions Published in British Parliamentary Papers 1801-1921*. Publication of this work followed many months of research in the British Library and the India Office. It has been commended for its scholarship.

FIRST HELEN WALLIS FELLOWSHIPS AWARDED AT THE BRITISH LIBRARY

The first recipient of the fellowship named after the former Map Librarian of the British Library is to be Professor Henry J. Steward, Graduate School of Geography, Clark University, Worcester, Massachusetts. The research that Professor Steward will be carrying out in the British Library during 1999 concerns the parallel careers of two surveyors, William Mayo (1684-1744) and Francis Louis Barrallier (1773-1853). Both were military colonels who spent four years producing notable maps of Barbados, although much of their careers were spent, respectively, in Virginia and Australia.

The fellowship, honoring Dr. Helen Wallis OBE, Map Librarian at the British Museum and British Library (1967-1986), requires applicants to demonstrate how they would make 'extended and complementary use of the British Library's book and cartographic collections. Applicants were also asked to look for an international dimension, reflecting the range of Helen Wallis's own work. Professor Steward amply fulfills those criteria, in a project which consciously overlaps with Dr. Wallis's own research at several points.

The Wallis Fellowship will be awarded annually, with a closing date of May 1st. Besides the title, and special facilities at the new British Library building at St. Pancras, the award provides the Fellow with a 300 pound voucher to spend on charged library services, or in the Library's new bookshop.

NEBENZAHL PRIZE FOR DISSERTATIONS IN THE HISTORY OF CARTOGRAPHY

The Newberry Library and its Herman Dunlap Smith Center for the History of Cartography are pleased to announce the creation of the Nebenzahl Prize for Dissertations in the History of Cartography. The Nebenzahl Prize for Dissertations in the History of Cartography is the successor to the Nebenzahl Prize for Books in the History of Cartography, which will no longer be awarded. Starting in January 1999, the prize will be awarded every two years to the author of a recently completed dissertation, in any field,

judged in an open competition by the prize committee to have made the most significant contribution to the study of the history of cartography. The prize will be awarded on the basis of the dissertation's originality, scholarship, and writing quality.

An outright prize of \$1,500 will be presented to the author at the time of the award. Prize winners will also receive a fellowship to support research related to revision or expansion of the dissertation to be done in residence at the Newberry Library. The fellowship carries a stipend of \$800 per month, and will be prorated for periods of two weeks to two months. Prize winners will be offered a review of their dissertations by the University of Chicago Press.

Doctoral dissertations in any field may be submitted to the competition no later than November 1, 1998, provided a significant portion of their content is concerned with the history of cartography. The dissertation must have been approved by an accredited Ph.D. granting institution during the 24 month period prior to the competition deadline (November 1, 1996 – October 31, 1998). Submissions from outside the United States are welcome, so long as the

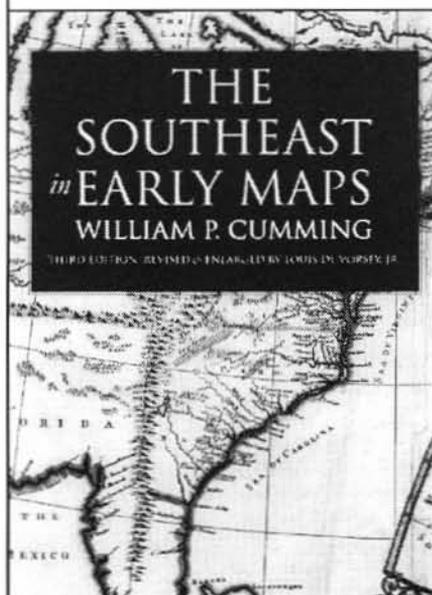
copy submitted is in English. Two paper copies of the dissertation, one in bound form and one unbound, inclusive of all illustrations, must be submitted along with three letters of recommendation and appropriate documentation from the Ph.D. granting institution. Authors will be notified of the results of the competition after January 1, 1999.

The Nebenzahl Prize for Dissertations in the History of Cartography is made possible by the generous support of Mr. & Mrs. Kenneth Nebenzahl. For further information about the prize, contact: James Akerman, Director, Herman Dunlap Smith Center for the History of Cartography, the Newberry Library, 60 W. Walton Street, Chicago, IL 60610-3380, USA; phone 312-255-3523; email akermanj@newberry.org.

JOHN CARTER BROWN LIBRARY RESEARCH FELLOWSHIPS

The John Carter Brown Library will award approximately twenty-five short and long term Research Fellowships for the year June 1, 1999 – May 31, 2000. Short-term fellowships are available for periods of

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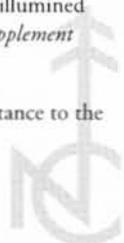
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two to four months and carry a stipend of \$1,100 per month. These fellowships are open to foreign nationals as well as to U.S. citizens who are engaged in pre- and post-doctoral, or independent, research. Graduate students must have passed their preliminary or general examinations at the time of application. Long-term fellowships, primarily funded by the National Endowment for the Humanities (NEH) and the Andrew W. Mellon Foundation, are typically for five to nine months and carry a stipend of \$2,800 per month. Recipients of long-term fellowships may not be engaged in graduate work and ordinarily must be U.S. citizens or have resided in the U.S. for the three years immediately preceding the term of the fellowship.

It should be noted that the Library's holdings are concentrated on the history of the Western Hemisphere during the colonial period (ca. 1492 to ca. 1825), emphasizing the European discovery, exploration, settlement, and the development of the Americas, the indigenous response to the European conquest, the African contribution to the development of the hemisphere, and all aspects of European relations with the New World, including the impact of the New World on the Old. Research proposed by fellowship applicants must be suited to the holdings

of the Library. All fellows are expected to relocate to Providence and be in continuous residence at the Library for the entire term of the fellowship.

Several short-term fellowships have thematic restrictions: the Jeannette D. Black Memorial Fellowship in the history of cartography; Center for New World Comparative Studies Fellowships for research in the comparative history of the colonial Americas; the Alexander O. Viator Memorial Fellowship in early maritime history; the Ruth and Lincoln Ekstrom Fellowship in the history of women and the family in the Americas; and the Touro National Heritage Trust Fellowship for research on some aspect of the Jewish experience in the New World before 1830. Maria Elena Cassiet Fellowships are restricted to scholars who are permanent residents of countries in Spanish America.

The application deadline for fellowships for 1999-2000 is January 15, 1999. For application forms and fuller information, write to: Director, John Carter Brown Library, Box 1894, Providence, RI 02912. Tel.: 401-863-2725. Fax: 401-863-3477. E-Mail: jcbl_fellowships@brown.edu. Web Site: http://www.brown.edu/Facilities/John_Carter_Brown_Library

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