CLUES IN THE HISTORICAL RECORD ABOUT THE FIRST ELIZABETHAN COLONY AT THE DEE RIVER (NARRAGANSETT BAY)

This compilation includes primary source material from the Elizabethan State Papers, as well as commentary by local historians and experts on European exploration.

Excerpts from various books and journals highlight John Dee's spearheading role in starting the British Empire and reforming the English calendar.

It concludes with astronomer William Penhallow's groundbreaking article on the astronomical alignments he found in the windows of the Tower



[For quicker browsing, the manicule (finger symbol) indicates summarizing sentences and important points.]

[The following excerpts have been compiled by Jame A. Egan, curator of the Newport Tower Museum, for scholarly purposes, and are not intended for wide dissemination or reproduction.]

Scholars have known about the first Elizabethan colony at the Dee River (Narragansett Bay) for 75 years.

In 1935, William Goodwin, an American insurance agent and amatuer historian, came across the first clue while researching the Elizabethan State Papers in London.

The Dee River of 1583 (Now called Narragansett Bay) and Its Relation to Norumbega

By WILLIAM B. GOODWIN

In a paper read before the December 12, 1933, meeting of the Rhode Island Historical Society entitled "The Truth Concerning Norumbega" as to both its meaning and its actual location, a part of the proof as to where the river, the cape, the country and the Indian trading town were all actually located is taken from a document preserved in the British Record Office, excerpts from which follow hereafter. This document is a grant by indenture from Sir Humphrey Gilbert to Sir George Peckham and his son, George Peckham, dated the last day of February 1583, and acknowledged before Queen Elizabeth, March 1, of the same year and enrolled July 1st.

There is a still further agreement between Sir Humphrey Gilbert and Sir Thomas Gerrard and Sir George Peckham, excerpts from which follow. In these two documents there is a definite description of land, of a river, of islands within that river, and a section of land amounting to fifteen hundred thousand acres, lying next west to the five islands within the bay and river along the sea coast.

Goodwin, William B., "Dee River of 1583," (R. I. Historical Society, Collections, April 1934, pp. 38-50)

¹Through the courtesy of Mr. Goodwin, a copy of this document is on file in the library of the Rhode Island Historical Society.

Inasmuch as there has been no attempt to properly locate the River of Norumbega—although there have been some writers who have suggested that the Cape of Norumbega is no other than Cape Cod—the casual reader of these two documents had no means of knowing where this distinct allotment of land to Sir George Peckham, his son George and to Sir Thomas Gerrard actually lay along our sea coast. However, all the information that Sir Humphrey and his fellow adventurers or in fact anybody in England knew in the year 1583 concerning our coast between Cape Breton and Spanish Florida, was obtained for them at the behest of Queen Elizabeth and at her expense through Dr. John Dee who went to Europe for that purpose, travelling extensively, and who also was to himself receive a very broad grant above a certain parallel of latitude in payment for his services.

In these documents there are references which give us the key as to where this land actually was to be set off to the backers of Sir Humphrey Gilbert for their money in advance to fit out his expeditions, for it distinctly speaks of the John Dee Bay and River with five islands in it. John Dee made two maps—one of them for Queen Elizabeth, and one of them for Sir Humphrey Gilbert—and his map of North America does not contain on it any reference to the John Dee Bay and River, nor to the five islands, but the scribe who wrote this indenture between Sir Humphrey Gilbert and his backers shows that Sir Humphrey grants— "all that ryver or porte called, by Master John Dee, Dee Ryver which Ryver by the discripcon of John Verarzanus, a Florentyne, lyeth in Septontrionall latitude about fortye twoo degrees and has his mouth lyinge open to the south halfe a league broade . . . contevneth in it selfe five small Islandes newlie named the Cinque Isles."

By means of this description we know that Narragansett Bay containing its five islands is intended, for we know that Verrazano described but two rivers in all his journey from South Carolina to Labrador—the one the Hudson and the other the Bay of Refuge, where he had refitted his ships and made friends with the natives and which Bay of Refuge lay a little to the North and East of the triangular island of Louisa or Claudia, named for the Queen Mother and Queen of Francis I of France, Verrazano's patron.

In addition, moreover, we have another proof that the John Dee Bay and River is actually Narragansett Bay because the articles of indenture go on to grant, in addition to the river and bay, "Fyftene hundred thousande acres of ground extende next alongst the sea coaste Westwarde towardes the ryver of Norumbeage".

The description of this amount of land from Point Judith carries us 60 miles along the coast and 38 miles inland and is equal to 2356 square miles and would extend about 16 miles west of the Connecticut River, namely to the present Guilford Harbor. This is the first grant of land in North America.

Immediately following these indentures, Sir Humphrey sailed from England and in due course reached St. John's, Newfoundland, and there started to found a colony among the fishing vessels, twenty-six of which were in the harbor when he arrived.

In the end, after a turbulent stay, Sir Humphrey put to sea and lost still another ship, making his way towards the John Dee Bay and River, and the Cape and the River of Norumbega, which had been described by Verrazano. Eight days out of St. John's he lost another ship and he turned back with two remaining vessels. Sir Humphrey in the little "Squirrel", but eight tons, went down, off within striking distance of the Azores, and the "Golden Hind", the last of a fine fleet, struggled home to tell the story of misadventure and defeat. So thus the great intended settlement of part of what is now Rhode Island and Connecticut, granted with definite bounds, never came to consummation.

The Deed of 1583

WRITING BETWEEN GILBERT KNT. & PECKHAM KNT.

Articles Indented of agreemente made concluded and agreed upon the laste days of Februarie in the fyve and twentieth yere of the raigne of oure soveraigne ladye Elizabethe by the grace of god Queene of Englande Fraunce and Irelande defendor of the faithe &c. Betwene Syr Humfrey Gilbert of Compton in the Countie of Devon knighte on the one partie and Sir George Peckham of Denham in the Countie of Bucks knighte and George Peckham his second sonne on the other partie as followeth viz. Imprimis Whereas oure saide Soveraigne ladye the Queenes majestie by her graces lettres Patents under the

Queenes majestie by her graces lettres Patents under the greate seale of England bearing date at Westminster the eleventh dave of June in the twentieth vere of her majesties raigne hath geven and granted unto the said Svr Humfrey Gilberte his heires and assignes for ever free libertye from tyme to tyme and at all tymes hereafter forever to discover searche finde owte and vewe such remote heathen and barborous landes countries and territories not actuallie possessed of any Christian Prince or people as to him his heires or assignes and to every or any of them shall seme good and the same to have holde occupie and enjoye to him and his heires forever with all commodities Jurisdicions and rialties both by sea and lande and did likwise by the said lettres patents for her majestie her heires and Successors geve full power and authoritie to the saide Sir Humfrey his heires and assignes and every of them that he and they and every or any of them shall or mave at every time and tymes hereafter have take and leade in the said voyage to travel thitherwardes or to inhabit there with him or them and every or any of them suche and so many of her majestyes subjectes as shall willinglie accompanye him and them and every or any of them with sufficiente shippinge and furniture for

Their transportacions so that none of the saide persons or them he suche as after the makinge of the said lettres Intents shoulde be speciallie restrayned by our saide sov-Fright her heires or successors the statutes or actes of Par-Immente made againste fugitives or against such as shall Imparte remaine or contynue oute of her majesties realme "I linglande withoute licence or any other acte statute lawe matter whatsoever to the contrarie in anywise notwithstandinge as by the saide lettres patentes amongeste other unites articles and libertyes therein conteyned more at Impe appeareth. Nowe the saide Sir Humfrey Gilberte as wall for the more spedye execucion of her majesties saide unites and then largmente of her majesties Domynions governmente and also for the better encouragemente Il the saide Sir George Peckham and George hys sonne and Illuir associates in so worthie and comendable an enterprise 14 11/80 for his and their sure warrante to prosecute the same Artherlie accordinge to the lawes and statutes of this realme. And in consideracon that the saide Sir George hath dis-Hirsed diverse sommes of money and adventured the same its a principall adventurer with the saide Sir Humfrey as for divers other weightie and good consideracions him The saide Sir Humfrey speciallie movinge for hym his heires executors administrators and assignes and every of them thath covenante premise and graunte to and with the saide George Peckham knighte and George hys sonne their heires "secutors administrators and assignes by theis presentes the said Sir George Peckham and George his sonne his and their assignes and associates adventurers and people and every of them shall and may at all tymes hereafter and from tyme to tyme forever have and enjoy full power and free libertie and authoritie by vertue of the saide lettres l'illentes to discover searche fynde oute and vewe any landes mintries or Islandes heretofore not discovered searched and inhabited by any Christian Prince or people by the Imagnemente of the saide Sir Humfrye his heires and sucminors and allso to enjoye to his and their owne use all

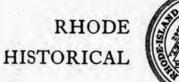


that ryver or porte called, by Master John Dee, Dee Ryver which Ryver by the discripcion of John Verarzanus a Florentyne lyeth in Septontrionall latitude about fortye twoo degrees and has his mouth lyinge open to the South halfe a league brode or there aboute and enteringe Within the saide Baye betweene the Easte and the Northe encreaseth his breadith and contynueth twelve leagues or there abouts and then maketh a gulfe of twentie leagues compasse or thereabouts and conteyneth in it selfe five small Islandes newlie named the Cinque Isles. And the saide gulfe and the tyve Isles therein and all other Isles lyinge within the saide Ryver or gulfe together with fyfteene hundred thousande acres or grounde within the supposed contynent lyinge nexte adjoininge upon the saide ryver gulfe and fyve Isles at the choyce of the saide Sir George and George his yongeste sonne their heires deputies or assignes or any of them. To have holde and enjoye the saide Isle and Islande together with the saide fyfteene hundred thousande acres of landes. [blank to end of line]

to the saide Sir George Peckham and George Peckham their heires and assignes to hys and their onlie uses forever by Soccage tenure of the same Sir Humfrye his heyres and assignes so as the uttermoste parts or lymytts of the saide Fyftene hundred thousande acres of grounde extende next alongst the sea coaste Westwarde towardes the ryver of Norumbeage* above threescore englishe myles in length at the moste with full powre and aucthoritie to inhabite people and manure the said Islandes landes countries and territories with all Jurisdiccions priviledges liberties and royallties both by lande and by sea alongest all the costes of the saide countries and territories as is aforesaid yeldinge and payinge unto the saide Sir Humfrye his heires succes-

^{*}In Norumbeage, the "u" is written "v," as is common through the document. It is followed by four minims, instead of three, and these could read "un" or "im," though none are dotted. It is, however, probably an error on the part of the scribe.

Several months later, historian Fulmer Mood responed apprivingly about Goodwin's findings. Mood got his Ph.D. in American History at Harvard and taught for 40 years at University of California at Berkeley and at University of Texas at Austin.





ISLAND SOCIETY

COLLECTIONS

Vol. XXVIII

OCTOBER, 1935

No. 4

H. Anthony Dyer, President Howard W. Preston, Secretary GILBERT A. HARRINGTON, Treasurer HOWARD M. CHAPIN, Librarian

The Society assumes no responsibility for the statements or the opinions of contributors.

Narragansett Bay and Dee River, 1583

By FULMER MOOD

In a recent publication the statement has been made that Sir Humphrey Gilbert's projected colony of Norumbega was to be established on the shores of Narragansett bay. An official document of 1583 is produced, evidencing, it is asserted, that the Elizabethan designation for Narragansett bay was "Dee river." According to the same source, there is to be found along the coast to the westward of Dee river "the ryver of Norumbeage." To test these geographical assertions is the aim of this note.



The technical adviser on whom Gilbert was at this time leaning heavily was John Dee, a Welsh polymath the profundity of whose learning easily merits that doctorate which

¹William B. Goodwin, "The Dee River of 1583 (Now called Narragansett Bay) and Its Relation to Norumbega," in Rhode Island Historical Society Collections (Providence, 1934), XXVII (No. 2), pp. 38-50.

hasty writers too frequently bestow upon one whom contemporaries greeted as "Master."²

The document of 1583 already mentioned—it is a deed from Gilbert to Sir George Peckham—informs us that the port is called Dee river by Dee himself. That is to say, he was responsible for so naming it. Reading further in the document, we learn more of this river or harbor to which it had pleased the scholar to affix his name: "Dee Ryver which Ryver by the discripcion of John Verarzanus a Florentyne lyeth in Septontrionall latitude about fortye twoo degrees and has his mouth lyinge open to the South halfe a league brode or there aboute and enteringe Within the saide Baye betweene the Easte and the Northe encreaseth his breadith and contynueth twelve leagues or there abouts and then maketh a gulfe of twentie leagues compasse or thereabouts and conteyneth in it selfe five small Islandes newlie named the Cinque Isles."

This description is sufficiently detailed to give rise to a natural inference in the mind of modern students that Gilbert, when he made the grant, and when he so described a portion of the territory he was conveying, based his action upon a map then in his possession. Certainly one can hardly escape the feeling that Gilbert had ready at hand some aid from which he took the particulars concerning the five isles and the run of the shore line, all the descriptions of which he incorporated into his legal instrument. It is a natural inference, to repeat, that the hypothetical source for this is a map. But no time need be lost searching for cartographical evidence bearing on the point, because there is waiting to be brought into the discussion a document which without question is Gilbert's source.

Speaking of an American region on the coast in about

²The role of John Dee, a neglected factor in the history of English expansion in late Tudor times, has lately been clarified by E. G. R. Taylor in *Tudor Geography*, 1485-1583 (London, 1930). Prof. Taylor devotes three chapters to Dee's work.

³Goodwin, op. cit., p. 43.

41° 30′ north latitude a chronicler writes: "[This country] lyeth East and West, I say that the mouth of the hauen lyeth open to the South halfe a league broade, and being entred within it between the East and the North, it stretcheth twelue leagues: where it waxeth broder and broder, and maketh a gulfe about 20. leagues in compasse, wherein are fiue small Islandes very fruitfull and pleasant, full of hie and broade trees, among the which Ilandes, any great Nauie may ryde safe without any feare of tempest or other daunger."4 These words were written by the author of Verrazano's narrative (who may have been Verrazano himself) and they were in print in English as early as the summer of 1582. The younger Hakluyt had translated Verrazano's narrative and published it in his little book, Divers Voyages, a work which was in large part designed as a handbook for the Gilbert venture in colonization. To apply the method of textual comparisons is to certify that the excerpt just given is the source of the description incorporated in the grant to Peckham.

The recognition of this circumstance alters the approach to the solution of the problem concerning the location of Dee's river. If Gilbert had Verrazano's account in his hand, and incorporated that navigator's description of a bay on the Atlantic coast, then the identification of that bay depends upon a scrutiny of Verrazano's narrative. But the identification must be made in accord with certain facts supplied by the grant to Peckham. The most pertinent of these is the information that the river of Norumbega lies to the west-

ward of the Dee river or port.

It is true that Verrazano's narrative describes a large river which lies to the west of his harbor already mentioned. But this river of Verrazano's—in which it is easy to see the

⁴R. Hakluyt, *Divers Voyages* (London, 1582), sig. B₄ verso—sig. B₅ recto. The general term by which Hakluyt describes this part of the coast is "Morum bega." He writes it as two words. He informs the reader, in a marginal note at the top of sig. B₁ recto, of "The Country of Sir H. G. voyage." Verrazano's letter is reprinted in Chapin's *Documentary History of Rhode Island* (Providence, 1919), Vol. 2, Chapter I.

Hudson—bears no name. Gilbert obviously did not derive the name of the river of Norumbega from that source. He must have derived this term, too, from some readily available authority. Why not from his technical adviser? Master John Dee at this time had in his possession a map of North America, and prominently displayed on this map in the central sector of the Atlantic coast is the term "Norumbega." The country of Norumbega, as this map plainly shows, is traversed through the middle by a large river which rises far in the interior. This stream can hardly be anything other than the "river of Norumbega." It may with confidence be taken to be the Hudson. Concerning the several openings and indentations on the coast to the eastward of this river's mouth, no statement need be hazarded except that the shore line which it is intended to represent is undoubtedly the littoral of southern New England.

If then the river of Norumbega as shown on Dee's map and the large river visited by Verrazano just before reaching Narragansett bay are to be understood as one and the same river, and if this may be taken as the Hudson, a vital condition for the identification of Dee's river is satisfied. The legal instrument informs us that west of the harbor of Dee is the river of Norumbega. And Narragansett Bay is certainly in a proper relation to the Hudson, by this construction.

As the present writer reads Verrazano's narrative, he is satisfied that the bay with the five isles in it corresponds to Narragansett bay, and that the river of Norumbega which lies to the west of it is the Hudson.



⁵British Museum, Manuscript Room: Cottonian MS, Aug. I, i, art. 1. There is a description of this map in A Catalogue of the Manuscripts, Maps, Charts, and Plans... in the British Museum (London, 1844), I, p. 30. The map has been reproduced, with some loss of its original sharpness of definition, in Hakluyt, Principal Navigations (Glasgow, 1904), VIII, facing p. 486.

The story even appeared in the Providence Journal. James Earl Clauson wrote a column called "These Plantations" in the *Evening Bulletin of Providence*.

In 1937, his "tales, sketches and essays" were published as a book.

THESE PLANTATIONS

By

J. EARL CLAUSON



WITH A FOREWORD BY SEVELLON BROWN AND ILLUSTRATIONS BY MILTON HALLADAY AND PAULE LORING

PRINTED IN THE UNITED STATES OF AMERICA AT PROVIDENCE RHODE ISLAND BY THE ROGER WILLIAMS PRESS...E.A. JOHNSON COMPANY

The Vikings

RHODE ISLAND was given away for the first time in 1583, 91 years after Columbus. This came to light when William B. Goodwin of Hartford, best known hereabouts for his shovel work at Fort Ninigret, Charlestown, by which he buttressed his thesis that that monument was originally a Dutch trading post, spoke before the Rhode Island Historical Society on Norembega.

Norembega City is a more or less mythical spot taking its name from Norawegia or something of the sort as corrupted by people who didn't care how they spelled. Mr. Goodwin located Norembega City as a trading post at the junction of the Hudson and Mohawk Rivers; the chief local interest in his paper lay in a deed he had dug up in the British Records Office.

This was from Sir Humphrey Gilbert to Sir Charles Peckham and son granting a tract of a million and half acres west from Narragansett Bay, therein referred to as the Dee River. Peckham had financed an exploring expedition Gilbert planned. Queen Elizabeth said it was all right with her to give Gilbert the land to do with as he pleased.

"Give him what you like," she probably said. "It isn't mine anyway. And send in Essex as you pass out."

Be that as it may, Mr. Goodwin established a pretty strong case that Norembega was Rhode Island and the land westward to a point beyond the Connecticut. Since the name is presumably a hang-over from Viking establishment in the new world, locating the place helps to circumscribe a little the inquiry as to where it was the Ericsson boys and their comrades landed.

Our reason for bringing up the subject at this moment is that lately we came into possession of a battle axe. From the known facts about it we advance modestly, without fear of successful refutation, the theory that Leif Ericsson's settlement, known to us archaeologists as Leif's booths, was either at Saunderstown or a bit south of there.

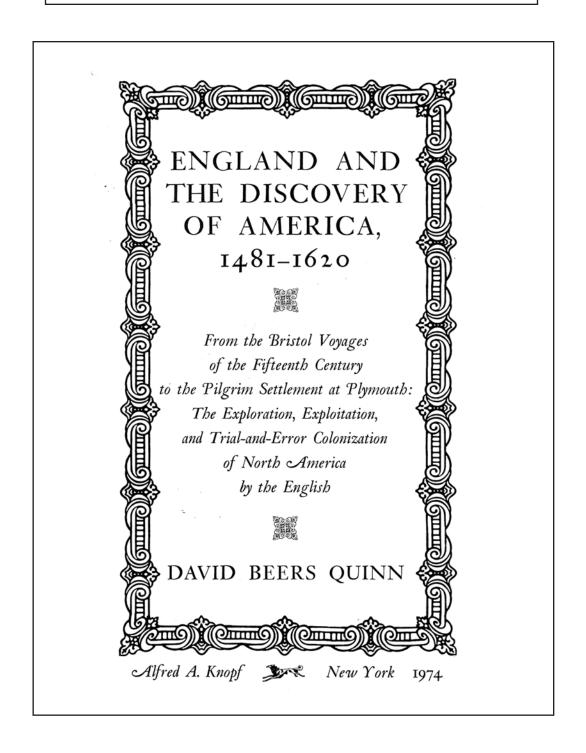
First as to the axe. It's an honest-to-goodness battle axe, 11 inches across the blade, about the same fore and aft and weighing around 10 pounds.

The blade is nicked but serviceable. At the rear is a spike useful for breaking open steel helmets or puncturing the human skull.

It was dug up in 1889 on the site of the Saunders House at Saunderstown, when foundations were being excavated for the hostelry

The most noted authority on Elizabethan exploration, David Beers Quinn (1909-2002) wrote about the intended colony in a chapter titled "English Catholics and America, 1581-1633."

Note his phrase in the subtitle, the "Trial-and-Error Colonization of North America by the English."



from 1581 to 1601 and once M.P.⁵ Was this young man, possibly a Catholic also, a son of Liverpool's Thomas or Chester's Richard? Further research may conceivably tell us. But the fact that Gerard's base was in south Lancashire and that Gilbert's chief lieutenant, Edward Hayes, came from Liverpool may well point to an association with this area.

Bavin and another man were to conduct a complete geographical survey of the parts of the American coast touched at by the first Catholic expedition. We have instructions such as this: "Let Bavin carry with him good store of parchments, paper royal, quills, and ink, black powder to make ink, and of all sorts of colours to draw all things to life, gum, pencil, a stone to grind colours, mouth glue, black lead, two pairs of brazen compasses, and other instruments to draw cards [charts], and plots [maps]." Another item reads: "Also let Bavin draw to life one of each kind of thing that is strange to us in England, by the which he may always garnish his plot, as he shall so cause upon his return. . . . And also draw to life all birds, beasts, fishes, plants, herbs, trees and fruits . . . Also . . . the figures and shapes of men and women in their apparel . . . in every place." The fate of this versatile artist-surveyor is unknown; prolonged search by the late Eva Taylor failed to uncover a single map or chart drawn by him.6

The lands contracted for by Gerard and Peckham in June 1582 amounted to no less than two million acres each, and the documents we have enable us to see something of the kind of settlement they envisaged. Each of them, under Sir Humphrey Gilbert as Lord Proprietor and Governor of the whole colony, was to be lord paramount of a great seignory; each would have under him a hierarchy of adventurers and subadventurers who would be assigned land under them (paying one shilling per hundred acres to them every year); each would be a member of the supreme council and court of the colony, and each would hold courts for their own tenants. This notional hierarchy well illustrates the conservatism of the adventurers—shared with Gilbert and his Protestant supporters also—as well as their grandiose conceptions.

As insurance in case anything happened to Gilbert, Peckham was named as one of three trustees to hold the rights on Gilbert's grant from the crown, if he died on his first voyage. Later, when Gilbert's departure had been delayed, on 28 February 1583 Sir George Peckham and his son

⁵ Liverpool Town Books, 1550-1603, 2 vols. (Liverpool, 1918-35), ed. J. A. Twemlow; R. H. Morris, Chester in the Plantagenet and Tudor Reigns (Chester, 1893), passim; Chester Customs Accounts, 1301-1566 (Liverpool, 1969), ed. Kevin P. Wilson, pp. 59-60 (an earlier Thomas, of Chester), 88, 92, 99 (Thomas, of Liverpool).

⁶ See p. 374, n. 4, above.

⁷ Quinn, Gilbert, II, 266-73.

George contracted for a further million and a half acres and defined more closely the rights due them and their duties owed to Gilbert in the new colony.⁸ Gerard had already placed his family land in the hands of trustees in 1582.⁹

The two leaders were not without their anxieties. Rumors had begun to circulate in Catholic quarters that Spain owned the land it was proposed to settle. On 16 July 1582 Peckham, on his own behalf and Gerard's, visited Dr. John Dee, the eminent astrologer and geographer, at his home in Mortlake.1 They wanted assurances that Spain had no title to the land Gilbert proposed they should occupy in America. Eventually, Dee assured Peckham that Spain had no rights in the area; on the maps it was New France, having been claimed for Francis I by Verrazzano in 1524 but not occupied. Moreover, Dee was able to point out to them on the large map of North America he had drawn in 1580 the precise place he thought their settlement should lie. Verrazzano had stayed for some time on Narragansett Bay in modern Rhode Island, which he called his "Refugio," and there it was decided that Peckham should lay out his seignory. Thus in the agreement of 28 February 1583 it was solemnly set out that the Peckhams were to have one and a half million acres around the Dee River and the Bay of the Five Islands, renamed, presumably by Gilbert, after Verrazzano's discoveries. This seemed to give him some reasonable assurance that his title would stand up to Spanish claims.

As early as July 1582 the would-be emigrants were encountering a campaign against their project. This was mounted by Bernardino de Mendoza, the Spanish ambassador, who was keeping a close watch on all English overseas plans. He wrote to Philip II on 11 July 1582 that the Catholic gentry had been drawn into Gilbert's venture by Sir Francis Walsingham and confirmed in it by the queen herself.² Mendoza described the participants as men who "were anxious to live as Catholics without risking their lives" and who were being promised that they could live in America "with freedom of conscience, enjoying the use of their English properties. . . . The Queen restores them to her favour and accepts them as loyal subjects and vassals." The project was deeply distasteful to Mendoza. In the first place, it would interfere with Spain's so far unsubstantiated claim to the whole of North America. Second, it would weaken the Catholics in England whom he hoped to use in the interest of

8 Ibid., pp. 341-6.

¹ Quinn, Gilbert, II, 280. ² Ibid., pp. 278-9.





⁹ In favor of Elizabeth his wife and Thomas his son. Victoria County History of Lancashire, 8 vols. (London, 1906–14), ed. William Page, IV, 144, citing P.R.O., County Palatine of Lancashire, Feet of Fines, P. L. 17/44, m. 266.

In 1940, the Hakluyt Society of London published 142 documents pertaining to the "Voyages and Colonising Enterprises of Sir Humphrey Gilbert" (in two volumes).

David Beers Quinn gathered these documents and provides an insightful synopsis in his 104-page "Introduction."

THE VOYAGES AND COLONISING ENTERPRISES OF

SIR HUMPHREY GILBERT

With an Introduction and Notes

by

DAVID BEERS QUINN, Ph.D.

LECTURER IN HISTORY, QUEEN'S UNIVERSITY, BELFAST

VOLUME I

LONDON
PRINTED FOR THE HAKLUYT SOCIETY
1940



SIR HUMPHREY GILBERT

landlord. The only connection with the Crown would be through him and the colony would be practically independent of the realm of England.



It is clear from the arrangements made in the summer of 1582 that two expeditions were intended to be made that year. One was to be under the leadership of Anthony Brigham, with whom certain of the Catholic group were associated, and which it was assumed would leave during June¹. No details have been found regarding this, but it may have actually been despatched on a prospecting voyage, for on 17 March 1583 Mendoza stated that two vessels sent out the previous summer had not yet returned². If Brigham was their commander he returned safely, for he was doing propaganda for Peckham some time after 25 March³.

Gilbert's plans in June were to go out himself on a prospecting voyage as soon as possible and to return in time to set out again on a more elaborate expedition shortly after 31 March⁴ 1583. The ships he was preparing in Southampton in April and May were for the prospecting voyage and Mendoza asserted on 25 July that two ships and a pinnace were at Southampton ready to sail. But apparently some hitch developed, probably a financial one, and by November his plan was to set out before the end of April 1583 and to remain for about eight months trying to establish his colony⁵.

It seems probable, although the evidence is circumstantial rather than direct, that from early in 1582 Richard Hakluyt, the younger, had been engaged in collecting documentary evidence on America in connection with Gilbert's project, and he may have been employed to do so. Hakluyt had sponsored Florio's translation of the accounts of two of Cartier's voyages which appeared in 1580–1, and Professor Taylor argues strongly that the preface to this translation, which made an eloquent appeal for the colonisation of North America, was inspired by Hakluyt himself⁶. On 21 May 1582 there appeared in the Stationers' Register the following entry: 'Thomas Woodcocke, Licensed

¹ Document no. 87, pp. 257-60.

³ Document no. 118, pp. 375-6.

⁵ Documents nos. 99, 100, pp. 321, 327.

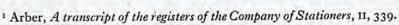
² Document no. 107, p. 349.

⁴ Document no. 86, pp. 256-7

⁶ Hakluyts, pp. 21-2, 164-8.

to him under the Bishop of London and both the wardens handes Divers voiages towchinge the discove[r]y of America. vi s.'', and the book, compiled by Richard Hakluyt, appeared before 25 March 1583 and probably in the autumn of 1582.

The Divers voyages was a collection of what Hakluyt considered the important documents on, firstly, the prospects of colonising in North America, and, secondly, the prospects of finding a passage through or round North America to the Pacific. The contents fall into four groups, one of Cabot documents with the purpose of proving the English title by prior discovery to North America and another of documents on the northerly passages. The third dealt with temperate America and consisted of a reprint of the 1563 edition of Ribault's account of the Florida colony and a translation of Verrazzano's narrative of a voyage from 30° N. to Cape Breton. The final group contains the notes on colonisation, probably prepared for Gilbert in 1578 and already referred to2, and a list of the products of North America. The evidence particularly connecting it with Gilbert's projects consists of: (1) the dedication to Philip Sidney who was one of Gilbert's assignees3; (2) the inclusion in the list of 'certaine late travaylers' of 1582—'Humfrey Gilbert knight, Edward Heyes, and Antonie Brigham Englishmen'4-whom Hakluyt expected to have set out before it was published; (3) 'The relation of John Vererzanus', which was the source of certain topographical information found in an assignment by Gilbert on 28 February 15835, and which has the gloss to the name 'Morumbega'-'The Country of Sir H. G. voyage'6; (4) the Cabot documents which may have been published with the object of allaying the doubts of those who hesitated about encroaching on Spanish preserves; (5) the notes on colonisation, unused in 1578, but of value for the current project; and (6) the list of American commodities which is closely linked with a list



² Document no. 24, p. 181-6 and pp. 36, 56 above.

⁴ Reprinted *ibid.*, p. 172. ⁵ Document no. 103, pp. 342-3 ⁶ Sig. B 1. See Mood, 'Narragansett Bay and Dee river, 1583,' in *Rhode Is. Hist. Soc. Collections*, XXVII, 97-100.





³ Reprinted by Taylor, *Hakluyts*, pp. 175-81. Lok's map was also dedicated to Sidney. It is reproduced facing p. 313 below.

compiled as evidence for the inquiry of August and September 15821.

The public propaganda of the Divers voyages was supplemented by private inquiry into the possibilities of America for settlement and exploitation. On 16 July Sir George Peckham, frightened by Mendoza's threats and assertions that Florida was owned and occupied by Spain, visited John Dee 'to know the tytle for Norombega in respect of Spayn and Portugall parting the whole worlds discoveryes'. Dee's answers were evidently reassuring, for Peckham promised Dee a grant of 5000 acres in America and hoped to get the same amount for him from Sir Thomas Gerrard². In August and September a general inquiry was held, before 'Sir Frauncys Walsingham her majestes principall Secretarye and . . . Sir George Peckham knight and dyvers others of good judgment and Creditt'3. The chief witness was a certain David Ingram who alleged that he had been put on shore by Hawkins on the Gulf of Mexico in 1568 and had been one of the party which had taken an easterly route and, with two companions, Richard Browne and Richard Twyde, had walked north-eastwards across North America, to be finally rescued by a French ship sixty leagues west of Cape Breton. The story of his twelve months' perambulation is not, unfortunately, told chronologically in either of the two accounts which have survived4, but he gave detailed accounts of the people, animals, plants and minerals of the country.

The authenticity of the outline of his story could easily have been tested by Hawkins, whom he said he visited on his return to England about the end of 1569 or early in 1570, and the fact that Hakluyt printed his narrative in 1589 suggests that his connection with Hawkins had been checked. It was physically just about possible for a man to walk from Mexico (23° N.)⁵ to Cape Breton, a distance of over 3000 miles, in a year. It is very unlikely that he did so. His own chronology is a little weak. Hakluyt's version gave his total time as twelve months, but



¹ Document no. 97, pp. 310-13. On the *Divers voyages*, see Taylor, *Hakluyts*, pp. 22-6; Parks, *Hakluyt*, pp. 68-84.

² Document no. 91, p. 280. ³ Document no. 95, p. 283, n. 5. ⁴ Documents nos. 95, 96, pp. 283–307. Questions put to him are in Document no. 94, pp. 281–3. ⁵ Williamson, *Hawkins*, p. 236.

In Volume 2, Quinn reproduces the full text of the land grant for the colony at the Dee River. And he draws a map to show the full extent of the grant: from the Dee River "not more than 60 miles west."

Quinn found that the Spanish Ambassador to Elizabethan London, Don Bernadino deMendoza, had written a series of letters back to King Philip II of Spain. They reveal there was a "preliminary expedition" in 1582, under the leadership of Anthony Brigham. This was a top-secret mission, as Mendoza writes that if the Spanish found them they would slit all their throats.

THE VOYAGES AND COLONISING ENTERPRISES OF

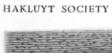
SIR HUMPHREY GILBERT

With an Introduction and Notes
by

DAVID BEERS QUINN, Ph.D.
LECTURER IN HISTORY, QUEEN S UNIVERSITY, BELFAST

VOLUME II

LONDON
PRINTED FOR THE HAKLUYT SOCIETY
1940



Series II. Vol. LXXXIV



SIR HUMPHREY GILBERT

Addressed:—To the right honorable Sir Frauncis Walsyngham Knight Principall Secretarye to her majestie.

Endorsed:—1582 7 Feb: Sir H. Gilbert that he may be suffered to continewe his voyage.

103. 28 FEBRUARY 1583. AGREEMENT BETWEEN SIR HUMPHREY GILBERT, SIR GEORGE PECKHAM AND GEORGE PECKHAM¹.

Articles Indented of agreemente made concluded and agreed Scriptum uppon the laste daye of Februarie in the fyve and twentith yere inter of the raigne of oure soveraigne ladye Elizabeth by the grace of militem et god Queene of Englande Fraunce and Irelande defendor of the Peckham faithe &c. Betwene Syr Humfrey Gilbert of Compton in the millitem. Countie of Devon knighte on the one partie and Sir George Peckham of Denham in the Countie of Bucks knighte and George Peckham his second sonne on the other partie as followeth viz.

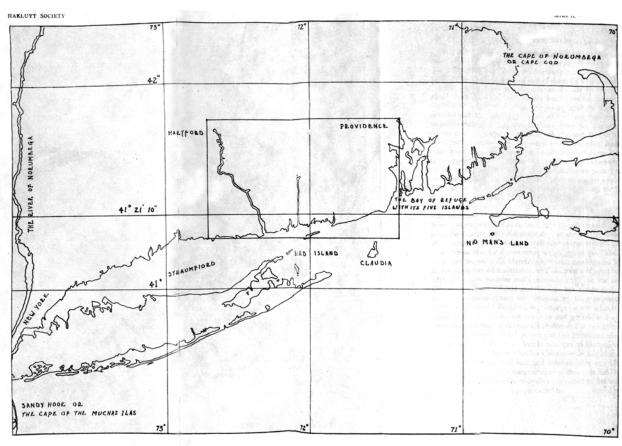
Inprimis Whereas oure saide Soveraigne ladye the Queenes majestie by her graces lettres Patentes under the greate seale of Englande bearinge date at Westminster the eleventh dave of June in the twentith yere of her majesties raigne hath geven and graunted unto the saide Syr Humfrey Gilberte his heires and assignes forever free libertye from tyme to tyme and at all tymes hereafter forever to discover searche finde oute and vewe suche remote heathen and barborous landes countries and territories not actuallie possessed of any Christian Prince or people as to hym and his heires or assignes and to every or any of them shall seme good and the same to have holde occupie and enjoy to hym and his heires forever with all commodities Jurisdiccions and rialties both by sea and lande and did likewise by the saide lettres patentes for her majestie her heires and Successors geve full power and aucthoritie to the saide Sir Humfrey his heires and assignes and every of them that he and they and every or any of them shall or maye at every tyme and tymes hereafter have take and leade in the saide voyage to travell thitherwardes or to inhabitt there with hym or them and every or any of them

¹ Close Roll, 25 Elizabeth, pt. 8. C 54/1154, m. 2-3. Printed by W. B. Goodwin, 'The Dee River of 1583 (now called Narragansett Bay) and its relation to Norumbega', in Rhode Island Historical Society Collections, XXVII. No. 1 (January 1934), pp. 41-50.

suche and so many of her majestyes subjectes as shall willinglie accompanye him and them and every or any of them with sufficiente shippinge and furniture for their transportacons so that none of the saide persons or any of them be suche as after the makinge of the saide lettres patentes shoulde be speciallie restrayned by oure saide soveraigne her heires or successors the statutes or actes of Parliamente made againste fugitives or againste suche as shall departe remaine or contynue oute of her majesties realme of Englande withoute licence or any other acte statute lawe or matter whatsoever to the contrarie in anywise notwithstandinge as by the saide lettres patentes amongeste other grauntes articles and libertyes therein conteyned more at large appeareth. Nowe the saide Sir Humfrey Gilberte as well for the more spedye execucion of her majesties saide grauntes and thenlargmente of her majesties Domynions and govermente and also for the better encouragemente of the saide Sir George Peckham and George hys sonne and their associates in so worthie and comendable an enterprise as also for his and their sure warrante to prosecute the same orderlie accordinge to the lawes and statutes of this realme. And in consideracion that the saide Sir George hath disbursed diverse sommes of money and adventured the same as a principall adventurer with the saide Sir Humfrey as also for divers other weightie and good consideracions him the saide Sir Humfrey speciallie movinge for hym his heires executors administrators and assignes and every of them doth covenante promise and graunte to and with the saide Sir George Peckham knighte and George hys sonne their heires executors administrators and assignes by theis presentes that the saide Sir George Peckham and George his sonne his and their assignes and associates adventurers and people and every of them shall and may at all tymes hereafter and from tyme to tyme forever have and enjoy full power and free libertie and aucthoritie by vertue of the saide lettres patentes to discover searche fynde oute and vewe any landes Countries or Islandes heretofore not discovered searched and inhabited by any Christian Prince or people by the assignemente of the saide Sir Humfrye his heires and successors and allso to enjoye to his and their owne use all that ryver or porte called by Master John Dee, Dee



Ryver which Ryver by the discripcion of John Verarzanus a Florentyne lyeth in Septontrionall latitude about fortye twoo degrees and hath his mouth lyinge open to the South halfe a league brode or there aboute and enteringe within the saide Baye betwene the Easte and the Northe encreaseth his breadith and contynueth twelve leagues or there aboutes and then maketh a gulfe of twentie leagues compasse or thereaboutes and conteyneth in it selfe five small Islandes newlie named the Cinque Isles. And the saide gulfe and the fyve Isles therein and all other Isles lyinge within the saide Ryver or gulfe together with fyfteene hundred thousande acres of ground within the supposed contynent lyinge nexte adjoining upon the saide ryver gulfe and fyve Isles at the choyce of the saide Sir George and George his yongeste sonne their heires deputies or assignes or any of them. To have holde and enjoye the saide Isle and Islande together with the saide fyfteene hundred thousande acres of landes [blank to end of line] to the saide Sir George Peckham and George Peckham their heires and assignes to hys and their onlie uses forever by Soccage tenure of the same Sir Humfrye his hevres and assignes so as the uttermoste partes or lymyttes of the saide Fyftene hundred thousande acres of grounde extende not alongst the sea coaste westwarde towardes the ryver of Norunnbedge above threescore englishe myles in length at the moste with full powre and aucthoritie to inhabite people and manure the saide Islandes landes countries and territories with all Jurisdiccions priviledges liberties and royallties both by lande and by sea alongest all the costes of the saide countries and territories as is aforesaide veldinge and payinge unto the saide Sir Humfrye his heires successors or assignes for every thousande acres of grounde of the saide fiftene hundred thousande acres of grounde after the firste seaven yeres proporcianallie which the same shalbe actuallie possessed and manured by the saide Sir George Peckham or George his sonne their heires or assignes five shillinges and twoo fyfte partes of all the golde silver pearle and precious stones there growinge founde had and gotten oute of the which twoo fyfte partes the Queenes majesties parte reserved by the lettres patentes ys to be allowed and deducted. Item that they the saide Sir George nor



PART OF THE DEE MAP OF NORTH AMERICA, 1582 (redrawh)
NARRAGANSETI BAY, SHOWING LAND ASSIGNED TO THE PECKHAMS

had qualifications for this task. One, Martin Frobisher, was highly experienced in American waters, but the degeneration of his Northwest Passage ventures of 1576 to 1578 into an abortive hunt for gold had somewhat discredited him; in any case, he did not get on well with the experienced sailors on his voyages. The second to be named, Richard Bingham, had wide experience as a mercenary soldier in fighting both for and against Spain, but was not employed at this time. (He was in fact to conclude his career by taking a prominent part in Irish affairs, where he distinguished himself as a tough, even brutal administrator of an Irish-Catholic population.) The third man was another northern Catholic, Sir William Stanley of Hooton, Cheshire. He too had been in Spanish service, but had been employed more recently in the Irish service of the English crown, helping to stamp out the last embers of the Desmond Rebellion in Munster. He had come to England to enlist reinforcements for the army. Stanley was to go over spectacularly to Spain in 1587, with the Deventer garrison, and to remain at the head of a regiment in the Spanish service for a generation.



An obscure secondary project under Anthony Brigham was also linked with this venture, some minor reconnaissance which may have been dispatched by June 1582; we hear of two ships which had not returned by March 1583, and these may well have been his if he had indeed set out. This may not have been part of the main colonizing project, but a subsidiary commercial scheme to set up a whaling base on the west coast of Newfoundland. Certainly Brigham was back in England in 1584, when he planned to go whale-fishing off the Newfoundland coast, though perhaps not with Catholic support.

Among the interesting detail that survives of these plans is an elaborate set of instructions for a surveyor called Thomas Bavin. It is just possible that he provides a further link with south Lancashire, whence part of the Catholic initiative derived, or with nearby Cheshire. His name may be one which is found in both Elizabethan Liverpool, where a Thomas Bavande, merchant (flourished 1563–86), was mayor at various times from 1571 to 1586, and Elizabethan Chester, where Richard Bavande, who also spelled his name "Bavin" and "Bavan," was mayor several times

³ On Brigham see Quinn, Gilbert, I, 61-3, 73, 90, 99, II, 258, 339, 349, 375, 486.

⁴ Commonplace Book of Edward Hoby, B.M., AdditionalMS 38823, fols. 1-8 (incomplete); Quinn, Roanoke Voyages, I, 51-4; E. G. R. Taylor, "Instructions to a Colonial Surveyor in 1582," Mariner's Mirror, XXXVII (1951), 48-62; Taylor, Mathematical Practitioners of Tudor and Stuart England (Cambridge, Eng., 1954), p. 184; D. W. Waters, The Art of Navigation in England in Elizabethan and Early Stuart Times (London, 1958), pp. 164, 534-40.

91. 16 July 1582. John Dee's dealings with Sir George Peckham¹.

A meridie hor. $3\frac{1}{2}$ cam Sir George Peckham to me to know the tytle for Norombega in respect of Spayn and Portugall parting the whole worlds discoveryes. He promysed me of his gift and of his patent 5000 akers of ye new conquest & thought to get so moch of Mr. Gerardes gift to be sent me with seale within a few days².



92. 25 July 1582. Don Bernardino de Mendoza to Philip II³.

As to the ships which as I previously wrote to your majesty the Catholics were getting ready here, it turns out that not more than two are going this year with Hongigilberto [Humphrey Gilbert] to reconnoitre the place where they can land next year. These ships are already riding in Sotamton [Southampton] harbour, only waiting for the weather to set sail, and with them a pinnace.

93. 27 August 1582. Sir Humphrey Gilbert admitted a Freeman of Southampton⁴.

Gratia admissus.

Tempore Ricardi Biston Maioris. . . .

Sir Humfrey Gilbert knight was the xxviith daye of Auguste 1582 / admitted to be one of the Burgesses of the towne of Suthampton frank and free.

¹ John Dee, 'Diary', Bodleian, Ashmole MS. 487. Printed by Halliwell, p. 16, very corruptly.

² From here to the end the entry is crossed through. Unfortunately the ink used is of the same sort as that in which the entry was made and so infra-red photography is of no value in bringing up the original entry. The crossed-out portion, as far as it can be read, is as follows: '[] by [

] therefore Because yt Talbot would not fullfyll Sir George Peckams beyng the request for the obtaynynge of a w[..]e[..]r[....] Sir George Peckham belied Talbot in this very shorte by ye reportes notyed belowe. He confirmed that Talbot was a cosener, & had been himself [....] of my acqua.

³ Navarrete, Documentos inéditos, XCII, 406. Extract, translated. GSP Sp. 1580-6, no. 277.

⁴ Book of Oaths 1496-1704, freedoms, f. 47. Southampton Municipal Records.

78. 24 APRIL 1582. SIR HUMPHREY GILBERT IN SOUTHAMP-TON¹.

I supt at ye Dolphin [in Southampton] with ye merchants whether came sir Humphrey Gilbert & was offended because they had bowght luke wards barque.

79. 26 APRIL 1582. DON BERNARDINO DE MENDOZA TO PHILIP II².

I have had news today that the ships, which I wrote to your Majesty were ready to sail for the Malucos, have now left, and also that Onxiginberto [Humphrey Gilbert] is fitting out three more with which to go to Florida and settle there in the place where Estucle [Stukeley] was and Juan Robero [Jean Ribault], (the man whom Pero Melendez beheaded), with the French. When he asked for the Queen's assistance he was answered in council that he might go, and, that when he had landed and fortified, the Queen would send 10,000 men to conquer the territory and safeguard the port. Likewise there is news that Jorbirger [Frobisher] is hurrying to fit out other three ships to go to the Malucos, asserting that he has to pass the South Sea by the islands which make the strait of Magellanes before those ships which have set out, the which have not been augmented in personnel and munitions from what I have written to your Majesty.

80. I MAY 1582. EXTRACT FROM RICHARD MADOX'S DIARY3.

[At the muster of Fenton's expedition at Southampton there were thirty men above the complement of 200 because Richard Hawkins said they would get food enough for them in the Indies and] because ye Elizabeth was bowght for burden sake & ye frigot sold for 40 li. to sir Humphrey Gilbert therfor for his supply.

3 Richard Madox, 'Diary'. BM, Cotton MS. Appendix XLVII, f. 17.

¹ Richard Madox, 'Diary'. BM, Cotton MS. Appendix XLVII, f. 15v.

² Navarrete, Documentos inéditos, XCII, 358. Extract, translated. CSP Sp. 1580-6, no. 254.

Senyorie and to have alowed hym of the same tithe free for his demeanes twoe thowsand acres Alsoe every Archebisshoppe to have twentie thowsand acres to be devided into twoe seniories of tenne thowsand acres the peice and to have of the same alowed hym in each lordshippe or seigniory twoe thowsand acres of grounde for his demeane tithe free in respecte of which tithes they shall encrease the livinge of the parsone of every the said parishes where their landes shalbe soe freid with as mutch glebe landes as may countervaile the same. Provided alwayes and my meanynge is that my saide assignes shall not have to doe in disposinge of anye of the premysses any longer then duringe the mynoritie of my heires.

Et memorandum quod die et Anno supradicto prefatus Humfridus Gilbert Miles venit coram dicta domina Regina in Cancellaria Sua et recognovit scriptum et sedulum predictum ac omnia et singula in eisdem contentum et specificatum in forma supradicta Irrotulatur xx° die Julii Anno predicto Examinatur H.

90. 11 July 1582. Don Bernardino de Mendoza to Philip II¹.

As I wrote to your Majesty some days since, Ongi Gilberto [Humphrey Gilbert] was fitting out several ships for a settlement in Florida and as this was not only prejudicial to your Majesty but also to the English Catholics as giving advantage to heretics, Walsingham put it secretly to two spendthrift Catholic gentlemen who have some land that if they helped Ongi Gilberto in his expedition, they would escape losing life and property, by asking the Queen to allow them, in consideration for this service, to live in those parts with freedom of conscience and enjoy the use of their property in England—for which purpose they might rely on Phelippe Sideney. As these men were anxious to live as Catholics without risking their lives, they thought it a good plan, and informed other Catholics of it. These also have approved and offered to help with money, petitioning the Queen on the subject. She has given them a

¹ Navarrete, Documentos inéditos, XCII, 396-8. Extract, translated. CSP Sp. 1580-6, no. 275.



patent under the Great Seal of England to settle in Florida on the coast of Noromberga and live there with freedom of conscience, enjoying the use of their English properties-this not only for those who leave the realm for the purpose but other English abroad, although declared rebels. The Queen restores them to her favour and accepts them as loval subjects and vassals-this for no other motive that, in spite of persecution, imprisonment and the bloodshed of martyrs, Catholics were increasing. These it was expedient to weaken and destroy in some way. When this was done, there would be no maintaining of seminaries abroad nor would priests living here be able to continue their preaching if there were no one to receive and shelter them. In this way once and for all the small remnant of good blood in this sick body would be drained away. Through the clergy here I made known to the Catholics the purpose of the Queen and Council in admitting them to favour-and that those lands belonged to your Majesty, that you had garrisons and fortresses there, and that they would immediately have their throats cut as happened to the French who went with Juan Ribao [Jean Ribault], that further they were imperilling their consciences by engaging in an enterprise prejudicial to His Holiness and that it would be well for them to report the matter to him through Dr. Alano [Allen] and learn if they could justifiably make the voyage.

Some have withdrawn on this, but others who are spend-thrifts persist in wishing to make the voyage, convincing themselves that there is nothing in it against your Majesty because in the map it is marked as Nueva Francia [New France], which proves it was discovered by the French, and that since Cortés fitted out ships at his own expense to make conquests—and he was a Catholic—they could do the same. At the same time I have notified the Abbot Briceño in Rome and have written to Alano [Allen] how necessary it is for the reduction of this kingdom that he make every effort to prevent the expedition.



[In special pocket inside the back cover of Vol. 2 are two maps that can be unfolded.

One is an enlargement of the North Atlantic coast section of Dee's 1580 Map of North America. The second is Dee's Circumpolar Map of the Northern Hemisphere, drawn for Sir Humphrey Gilbert in 1582.]

Samuel Eliot Morison (1887-1976), who taught history at Harvard for 25 years, also writes about the "Dee River," in a chapter titled "Haklutyt and Gilbert 1578-1585."

The European Discovery of America

THE NORTHERN VOYAGES
A.D. 500—1600

SAMUEL ELIOT MORISON



New York OXFORD UNIVERSITY PRESS 1971

named bark, taking off with Knollys, alleging as an excuse that Gilbert had rebuked him for striking an unarmed sailor "with his naked sworde" and told him if he could not keep his temper he was "not fitt for the voyage"; Denye retorted "outragiously and with verey unsemely terms." English gentlemen of Elizabeth's era were very different from their tight-lipped, reticent descendants of the twentieth century; few were capable of "keeping their cool" under provocation. One only regrets that no more of their rich language of obloquy has been preserved.

Gilbert's first voyage never really "got off the ground," to use aviation language. Knollys's squadron sailed south, capturing ships off the coasts of France and Spain. Gilbert's put in at certain Irish ports to revictual, since during his long detention in England the men had already consumed a great quantity of sea stores. And they never got any further. The fleet returned that autumn to Dartmouth, whence Gilbert intended to make a fresh start in 1579. But the privy council forbade him to leave, owing to the piracies of Knollys and even his own men. For instance, while Sir Humfry was enjoying liberty at Greenway, his sailors seized a Spanish ship laden with oranges and lemons in Dartmouth Harbor and made off with her. As the English government was not yet ready for a complete breach with Spain, there was a great hue and cry after the pirated fruiter, and both Gilbert and Raleigh were warned that they would never again be allowed to sail until and unless she was recovered. Fortunately the captors put in at Lynn early in June, the owner recovered his ship, and was allowed to export grain as recompense for the oranges and lemons, which had rotted.

Gilbert's Second and Last Voyage

For this and other reasons, Sir Humfry attempted no second voyage in 1579. Flagship *Anne Aucher* and frigate *Squirrel* were employed in the perennial war with Ireland that summer, causing their owner financial loss. Undiscouraged, he then began preparations for a real colonizing expedition.

Gilbert's principal problem was to raise money. One means was to sell American land grants, as his royal patent allowed him to do; but so far as I can judge, he found no paying customers. In August 1580 he made an oral gift to the polymath John Dee of all land above lati-



tude 50° N-practically the whole of Canada. And in 1582-83 Sir Humfry deeded to Sir George Peckham and his son a modest patrimony of 1,500,000 acres. Guided by Verrazzano's Letter (which Hakluyt had printed), the grant begins at "Dee River" (Narragansett Bay) with its five islands, and extends sixty English miles "along the sea coast westwarde towardes the ryver of Norumbeague." This was the wrong direction from Newport to the Penobscot; why such a mistake was made is not apparent. Laid down on a modern map, the Peckham grant covers about half Rhode Island and half Connecticut; but the only consideration was that after seven years the Peckhams should pay five shillings for every 1000 acres "actuallie possessed and manured." Gilbert also granted three million American acres, and two-fifths of all precious metals and pearls to be discovered, to Philip Sidney "to have, holde and enjoye forever," on condition that after seven years he pay a quitrent of 15d. per thousand acres, and after ten years a halfpenny an acre toward maintaining a navy and army for the defense of the colony. A few grants of a mere 100,000 acres each were also made.

What, if anything, Gilbert realized from these dubious land grants we do not know; but it was more than he obtained from the other extraneous source that he counted on, the English Catholics. The recusants, as they were called, since they refused to attend divine service according to the Book of Common Prayer, were very unhappy. They were not massacred as the Huguenots were in France, or tortured as Protestants were in Spain; but the £20 a month fines to which each family was liable were ruinous, and they dearly wished to combine loyalty to the Queen with the practice of their own religion. Gilbert, precursor in this respect of the Calverts and Maryland, offered to give them (for a consideration) a colony of their own with complete religious liberty; but the Queen would not let them go unless they paid up long overdue fines, which would have stripped most of them clean. Furthermore, the Spanish ambassador vetoed the scheme, threatening English Catholics that if they settled anywhere near Florida they would "have their throats cut" as had happened to the French Protestants under Ribault. For, just as the Soviets now wish communists in capitalist countries to stay at home as foci of propaganda and, in due time, of revolution; so Philip II wanted the English Catholics to stay put, conceal refugee priests, hold secret masses, and prepare to act as a fifth column in



the Spanish invasion of England which Philip II was already planning. The ambassador concluded his report to the king by stating it to be necessary "for the reduction of this kingdom" (the conquest of England) that the Roman Catholics stay at home.

So, in the end, Gilbert and his friends did most of the financing for this voyage. On 2 November 1582 he signed an agreement with a group of local capitalists, calling themselves the Merchant Adventurers of Southampton. That town was then losing trade to Bristol, and hoped by this means to recoup; for Gilbert agreed to make it the "staple town" through which all his colony's trade would pass, as Seville served the Spanish Empire. For that and other privileges, fifty citizens of Southampton subscribed a total of £500. From others not of that city, including Sir Francis Walsingham, Gilbert raised about as much more; Walter Raleigh put in £2000, including a ship. This was not nearly enough, and there was no provision for supporting the colony once established.

That the populace was enthusiastic for Gilbert's second voyage may be inferred from a Londoner's diary. One Ashley, preparing beads and other trading truck for the voyage, was so confident of Sir Humfry's finding the Northwest Passage that he hoped to see the day when a letter dated London on 1 May would be delivered in China before midsummer. He would have had to wait some three centuries for that!

If there be any doubt of Gilbert's intention to found a real colony in Norumbega, a document he signed on 8 July 1582 should resolve it. He appointed brother Sir John, brother-in-law William Aucher, and Sir George Peckham, executors in the event of his death. They were to set up a government in the colony, consisting of a governor appointed by themselves, and thirteen councillors to be "chosen by consent of the people." Owners of four thousand or more acres must build a house in the "cheif Cittie." Free homesteads were to be given to poor emigrant families, provided each bring a pickax, a hand saw, a spade, a hatchet, and a certain amount of seed corn and peas. The Church of England is to be established and to assign 5 per cent of church lands for support "of maymed soldiars and of learninge, lectures, scholers and other good and godlye uses"—a foretaste of the famous provision for education in the Northwest Ordinance of 1787. Gilbert's executors are reminded that his colonists are to enjoy all the rights of native-born



Englishmen and that the colonial government's "lawes and ordinaunces may be as nere as convenyently may be agreable to the forme of the lawes and pollicie of England."

Now a fresh obstacle loomed up. The Queen informed Walsingham, who passed it on to Gilbert, that she did not wish Gilbert to go with the expedition, "as a man of not good happ by sea." How right she was!

Gilbert, not to be denied, wrote a vigorous reply to Walsingham. If her Majesty objected to his long delay, "It hath proceeded by Southwest wyndes of Godes making." The winter of 1582-83 had been very rough; ships had been blown from the Azores to England under bare poles. If he be accused of want of skill, he appeals to the best navigators and cosmographers of England. If it be "suspition of dayntines of dyett or sea sickness," he insists he is second in toughness to no man living. Unfortunately, Elizabeth relented. On 16 March she sent Sir Humfry, by his half-brother Walter, a piece of jewelry showing an anchor guided by a lady, and she asked for his portrait and wished him and his ship "great good hap and safety."

Stephen Parmenius, a learned Hungarian roommate at Oxford of Richard Hakluyt, asked Gilbert to take him as chronicler, and by way of testimonial presented him with a turgid Latin poem. And he got the job.

Here is the task organization for Sir Humfry's second and last voyage:

CAPTAIN GENERAL: SIR HUMFRY GILBERT, KNIGHT

Ship DELIGHT (also called GEORGE), 120 tuns; owned and commanded by William Winter, who was relieved at St. John's by Captain Browne of Swallow; Richard Clarke, master.

Bark RALEIGH, 200 tuns, owned by Sir Walter. Commanded by one Butler; Robert Davis of Bristol, master.

GOLDEN HINDE (also called SAMUEL) of Waymouth, 40 tuns, owned and commanded by Edward Hayes; William Cox, master.

Frigate swallow, 40 tuns, Captain Maurice Browne. Gilbert had arbitrarily seized her from John Callis after catching him in an act of piracy.

Frigate or pinnace squirrel, 10 tuns, owned by Gilbert. Captain William Andrews.

The total complement was about 260 men, including masons and carpenters, "minerall men" and refiners. "Besides, for solace of our people, and allurement of the Savages, we were provided of Musike in good variety not omitting the least toyes, as Morris dancers, Hobby horsse, and Manylike conceits to delight the Savage people, whom we intended to winne by all faire meanes possible. And, to that end, we were . . . furnished of all petty haberdasherie wares to barter with these simple people." So wrote Edward Hayes, captain of the Golden Hinde, in the most moving of all narratives printed by Hakluyt.

The fleet sailed together from Cawsand Bay, the outer part of Plymouth Sound, on 11 June 1583, two days after new moon. It was late in the season for a northern crossing, but Gilbert decided to go that way instead of following the southern route, probably for fear of running into a West Indian hurricane. The "course agreed upon," says Hayes, was to steer WSW from Scilly (about latitude 50° N) until they were in latitude 43° or 44°, "because the Ocean is subject much to Southing windes in June and July"; then try to head up to latitude 46° or 47° in order to make landfall on Cape Race (46°39' N) and rendezvous in Renewse or Fermeuse Harbor, Newfoundland. Very good advice, "if God shall not Enforce the contrary," wrote Hayes. Unfortunately He did. Bark Raleigh quit only two days out. The other four kept together for a month of head winds and foul weather. Swallow and Squirrel dropped out of sight of the Delight in a fog-mull. The wind blew from WNW and WSW, so that their "traverse" (beat to windward) "was great," running on the starboard tack down to 41°, the latitude of Montauk Point, then coming about to the port tack and sailing up to 51°, missing Cape Race. They hit the Newfoundland coast at the Grois Islands on 30 July, after crossing the Grand Bank. Then, "Forsaking this bay and uncomfortable coast, nothing appearing unto us but hideous rocks and mountains, bare of trees, and voide of any greene herbe," says Hayes, "we followed the coast to the South, with weather faire and cleare." Fortunately they started their coasting with the moon almost full.

Sighting (and scenting) Funk Island (which he calls Penguin Island after the great auk), they rounded Baccalieu Island and Cape St. Francis, and in Conception Bay on 3 August picked up the Swallow. Captain Browne had indulged in a little piracy since parting from the fleet. On the same day they arrived off St. John's, and there found

[To make a long story short, Gilbet never made it o the Dee River. He drowned and the colonization effort to settle the Dee River eventually fizzled out .]

In 1976, a manuscript written by John Dee, titled *Limits of the British Empire* was discovered and acquired by the British Library.

It shed a bright light on the key role John Dee had in the founding of the British Empire (a term which Dee coined).

Ken McMillan, associate professor of History at the University of Calgary in Canada, provides an in-depth analysis of Dee's text, as well as a transcription done with the assistance of Jennifer Abeles.

John Dee The Limits of the British Empire

Edited by Ken MacMillan with Jennifer Abeles

Studies in Military History and International Affairs Jeremy Black, Series Editor



Westport, Connecticut London

Introduction: Discourse on History, Geography, and Law

The late sixteenth century saw a resurgent interest in English transoceanic voyages. Previously, between about 1495 and 1530, the crown had sent explorers westward to discover the New World, with the result that John and Sebastian Cabot, among others, claimed Newfoundland and portions of North America along the Atlantic seaboard for Henry VII and his successors. In the 1550s, pilots for the Muscovy Company, such as Richard Chancellor and Stephen Borough, traveled northeast in search of new trading opportunities, but it was not until Martin Frobisher set out in search of a northwest passage in 1576 that serious plans for the New World began to take shape. Within a few years, Frobisher had conducted two additional exploratory voyages, he and Humphrey Gilbert were authorized by the crown to settle permanent colonies in the North Atlantic, and Francis Drake undertook his circumnavigation of the world. During this intense half-decade of English overseas activities, many questions arose. What did the geography of the Northern Hemisphere look like? Should Frobisher be seeking a northwest or a northeast passage? Were Drake's and Frobisher's activities legal? What rights did the English have to lands in the North Atlantic and North America? How could English activity in these regions be justified to the Spanish and Portuguese, or even to the Scottish, who also claimed legal rights to these regions? These questions emerged during a sensitive time in the relations between Protestant England and Catholic Europe, and more particularly between England and Spain. A few false steps in the direction of North America could lead to war.

2 John Dee

Amidst these concerns entered the English renaissance polymath John Dee, who was routinely called to court while the crown was making decisions about its nascent empire. Historians and literary scholars have examined in some detail Dee's efforts on behalf of the first British Empire.1 From the mid-1550s he was recognized as an expert in geography and when seeking advice and instruction for trade expeditions it was to Dee that many explorers turned. Dee prepared maps and instructions for several explorers, including Drake, Frobisher, Gilbert, and Walter Ralegh. With respect to Dee's efforts regarding Queen Elizabeth's sovereign title to newfound lands, however, historians have been hesitant to assign him an important role. Most writers accept that Dee brought the term "British Empire" into common usage. Otherwise they argue that his imperial vision was simply propaganda derived from antiquarian notions, ideas that were without much practical value to the English crown and state.2 In this respect, Dee has been treated sympathetically by William Sherman, who argued against the prevailing belief that Dee's imperial writings should be assigned a purely propagandistic or even ephemeral mystical role.3 Even so, when looking for contemporary ideologies of empire, historians and literary scholars generally turn to writers such as Richard Eden, Humphrey Gilbert, and Richard Hakluyt. Each of these writers had powerful patrons who ensured their works were seen at the senior levels of government.4

Scholars have had good reason to focus on other aspects of Dee's work, such as his documented conversations with angels or his writings on astrology.5 These fantastical writings drew the attention of Queen Elizabeth, who occasionally invited Dee into her chamber to explain astronomical phenomena. In contrast to his good reputation as Elizabeth's court magician, for most of the modern period only a few of Dee's imperial writings were known to exist and only one was published during his lifetime. The General and Rare Memorials Pertayning to the Perfecte Arte of Navigation was written in 1576 to promote Frobisher's voyage and the trading goals of the Muscovy Company. It was published in a limited run of 100 copies in 1577, and in a catalogue of his library prepared in 1583 Dee indicated that 60 copies remained on his bookshelf. There is evidence to suggest that the queen herself suppressed its distribution because she was interested in keeping secret many of Dee's ideas, and there is little reason to believe that it had much lasting impact.6 Two other extant writings, "Of Famous and Rich Discoveries" (1577) and "A brief Remembraunce of Sondrye foreyne Regions, discovered, inhabited, and partie Conquered by the Subjects of this Brytish Monarchie" (1578)

Introduction 3

likely had limited audiences. The first is a large, untidy manuscript in the form of a scrapbook. Despite Dee's best efforts, it was not published and probably never seen by the central government. Several of the early chapters were published by Samuel Purchas in 1625, and it seems likely that the book was in the possession of Dee, Hakluyt, and Purchas during much of the intervening period.⁷ The second manuscript is shorter and situated on the back of a map Dee drew of the Northern Hemisphere. In this document, Dee summarized certain historical, legal, and geographical precedents that demonstrated that the English crown had sovereign authority over the North Atlantic and parts of North America, but the document was seemingly prepared for some third party and likely never presented to Queen Elizabeth.⁸

In his diary and other biographical works, Dee mentioned other imperial writings that modern writers have assumed were alternate names for those works that do exist. These were described by Dee as the queen's "title to Greenland, Estetiland, and Friseland," declared to Elizabeth and Secretary of State Sir Francis Walsingham in November 1577, "Her Majesties Title Royall, to many forayn countries, Kingdomes, and provinces" and "Imperium Brytanicum," both declared in 1578, and "two rolls of the Quene's Majesties title," presented to the queen and the Lord Treasurer, William Cecil, Lord Burghley, in 1580.9 These titles are close enough in their descriptions to Memorials, "Discoveries," and the "Brief Remembrance" to convince most scholars that these works were already known. Taken together, then, the extant works and historians' conclusions about Dee's scant references to his other imperial writings have done little to improve Dee's limited reputation as a proponent of empire. Instead, they suggest that one of England's foremost scholars was merely an enthusiastic amateur, but one of sufficient standing to have been granted a few audiences with senior state officials to muse over his rather far-fetched ideas.

This was the case until John Dee's *The Limits of the British Empire* was discovered in 1976 and became part of the British Library's manuscript collection. Where the volume spent the intervening four centuries is something of a mystery. So are certain issues surrounding the preparation of the documents in the compilation, the reasons why it was drawn together in 1593 (the terminal date on the manuscript), and how it fits into Dee's known canon of imperial writings. Answers to these questions are offered here. Perhaps more significant for historians, historical geographers, and literary and legal scholars are Dee's arguments for the existence and recovery of an ancient and vast British Empire whose outer



4 John Dee

boundaries are large enough to include the North Atlantic, half of North America, the entirety of the British Isles, and even much of Scandinavia and the Iberian peninsula. In making these claims, Dee drew extensively on ancient, medieval, and contemporary historical, geographical, and legal sources. The range of these sources is as impressive as it is polymathic: from the legal treatises of the Emperor Justinian and William Lambarde to the geographical writings of Gerard Mercator and the mysterious Jacobus Cnoyen of s'Hertogenbosch; from the Brut history of Geoffrey of Monmouth and his neo-Galfridian successors to the Scottish revisionist history of Hector Boece. The impact of this manuscript on the history of the British Empire deserves careful attention.

PROVENANCE

In manuscript form, Limits is a small quarto volume with a vellum binding, containing ninety-four numbered and lined pages of fair copy, single-spaced text, divided into four distinct documents. The compilation was drawn together in 1593 and was prepared not by Dee but by an amanuensis. This is clear from the errors in transcription of Greek and Latin passages, which are too numerous and rudimentary for a man of Dee's learning. The inclusion of Dee's signature marginalia throughout the compilation, however, indicates that it was prepared under his supervision, probably by a student in his own household. After its preparation in 1593, Limits apparently made its way into state custody. This is evidenced by a brief note in Lord Burghley's hand kept among the British Library's Lansdowne manuscripts. The note is entitled "A Summary of Mr. Dees book," and contains a brief statement of King Arthur's conquests and also two pedigree charts that correspond exactly to portions of Limits.10 That Limits was compiled in 1593 by an amanuensis under Dee's supervision and made its way into state custody, then, are not really matters of dispute, but given the general lack of English overseas activities in the 1590s it is also hard to imagine that the treatise would have had much impact on the state at that time.

There are several questions, however, about the provenance of the compilation, and their answers show that *Limits* was more valuable than might at first be apparent. When were the documents in the compilation first written and why? To whom were they originally presented? What impact might this manuscript compilation have had on the English state and on the future of the English empire? Importantly, although only one of the four documents in the compilation is correctly dated, considerable

Introduction 5

internal and external evidence exists to suggest that the manuscript compilation is a new format of Dee's various imperial writings prepared in 1577 and 1578. There is also strong evidence that each of the documents was presented to Queen Elizabeth and her senior advisors during periods of intense overseas activities. This compilation, therefore, comprises much of the material to which Dee referred in his diary and other works, but which historians have long assumed as lost, destroyed, or alternate names for extant works. When the documents compiled in *Limits* are properly dated and reconciled with English overseas activities at the time of their presentation to the state, it becomes clear that the compilation rises in importance to become a seminal text in the early discussions about the expansion of the British Empire.



The first two documents in Limits are brief treatises, written in Latin, and respectively entitled "Concerning a New Location for the Island of Estotilant and the Province of Drogio" and "Concerning this Example of Geographical Reform." Neither of these treatises is dated, but internal evidence and our knowledge that the queen was the intended audience of both documents make dating possible. In these documents Dee referred to "an accurate, comprehensive, and full account" of his arguments that was undertaken "lately in a large book in our vulgar tongue" (p. 39 in this edition). This is a clear reference to "Discoveries," completed in June 1577. Next, in the final document in Limits, Dee wrote that he had previously presented to the queen a "Lattin annotation vppon Estotiland," a reference to the first document (p. 91). In addition, near the end of the second document Dee made reference to an accompanying map on which was a drawing of the queen. When charting various regions of the world, Dee's references were based on the queen's body, using phrases such as "on the left-hand side of your majesty's throne," "under your Crown," and "at the right side of your Majesty," clear indications that Elizabeth was the audience (p. 41). Finally, in his diary Dee recorded that between 22 and 28 November 1577 he traveled to Windsor and had three meetings with Elizabeth and Walsingham, during which he "declared to the Quene her title to Greenland, Estetiland and Friseland."11 It seems likely that these declarations represented both of the short pieces compiled in Limits, which dates the documents between June and November 1577 and explains the content of Dee's meeting with Elizabeth at this time. It is no coincidence that at the same time both Martin Frobisher and Humphrey Gilbert were beginning a dialogue with the English state about settling colonies in precisely the regions about which Dee wrote.

6 John Dee

The third document in Limits is an eight-page treatise entitled "Unto your Majesties title Royall to these forene Regions, & Ilands," dated "Anno: 1578 Maij 4."12 This document was probably commissioned by the crown sometime in April 1578. In his "Compendius Rehearsal," Dee recorded that "Her Majesties Title Royall" was "fayre written for her Majesty's use and by her Majesty's commandements—Anno 1578."13 Dee also noted that this document was written on "12 velam skyns of parchment," something much larger than the third document, which likely filled only one or at most two vellum sheets. Dee wrote that the "Brytanici Imperii Limites," the exact title of the fourth and final document in Limits and a document long enough to fill a dozen vellum sheets, was "compiled speedily at her majesty's commandment.".14 On both occasions, Dee was probably referring to the third and fourth documents in Limits together, which were written as companion pieces. At the end of the third document, which Dee probably presented to the crown shortly after its completion on 4 May, he wrote that more evidence was "shortlie to be recovered," a task that was undertaken in the fourth document (p. 49). The third document came at a good time because at the end of May 1578 Frobisher was given instructions to settle some men on a small island off Baffin Island, and the following month Gilbert was issued a royal letter patent to settle land in North America.

This brings us to the fourth document in *Limits*, which was, it has been suggested, a companion piece to the third document. It is the "Brytanici Imperii Limites" proper, which fills approximately seventy manuscript pages and gives the name to the compilation. This document, prefaced with another copy of the third document, was likely what occupied the majority of the twelve "full written" vellum skins of parchment given to the crown in August 1578. This theory immediately confronts a problem, because the fourth document is signed "Your Majesties most Humbell and Obedient Servant *Iohn Dee Anno Dominj* 1576; *Iulij* 22" (p. 100). This would place its production just before *Memorials*, which was completed in August 1576, and would make it the earliest of Dee's writings on the queen's title to overseas territories. However, this date is certainly wrong. The fourth document was written as an addition to the third document, dating it 22 July 1578, not 1576.

The evidence for this redating is considerable. To begin with, in his diary. Dee wrote that he traveled to Norwich, where the queen was currently in residence, with his work entitled "Imperium Brytanicum," a clear reference to the fourth document, on 5 August 1578. Within the manuscript itself, Dee makes explicit reference to Memorials, its nonsur-

Introduction 7

viving sequel entitled "The Brytish Complement," and to "Discoveries," which makes it clear that the document in Limits came after all of these (p. 98). The third document ends, as we have seen, with an assurance that more evidence was soon to be "recovered," and an early line in the fourth document reads, "Heere now in this other parte, I entend to recorde that which appertaineth to continewe the memorie of your Majesties iust title Royall" (p. 51, emphasis added). This suggests that it is the second of two parts, and was written shortly after the first. A number of times Dee indicates that it is an "appendix," presumably to the third document, and he argues that the recovery of the British Empire was fully justified by "these 2 recordes"-that is, by the third and fourth documents together (p. 98). Dee also included in the fourth document a letter he received from Gerard Mercator, which was explicitly dated "1577" (p. 85). Finally, it seems likely that the manuscripts that make up the compilation would have been placed in the order in which they were written. The evidence thus makes it necessary to redate the fourth document to 1578 and to put it and the third document together as one package. The simple transcription error of turning a questionable-looking "8" into a "6" probably accounts for the misdating of the fourth document in Limits.

These "2 recordes" were presented to Elizabeth about 5 August 1578 as two rolls written on twelve vellum skins of parchment. We know that these rolls were to a large extent the content of *Limits* because the final twenty pages in the manuscript compilation, the last part of the fourth document, comprise additions to the text, which once "were noted in the margentes of the longe rolle" (p. 103). This would have been Dee (or the amanuensis) writing in 1593, explaining that the change in format required a different presentation for the supplemental material. These rolls were returned to Dee after the meeting in August 1578 and were presented to Elizabeth again two years later. Dee wrote that on 3 October 1580 he "delivered [his] two rolls of the Quene's Majesties title" to Elizabeth and Lord Burghley. Because we know that these rolls were first presented in 1578, this means that no new material was offered to Elizabeth at this time. Finally, the rolls were returned to Dee for a second time.

Why did John Dee gather up the short Latin passages (documents one and two) and the two great rolls (documents three and four), which had been written in 1577–1578, and prepare a book-length manuscript for the crown in 1593? The answer lies in Dee's quest for royal patronage. In November 1593 Dee had presented his "Compendius Rehearsal" to two

8 John Dee

of the queen's gentlemen, by which he had hoped to remind the crown of his good service in exchange for a pension, university position, or clerical sinecure. At that meeting, Dee pointed to a table upon which were laid "two parchment great Rolls full written" that he had prepared more than a decade earlier and said that he was once offered £100 for them. In response, the gentlemen, probably at the command of Elizabeth, returned three weeks later and gave Dee the same amount in gold and silver, for which Dee acknowledged his satisfaction. It seems probable that in exchange for this money Dee was expected to produce another version of his imperial writings. He likely turned this mundane work over to a student amanuensis, reviewed the finished product, and sent it to Lord Burghley.

Based, then, on Dee's reporting of his writings on empire, with the presence of this compilation we now have at our disposal virtually all of the written material prepared by Dee in 1577-1578 expressly for Queen Elizabeth and her senior advisors regarding her title to newfound lands. The dates of the manuscripts attest to their importance both to the English state at the time of their preparation and to modern scholars. As William Sherman has pointed out, even though much of Dee's writings-including Limits-remained in manuscript form, this does not mean they were unimportant, peripheral, or ignored by contemporaries. On the contrary, Sherman writes that during the renaissance, "political, social, and economic debate, too, was largely confined to 'private,' manuscript circulation. . . . These political manuscripts . . . were never intended for-indeed, would have been inappropriate for-a wider reading public."17 Limits can be placed in this category. As we have seen, Dee was commanded to write these documents, given several audiences with the queen and her senior advisors to discuss them, and subsequently rendered them into another format so they could be held in state custody. There can be little doubt given the provenance of the compilation that its impact was not minimal merely because it remained in manuscript form.



Dee's Limits of the British Empire, although clearly seen—until now—by a very limited audience, must be given pride of place for being the earliest justification for the expansion of the British Empire to be offered in Elizabethan England. These works were offered at the beginning, rather than the end, of a decade (1576–1585) of great uncertainty and intense planning for the English land and sea empire in North America and the North Atlantic. Thus, the arguments and evidence that Dee expresses and develops in these seminal writings on empire, his early use of the

Introduction 9

term "British Empire," and the overall impact of *Limits* are of much more than passing interest. Dee's status as an imperial thinker shifts from enthusiastic amateur to leading expert, and his works are now required reading for those interested in claims to overseas territories during the early modern period, in early formulations of the British Empire, and in the contemporary use of evidence to serve a political and propagandist purpose.



ARGUMENTS AND EVIDENCE

Geography

While compiling the four documents that make up Limits of the British Empire, John Dee had a number of purposes in mind. As exemplified especially in the first two documents, Dee's first purpose in writing was to explain the current geographical and hydrographical knowledge of the North Atlantic, those areas that were of primary interest to the English. These were topics he had addressed in some detail in Memorials and "Discoveries," and with which he was probably most at home. 18 In the 1550s, Dee had studied geography and related sciences at the University of Louvain under Gerard Mercator and Gemma Frisius, the leading geographers of the age. He was also a regular correspondent with Pedro Nuñez, cosmographer royal in Portugal, and Abraham Ortelius, whose collection of geographical knowledge in the Theatrum Orbis Terrarum (1570) was seminal for the period.19 As Lesley Cormack has suggested, by the 1570s Dee was the leading figure in a coterie of geographically minded scholars, and he was with good reason the primary navigational advisor to nearly every overseas traveler into the 1580s.20 His library was furnished with seven copies of Ptolemy's Geographica and also the various navigational writings of Arrian, Krantz, Münster, Ramusio, Strabo (in whose work Dee wrote over 2000 marginal notes) and Thevet.21 Dee owned two of Mercator's globes, and during the preparation of "Discoveries" he corresponded directly with the Dutchman, whose reply Dee interpreted as confirming some of his ideas about the northern regions.²² In January 1577, Dee wrote a letter to Ortelius in which he asked specifically about the northern coast of the Atlantic. Two months later he met with Ortelius in person and within a year he had written "Discoveries" and the first two documents in Limits.23 Clearly, Dee's geographical knowledge rivaled-and in his estimation exceeded—that of many contemporaries.



In 2006, Ken MacMillan published a 200-page book about the first 6 decades of English colonization.

Dee takes center stage in MacMillan's chapter titled, "Defining the Elizabethan Empire in America."

Sovereignty and Possession in the English New World

The Legal Foundations of Empire, 1576–1640

Ken MacMillan

University of Calgary





Title page to John Dee, General and Rare Memorials, 1577. This item is reproduced by permission of the Huntington Library, San Marino, California.

Introduction

One of the most striking images of early English New World expansion is the illustrated title page to John Dee's General and Rare Memorials Pertayning to the Perfect Arte of Navigation (1577, opposite). Queen Elizabeth is shown at the helm of an "imperial ship" named the Europa, on whose rudder is displayed the royal coat of arms. The queen is steering the ship toward the mainland, where Fortuna, the goddess of fortune and opportunity, is standing on a powerful fortification. Elizabeth is reaching out her hand to grasp both Fortuna's forelock and a proffered laurel wreath, a traditional symbol of Roman imperial authority. Britannia, an allegorical figure demonstrating England's agrarian economy, is kneeling on the ground beside a sheaf of grain, which is deep within the fertile, virgin earth and ready for cultivation. In the sea are armed ships and on the land are soldiers, colonists, and fortresses, all of which are protected by Saint Michael, who is descending from the heavens with sword and shield. Despite the complex allegory, Dee's message is a simple one: Queen Elizabeth, head of the British imperial monarchy and a leader of Christendom, needs merely to seize the New World opportunities with which she is being presented to improve her wealth, strength, and imperial power, and thereby achieve supremacy over other European princes.

Although this image reflects a number of themes with which this book is concerned, its allegorical representations of imperial sovereignty over, and territorial control of, the New World are somewhat at odds with current ideas about Elizabethan and early-Stuart activities in America. Dee's image belies the fact that the English arrived late and fitfully in the New World. Setting aside the apocryphal voyages of Britons such as Saint Brendan, Prince Madoc, Hugo of Hibernia, and the legendary King Arthur, it was only in 1497 that the English made their way across

¹ John Dee, General and Rare Memorials Pertayning to the Perfect Arte of Navigation (London, 1577). A recent discussion of this image is in Lesley Cormack, Charting an Empire: Geography at the English Universities, 1580–1620 (Chicago, 1997), pp. 3–4.

2 Defining the Elizabethan empire in America

Elizabethan activities in the New World began at a sensitive time in the relations between Protestant England and Catholic Europe, and especially between England and Spain. It was only six years after Pope Pius V excommunicated Queen Elizabeth and called upon all Catholics to rebuke her "pretended" rule that Martin Frobisher began making plans for permanent settlement in the region of Baffin Island. At the same time, Elizabeth was holding prisoner her cousin, Mary Queen of Scots, whom domestic and foreign Catholics intrigued to place on the English throne. It was also toward the end of the 1570s that Elizabeth began outwardly showing sympathy for the Dutch desire to revolt against the Spanish rule of Philip II, the queen's former brother-in-law and suitor. Within this tenuous political climate, in which a few false steps in the direction of North America could lead to war, Elizabeth and her senior councillors proved hesitant to authorize any overseas activities until they were shown to be consistent with the sovereign responsibility of the English monarch and, especially, allowed in law. Faced with legal precedents of first discovery and papal donation, by which the Spanish laid claim to most of the New World, providing sufficient legal justifications was not an easy task.

The best known examples of Elizabethan attempts to justify English activities in America are embodied in the works of the Anglican priest, the younger Richard Hakluyt. Between 1582 and 1600, Hakluyt published his Divers Voyages Concerning the Discovery of America (1582) and two editions of his Principal Navigations, Voyages, Traffiques, and Discoveries of the English Nation (1589, enlarged 1598–1600), which were

¹ Importantly, English relations with Spain before this time, though not always friendly, were generally amicable, and writers such as Richard Eden were willing to see English and Spanish New World activities as complementary and united in imperial endeavours rather than competitive. This viewpoint changed at the beginning of the 1560s, largely because of the final break with Rome that Elizabeth's reign inaugurated. See especially Jonathan Hart, Representing the New World: The English and French Uses of the Example of Spain (New York, 2001), chs. 3–4.

intended both to challenge European perceptions of English inactivity in overseas affairs and to promote new transoceanic initiatives. Hakluyt's work also came to the crown's attention in the form of his Discourse of Western Planting, a manuscript presented to Queen Elizabeth in 1584. Owing to its length, the complexity and nature of its argument, and the likelihood that it was seen in the highest positions of government, Hakluyt's Discourse has been recognized as the seminal document of Tudor expansion, one that largely defined the potential of the Elizabethan New World empire.2 In a series of chapters, Hakluyt provided the crown with a complete plan for colonization, including the economic and religious benefits of these activities, Elizabeth's legal right to authorize their undertaking, the types of supplies and men needed to implant a colony, and an important refutation of the pope's jurisdiction to donate the New World to the Spanish. Hakluyt's body of work and his impressive collection of travel writings were later memorialized in the title of his literary successor's famous work, Samuel Purchas's Hakluytus Posthumus, or Purchas His Pilgrimes (1625).



Though Hakluyt's work deserves the attention it has received, it was neither the first nor, it can be argued, the most valuable body of work submitted to Queen Elizabeth regarding her lawful title to newfound lands. In this chapter, I examine some of the imperial writings prepared by the renaissance polymath John Dee (1527–1608), who was commissioned by the crown to prepare key writings in the first, important, half decade of Elizabethan overseas activity (1576–80). Historians and literary scholars have examined in some detail Dee's efforts on behalf of the first British Empire. From the mid-1550s he was recognized as an expert in geography and when seeking advice for trade expeditions it was

Meyrick H. Carré, "Visitors to Mortlake: The Life and Misfortunes of John Dee," History Today 12 (1962): 640-7; Nicholas H. Clulee, John Dee's Natural Philosophy (London, 1988), pp. 180-4; William H. Sherman, "John Dee's Role in Martin Frobisher's Northwest Enterprise," in Meta Incognita: A Discourse of Discovery: Martin Frobisher's Arctic Expeditions, 1576-78, ed. H. B. Symons, 2 vols. (Hull, QC, 1999), vol. I pp. 283-98; E. G. R. Taylor, Tudor Geography, 1485-1583 (London, 1930), chs. 5-7.

² Richard Hakluyt, A Particuler Discourse Concerninge the Greate Necessitie and Mainfolde Commodyties that are like to Growe in this Realme of Englande by the Westerne Discourries Lately Attempted, written in the yere 1584, known as Discourse of Western Planting, ed. David B. Quinn and Alison M. Quinn (London, 1993). On Hakluyt, see David Armitage, Ideological Origins of the British Empire (Cambridge, 2000), ch. 3; Hart, Representing the New World, pp. 125–44; Richard Helgerson, Forms of Nationhood: The Elizabethan Writing of England (New York, 1995), ch. 4; and E. G. R. Taylor, ed., The Original Writings and Correspondence of the Two Richard Hakluyts, 2 vols. (London, 1935). For Hakluyt's relationship with other travel writers of the period, see Philip Edwards, Pilgrimage and the Literary Tradition (Cambridge, 2005), ch. 5; and William H. Sherman, "Stirrings and Searchings (1500–1700)," in The Cambridge Companion to Travel Writing, ed. Peter Hulme and Tim Youngs (Cambridge, 2002), pp. 17–36.

to Dee that many explorers turned. Dee prepared maps and instructions for several explorers, including Francis Drake, Martin Frobisher, Humphrey Gilbert, and Walter Ralegh. With respect to Dee's efforts regarding Queen Elizabeth's sovereign title to newfound lands, however, historians have been hesitant to assign him an important role. Most writers accept that Dee brought the term "British Empire" into common usage. Otherwise, they argue that his imperial vision was simply propaganda derived from antiquarian notions, ideas that were without much practical value to the English crown during early forays into the New World. In this respect, Dee has been treated sympathetically by William Sherman, who argued against the prevailing belief that Dee's imperial writings should be assigned a purely propagandistic or even ephemeral mystical role. 5



When Dee's writings on empire are examined and reconciled with the nature of overseas enterprises at the time of their preparation, it becomes clear that his ideas were of more value than scholars have admitted. His imperial writings came at a vital period, corresponding directly with the most intense English overseas enterprises to date, when Frobisher, Drake, and Gilbert undertook their adventurers in newfound lands. It is within the context of specific voyages that Dee prepared his early imperial works. The first, the General and Rare Memorials Pertayning to the Perfect Arte of Navigation was written in 1576 to promote Frobisher's voyage and the trading goals of the Muscovy Company. It (along with its illustrated title page) was published at a key time in 1577, with copies being furnished to important crown officials. The second, "Of Famous and Rich Discoveries," was written in 1577 to promote Frobisher's second voyage and Francis Drake's circumnavigation, which departed in November of that year. Although neither of these works was especially influential at court, Dee established himself as an expert with these writings and was shortly afterward commissioned by the crown to prepare and present a series of works that were far more valuable. Copies of these works are extant in the Brytanici Imperii Limites (The Limits of the British Empire), Dee's imperial tour de force. This manuscript was prepared in 1577-78, and presented when Dee met with Elizabeth, Secretary of State Sir Francis Walsingham, and the Lord Treasurer,

William Sherman, John Dee: The Politics of Reading and Writing in the English Renaissance (Amherst, MA, 1995), ch. 7.

⁴ A. L. Rowse, The Elizabethans and America (London, 1959), pp. 17–21; T.D. Kendrick, British Antiquity (London, 1950), p. 43; John C. Appleby, "War, Politics, and Colonization, 1558–1625," in The Origins of Empire: British Overseas Enterprise to the Close of the Seventeenth Century, ed. Nicholas Canny, The Oxford History of the British Empire (Oxford, 1998), p. 62.

William Cecil, Lord Burghley. These crown officials were then involved in considering, and ultimately authorizing, the establishment of the first English colonies in the New World, that is, Frobisher's settlement in the North Atlantic and Gilbert's in North America. In his most important audience with the queen and Burghley in October 1580, Dee informed the crown of its rights literally days after the Spanish ambassador lodged an official complaint upon Francis Drake's return from his famous circumnavigation. As these commissions and meetings at such propitious times attest, the crown placed some value on Dee's ideas about empire.⁶

Especially noteworthy in these imperial writings, and particularly in the text on which this chapter shall focus, The Limits of the British Empire, are Dee's efforts to define the outer boundaries of Elizabeth's empire and her legal rights to establish sovereignty and possession over these regions. Dee buttressed his claims by building up an impressive scholarly edifice of classical and contemporary historical, geographical, and legal evidence, at a time when each of these disciplines was increasing in use and importance.7 Significantly, these writings show that the establishment of English sovereignty over newfound lands was conceived by Dee in terms that were supranationally intelligible. Rather than rely on the domestic English common law, Dee proclaimed the queen's right to draw into her dominion those lands that were discovered by English subjects and were not currently in the actual possession of a Christian prince by Roman law and the laws of nature and nations. He laid the foundation for the English claiming territory by occupation rather than mere discovery, recognizing that in Roman law possession was not simply an act of will or intent (as the Spanish tended to see it) but also of physical presence and effective control. He also challenged the Iberian claims to exclusive dominion by taking on, almost as a lawyer arguing a case, the explicit language of Alexander VI's papal bull awarding all terra incognita to the Spanish and Portuguese. Although they were developed within specific contexts, Dee's arguments were well enough grounded in



See D. R. Woolf, Reading History in Early Modern England (Cambridge, 2000); Lesley B. Cormack, Charting an Empire: Geography at the English Universities, 1580–1620 (Chicago, 1907)

⁶ John Dee, General and Rare Memorials Pertayning to the Perfect Arte of Navigation (London, 1577); "Of Famous and Rich Discoveries [1577]," BL Cotton MS Vitellius C.VII, fols. 26–269; "Brytanici Imperii Limites [1577–8]," BL Additional MS 59681; published as John Dee, The Limits of the British Empire, ed. Ken MacMillan with Jennifer Abeles (Westport, CT, 2004). On the latter manuscript's provenance, see ibid., pp. 4–9. Dee's visits with the queen are recorded in John Dee, The Private Diary of Dr. John Dee, ed. J. O. Halliwell-Phillipps (London, 1968), pp. 4–9.

scholarship to germinate into long-term intellectual justifications for claiming sovereignty.8



Geography, history, and law

Dee's first purpose in writing Limits of the British Empire was to explain the current geographical and hydrographical knowledge of the North Atlantic, those areas that were of primary interest to the English. These were topics he had addressed in some detail in Memorials and "Discoveries" and with which he was probably most at home. In the 1550s, Dee had studied geography and related sciences at the University of Louvain under Gerard Mercator and Gemma Frisius, the leading geographers of the age. He was also a regular correspondent with Pedro Nuñez, cosmographer royal in Portugal, and Abraham Ortelius, whose collection of geographical knowledge in the Theatrum Orbis Terrarum (1570) was seminal for the period. 10 As Lesley Cormack has shown, by the 1570s Dee was the leading figure in a coterie of geographically minded scholars, and he was with good reason the primary navigational advisor to nearly every overseas traveler into the 1580s.11 His library was furnished with seven copies of Ptolemy's Geographica and also the various navigational writings of Arrian, Krantz, Münster, Ramusio, Strabo (in whose work Dee wrote over 2000 marginal notes), and Thevet. 12 Dee owned two of Mercator's globes, and during the preparation of "Discoveries" he corresponded directly with the Dutchman, whose reply Dee interpreted as confirming some of his ideas about the northern

100, 189, 674, 769; Ortelius, no. 213; Münster, nos. 88; Ramusio, no. 273; Strabo, no. 112; Thevet, no. 238.

⁸ On this wider impact, see Anthony Pagden, European Encounters with the New World: From Renaissance to Romanticism (New Haven, 1994), ch. 1; and Pagden, Lords of All the World: Ideologies of Empire in Spain, Britain, and France, c. 1500-c. 1800 (New Haven,

⁹ On Dee's role in the development of contemporary cartography, see Cormack, Charting an Empire; David N. Livingstone, The Geographical Tradition: Episodes in the History of a Contested Enterprise (Oxford, 1992); William H. Sherman, "Putting the British Seas on the Map: John Dee's Imperial Cartography," Cartographica 35 (1998): 1-10; Antoine de Smet, "John Dee et sa place dans l'histoire de la cartographie," in My Head Is a Map: Essays & Memoire in Honour of R. V. Tooley, ed. Helen Wallis and Sarah Tyacke (London, 1973); E. G. R. Taylor, "Instructions to a Colonial Surveyor in 1582," Mariner's Mirror 37 (1951): 48-62. See also Chapter 5 below.

¹⁰ Clulee, John Dee's Natural Philosophy, pp. 26-7. Dee dedicated his Propaedenmata Aphoristica (1558) to Mercator, and mentioned his and Gemma Frisius's tutelage in Louvain. See also Taylor, Tudor Geography, pp. 83-5.

¹¹ Cormack, Charting an Empire, ch. 3, especially pp. 124-8. 12 John Dee's Library Catalogue, ed. Julian Roberts and Andrew G. Watson (London, 1990): Arrian, nos. 36, 405; Frisius, nos. 362, 967, 1025, 1085, 1091, B74 (a globe), B228; Krantz, nos. 29, 1760-61, 1960; Mercator, nos. 211, 212, 1658; Nuñez, nos.

In a chapter titled, "Mapping the English empire in North America," MacMillan writes that Dee's maps were "considerably more accutate" than those of his English contemporaries.

Mapping the English empire in North America

to the immense popularity of decorated maps in the early-modern period, after their initial, crown-authorized publication in English books, many of these maps were subsequently republished either in their original form or with minor changes, by continental cartographers in their atlases. This gave an international audience to these maps and, regardless of cartographical accuracy, offered the possibility that other Europeans would better recognize English sovereignty in newfound lands.

151

Manuscript maps and the policy of secrecy

The earliest published English cartographical representations of the New World were cartoon-like in their simplicity. Sir Humphrey Gilbert's 1576 map of the world, which appeared in his Discourse of a Discovery for a New Passage to Cataia, is highly optimistic and speculative (Figure 5.1). 10 Overseas territories much desired by the English are depicted as being proximate and easily accessible. Greenland, Labrador, and "Canada" are shown too close to the British Isles, which makes them highly relevant to English interests and, perhaps, gives Queen Elizabeth a stronger claim to them. The wealthy islands of "Giapan" (Japan), and the "Insulae Molucae" (the Molucca Islands) are virtually at the egress of an easily navigable northwest passage. A similar map by George Best was published in his True Discourse of 1578 (Figure 5.2). 11 Representing the world less accurately and even more optimistically than Gilbert's, Best's map shares all of the same characteristics: China, Japan, and the Spice Islands are easily accessed through a wide Frobisher's Strait that runs across the entire northern coast of North America. In Michael Lok's map of North America, which appeared in Richard Hakluyt's Divers Voyages (1582) and was the most widely distributed of the three, North America is connected at its centre by a narrow body of land; while the southern part, Florida and Mexico, is clearly the dominion of the Spanish crown, the northern part contains numerous signs of English possession.12 The voyages of John and Sebastian Cabot and Martin Frobisher, and the years in which their discoveries were made, are indicated. Lok's message is clear: the English have sovereignty and possession, based on the precedent of first discovery, over a large land mass whose borders are easily identifiable.

Gilbert, Best, and Lok were propagandists and explorers, not cartographers, and they probably prepared their maps from earlier European

¹⁰ Humphrey Gilbert, A Discourse of a Discoverie for a New Passage to Cataia (London, 1576).

George Best, A True Discourse of the late Voyages of Discoverie (London, 1578).
 Richard Hakluyt, Divers Voyages Touching the Discovery of America and Islands Adjacent (London, 1582).

152 Sovereignty and possession in the English New World



Figure 5.1 Humphrey Gilbert, *Discourse of a Discoverie*, 1576. This item is reproduced by permission of The Huntington Library, San Marino, California.

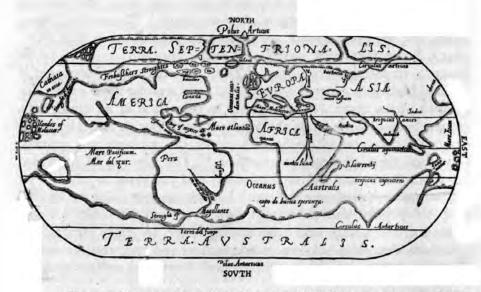


Figure 5.2 George Best, *True Discourse*, 1578. This item is reproduced by permission of The Huntington Library, San Marino, California.

drawings.13 But by the 1570s much better information than they published was available. The advanced projections of the continental cartographers Gemma Frisius, Gerard Mercator, and Abraham Ortelius were all available through atlases and globes. Mercator's mappamundi of 1569 was perhaps the most familiar cartographical representation of the late-sixteenth century and was widely available to English viewers. It contained the so-called Mercator projection, the modern method of centering the world map on Western Europe and including latitude and longitude lines to provide a perspective. 14 English geographers and cartographers, too, had far more knowledge than was demonstrated in Gilbert's and his contemporaries' printed maps. As Lesley Cormack, Richard Helgerson, and others have shown, England was fully involved in the cartographical revolution that occurred in Europe during the sixteenth and seventeenth centuries. The revolution was marked by the improvements in land surveying and measuring, the inclusion of scales and latitude and longitude lines in maps, the removal of speculation about the unknown from maps, and the increase of map ownership, use, and display. In the period after 1580, geography and related sciences were popular fields of study in the English universities and an important part of English discourse. 15



John Dee's three manuscript maps, drawn between 1580 and 1582, are considerably more accurate than those English maps simultaneously published. Dee, who was trained by and remained in contact with Frisius, Mercator, and Ortelius, conformed closely to the new learning on mapmaking. All of these maps remained in manuscript throughout the age of exploration. The first of the 1580 maps shows remarkable knowledge for the time (Figure 5.3). Dee included latitude and longitude lines and, where possible, place names and accurate representations of the geography. Dee's knowledge of the eastern seaboard of

Gilbert's map could have been drawn as early as 1566, predating Mercator's world map, but it is still more rudimentary than contemporary continental maps.

17 BL Cotton MS Augustus I.I.I.

¹³ For example, Peter Apian, Charte Cosmographique (Venice, 1553), Giacomo Gastaldi, Universale Novo (Venice, 1548), and Sebastian Munster, Nova Insulae XXVI Nova Tabula (Basle, 1552), share many similarities with these early English maps.

Cormack, Charting an Empire, chs. 3, 5; P. D. A. Harvey, Maps in Tudor England (Chicago, 1993); R. A. Skelton and P. D. A. Harvey, eds., Local Maps and Plans from Medieval England (Oxford, 1986); Catherine Delano Smith, "Map Ownership in Sixteenth-Century Cambridge: The Evidence of Probate Inventories," Imago Mundi 47 (1995): 67–93.

William Sherman, "Putting the British Seas on the Map: John Dee's Imperial Cartography," Cartographica 35 (1998): 1-10; Cormack, Charting an Empire, pp. 124-8; Ken MacMillan, "Discourse on Geography, History, and Law: John Dee and the Limits of the British Empire," Canadian Journal of History 36 (2001): 4-11.

154 Sovereignty and possession in the English New World



Figure 5.3 John Dee, map of the Northern Hemisphere, 1580. This item is reproduced by permission of the British Library, Cotton Augustus I.I.I.

North, Central, and South America, and of the West Indies, was impressive. In this respect, Dee's map is one of the most comprehensive of the time. On the west coast, Dee mapped what he could determine from other sources, which was the coastline of Central America northward to about Oregon, the region that Drake had recently discovered. The entire northwest portion of North America is blank on the map, because Dee did not have enough information and clearly did not wish to speculate. This map, which was given to Elizabeth or a senior advisor, was probably designed to assist the crown in future exploratory voyages and to assist sea pilots in their travels.



Another of Dee's maps, also drawn in 1580, was found among the extensive map collection of William Cecil, Lord Burghley. The value of Dee's map to Burghley and the English state may be assumed by the fact that it was sandwiched between two folios of Ortelius's famous atlas, Theatrum Orbis Terrarum (1570). To the English at least, Dee was deemed to be on par with the leading cartographers of his age. Drawn from a northern perspective, Dee's projection shows 200 degrees of longitude and 50 degrees of latitude, stretching eastward from England to China, and conforming to the speculations that Dee made in his "Of Famous and Rich Discoveries" and The Limits of the British Empire. 18 Although its provenance is uncertain, this map was probably similar to the one Dee prepared for Charles Jackman and Arthur Pett in 1580 to help in their search for the northeast passage. Dee once noted that he provided them with a new chart which described the route to China "more exactly, than any other, yet published." Obviously, when offering navigational instructions Dee was concerned that the information he was giving was accurate and unspeculative. Dee's 1582 map, drawn for Humphrey Gilbert, is less accurate than those of 1580, though it is still far more detailed and scientific than the published maps of the period (Figure 5.4). He made the same error as his contemporaries in assuming the existence of an easy northwest passage, and he conceived of the St. Lawrence stretching westward and emptying into the Pacific Ocean. If this was true, of course, another potential sailing route to China and the East Indies existed, and within this context Gilbert's plans to colonize and fortify Newfoundland made perfect sense.²⁰ This map seems to have had a more propagandistic purpose than the 1580 maps.

If such accurate information was available from respected European and English cartographers, why did Lok and his contemporaries print maps that they must have known were unrepresentative? The answer is that the English crown was concerned about disseminating intelligence that would prove advantageous to other Europeans. As Cormack argues, the more the English came to know about the world through geography and cartography, the more interested they were in exploring, writing about, and establishing authority over parts of it.²¹ Therefore, the knowledge conveyed through maps was highly esteemed and was to be

²¹ Cormack, Charting an Empire, pp. 1, 229.



¹⁸ John Dee, "Of Famous and Rich Discoveries [1577]," BL Cotton MS Vitellius C.VII, fols. 26–269; John Dee, The Limits of the British Empire, ed. Ken MacMillan with Jennifer Abeles (Westport, CT, 2004).

BL Lansdowne MS 122, fol. 30; and BL Cotton MS Otho E.VIII, fols. 78–80.
 Humphrey Gilbert, "Discourse how to annoy the king of Spain," NAUK SP 12/118/12(1).



Figure 5.4 John Dee/Humphrey Gilbert map of the Northern Hemisphere, 1582. This item is reproduced by permission of the Rare Book Department, The Free Library of Philadelphia.

carefully guarded for fear of giving an advantage to other countries. Secrecy and the monopolization of knowledge were vital to the success of early-English activities in newfound lands. This is why George Best, on the title page to his True Discourse, defended the simplicity of his maps by writing that they depicted Frobisher's North Atlantic activities "so far forth as the secrets of the voyage may permit."22

Secrecy was the prevailing official crown policy. When Francis Drake returned from his circumnavigation in 1580, he presented Queen Elizabeth with, as the Spanish Ambassador Bernardino de Mendoza reported to Philip II, a "very large map." 23 Drake was also required to pass his journal, without making a copy, to Lord Burghley. This is no longer extant, but it was apparently illustrated with maps "so naturally depicted that no one who guides himself according to these paintings

Best, A True Discourse, title page. 23 BL Additional MS 28420, fol. 30.

can possibly go astray."24 The journal, at least, was not available for public viewing. Richard Hakluyt could not consult it for his Principall Navigations of 1589 and Drake himself was forbidden access when he was planning to publish an account of his own voyage in order to correct misrepresentations. Only the queen and her inner circle were allowed to share the secrets of Drake's voyage, for Drake and all others were strictly warned against disclosing his route or any particulars that would allow another nation to repeat his voyage, a prohibition that still existed into the seventeenth century.25 Even in John Dee's "Discourse of the voyage made by Master Francis Drake," a treatise written in May 1580 for a popular audience, geographical references are noticeably absent, especially given Dee's considerable technical knowledge and his tendency to provide remarkable hydrographical detail when presenting material to the court.26 Nor was Dee, by this time, a stranger to the policy of secrecy. When he desired to publish his "Of Famous and Rich Discoveries" in 1578, in which he had written about Frobisher's activities and early English forays into the East Indies, the queen seems to have refused to allow its publication because of the amount of detail it contained.27

The cartographical truth of Frobisher's and Drake's voyage was not the only suppression in this period. In his instructions to Humphrey Gilbert in 1582, Edward Hoby (or somebody close to him) told the explorer to "note the particular place where every such thing shall be found," and to "note all the islands, their bigness, commodities, and havens, and the elevations of every isle and set down this same both in your maps and journals."28 But, as in Drake's voyage, these were to be turned in to the court, which would determine how best to use the intelligence. In the same year, Lord Burghley and Sir Francis Walsingham, the secretary of state, gave a set of instructions to Edward Fenton, captain-general of a voyage to the East Indies. The eighteenth article instructs that "you shall give straight order that none shall make any cartes [i.e. charts or maps] or description of the said voyage, but such as shall be deputed by you the general, which said charts and descriptions we think meet that you the general shall take into your hands at your return to this our coast of England leaving with them no copies, and to present them unto us at your return, the like to be done if



This is the opinion of a Spanish prisoner captured by Drake, quoted in Helen Wallis, "The Cartography of Drake's Voyage," in Sir Francis Drake and the Famous Voyage, 1577–80, ed. Norman J. W. Thrower (Berkeley, CA, 1984), p. 123.

²⁵ Ibid.

John Dee, "A discourse of the voyage made by Master Francis Drake," BL Lansdowne MS 122 fole 21-8.

²⁷ Dee implies this censorship of his work in Limits of the British Empire, p. 98.

²⁸ BL Additional MS 38823, fol. 1.

In his I995 scholarly book on Dee's writing and use of marginalia, William S. Sherman weaves in a chapter on "Dee and England's Maritime Empire.

JOHN DEE



The Politics of Reading and Writing in the English Renaissance

WILLIAM H. SHERMAN

UNIVERSITY OF MASSACHUSETTS PRESS
AMHERST

SEVEN



"This British Discovery and Recovery Enterprise"

Dee and England's Maritime Empire

Nowe (at length) ame I come to my chiefe purpose, of some Records settinge downe; which wilbe found sufficient, for to stire vpp yo' Ma^{tis} most noble hart, and to directe you' Godlie conscience, to vndertake this Brytish discovery, and recovery Enterprise, in yo' owne Royall Interest: for the great good service of God, for yo' highnes immortal fame, and the marvailous Wealth Publick of yo' Brytish Impire. —John Dee, Brytanici Imperii Limites

It is in his capacity as one of Tudor England's leading maritime advisers that the Dee I have been sketching takes on a clear shape. While his services on behalf of the British Empire have been consistently overshadowed by the more public legacy of Richard Hakluyt, Francis Drake, and Sir Walter Ralegh, he has always been assured of a place in this crucial chapter of maritime history and the history of geography. In 1930 Eva Taylor made him the central figure in her pioneering study, Tudor Geography, 1485-1583; and in 1973 Antoine de Smet claimed for Dee a seminal role in the development of Elizabethan cartography. 1 If we assemble all of the available sources—which requires us both to set aside our prejudices and to invest some serious textual labor—it becomes evident that Dee could hardly have held a more prominent place in what Kenneth Andrews described as the Tudor conjunction of "maritime enterprise and the genesis of the British Empire." He is traditionally credited with coining the very term "British Empire,"3 and he was one of its earliest, boldest, and most ingenious advocates.

DEE AND ENGLAND'S MARITIME EMPIRE

In a series of maps, treatises, and conferences from the 1550s to the 1590s, Dee developed an expansionist program which he called "this British discovery and recovery enterprise." Supporting both the discovery of new lands and the recovery of territories that once arguably belonged to the British crown, Dee gradually claimed for the queen a vast imperial dominion covering most of the seas and much of the land in the Northern Hemisphere.



In the Age of Expansion, according to one of the standard accounts, Dee's "influence . . . can scarcely be set too high." It can, however, be misrepresented, and careful historical reading is needed to do justice to his unique contributions. Dee's "imperial vision" has figured in the work of Yates and her successors; but by isolating it from his writings and activities and by viewing it through Yatesian lenses, they have colored it with two questionable shades. First, it is often assigned a propagandistic role. Yet the forms of Dee's writings and their intended audiences were quite distinct from those normally associated with propaganda. There is no doubt that his rhetoric was thoroughly nationalistic and his praise of the monarch absolute. But his texts were directed inward, to an extremely restricted circle; they were preparatory rather than celebratory; they informed policies more than they spread doctrines.

Second, in its recent incarnations Dee's imperialism has been inflated into a full-blown political, religious, and even mystical mission. In Gwyn Williams's words, Dee was interested in "establishing a quasi-mystical, quasi-scientific, quasi-religious world order, under that British-Protestant fraternity of chivalry . . . [and] the Hermetic, Platonic, and Cabalistic tradition."5 Aside from the general implausibility of a man in Dee's position advocating or even contemplating the establishment of a "world order," these aspirations are closer to Yates's field of vision than Dee's.6 This version of Dee's imperialism goes hand-in-hand with the myth of the magus and, like it, fails to appreciate the complex relationship between religion, politics, the occult sciences, and the New World in his writings and his era. According to Peter French, for instance, Dee had two principal motives for promoting English exploration: first, the Far East "represented one of the great repositories of occult knowledge"; and second, he had "an apocalyptic vision of England's future" that was inspired by a mythical view of England's past.7 Renaissance voyages to the East

WRITINGS

had more to do with the dissemination of Christianity, the acquisition of riches, and a general "cosmopolitical restitution," than with the revelation of occult mysteries. And while Dee did use the "quasi-historical" exploits of King Arthur to glorify Queen Elizabeth, this vision was by no means "apocalyptic"—on the contrary, it was standard Tudor historical practice. Readers like French and Roy Strong have read too much into his imperialist rhetoric: the mythical conquests that charge his pages have all too often taken on mystical coloring.

These points are meant rather to qualify than to nullify Dee's contribution to England's nascent imperialism. As we shall see, during the 1570s in particular no one did more to promote an English "maritime monarchy"9—to put England, in other words, on the map. In 1581, Charles Merbury registered Dee's impact on the geopolitical consciousness of the Elizabethan court: "it is no small comforte vnto an English Gentleman, finding him selfe in a farre countrey, when he may boldly shew his face, and his forehead vnto any forren Nation: sit side by side with the proudest Spagniard: Cheek by cheeke with the stoutest Germane: set foote to foote with the forewardest Frenchman: knowing that this most Royall Prince (her Maiesties highnesse) is no whitte subjecte, nor inferiour vnto any of theirs. But that shee may also (if shee plaise) chalenge the superioritie both ouer some of them, and ouer many other kinges, and Princes more. As maister Dee hath very learnedly of late (in sundry tables {i.e. maps} by him collected out of sundry auncient, and approved writers) shewed vnto her Maiestie, that shee may justly call her selfe LADY, and EMPERES of all the Northe Ilandes."10

In the series of texts that are the subject of this chapter, Dee offered the queen and other courtly readers an "imperial formula" of mathematical simplicity and certainty: "... in Totall Somme, of all the foresayd Considerations, vnited in one: Yt seemeth to be (almost) a Mathematicall demonstration ... for a faesable Policy, to bring or praeserue this Victorious Brytish Monarchy, in a marueilous Security. ..." The formula itself might be represented as: domestic and international security + territorial expansion = an "Incomparable Ilandish Monarchy," this "BRYTISH IMPIRE." The first, and prior, ingredient was a well-ordered commonwealth with defensive force sufficient to secure its boundaries. The second was a process (offensive, potentially, in both senses of the word) of

DEE AND ENGLAND'S MARITIME EMPIRE



geographical discovery and historical recovery—in Dee's felicitous phrase, "this Brytish discovery and recovery enterprise."

It is this program that earns Dee his special place in the history of the British Empire. With it he attempted, albeit mostly in vain, to make the English Renaissance an "Age of Reconnaissance" 13 and through it we can better understand the nature of that Age. The British discovery and recovery enterprise entailed, first, a spatial or geographical reconnaissance. Space was explored and conquered in the names of individuals and rulers. Travel became increasingly integral to Humanist education and service, and monarchs became increasingly dependent upon geographical knowledge for control of their dominions. 14 For his part Dee called for a "Geographicall" or "Cosmographicall Reformation"; and in the foreign policy of Dee and many of his compatriots this reformation was as decisive as the one concerning religion. The Geographical, like the Protestant, Reformation was a matter more of interpretation than of truth: new maps had to be drawn, justified, and enforced, and this required the cooperation of politicians, adventurers, and scholars.

The British discovery and recovery enterprise entailed, further, a temporal or historical reconnaissance. In order to persuade the queen and her council to pursue an imperial policy, as well as to persuade other countries to tolerate it, Dee needed to build his vision on historical foundations. In accordance with Tudor historiographical convention, he amassed a collection of precedents for territorial (re)possession and for empire itself. 15 He confronted no shortage of precedent: "Before ever Elizabethan adventurer set foot in the New World there were five centuries (or more) of precedent stored away in the minds and archives of English officials."16 In his maritime writings Dee used these precedents-ancient and medieval, English and foreign—to picture the British Empire as it "hath bene: Yea, as it, yet, is: or, rather, as it may, & (of right) ought to be. . . . "17 In this clumsy sentence Dee struggles with the appropriate tense of the imperial outlook; and he reminds us that it was as much retrospective as prospective.

Finally, Dee's discovery and recovery enterprise entailed a textual reconnaissance. Richard Schoeck has suggested that, during the Renaissance, textual discoveries were as exciting as geographical discoveries, "the illumination of an ancient author as stirring as the voyages of Vespucci, or Drake, Raleigh, and Frobisher." 18 But in

[Sherman also writes about the importance of Dee's maps, concluding with an emphatic sentence about Dee's role in the birth of the Brisish Empire.]

WRITINGS

cated. Maps were one of a number of instruments of control by landlords and governments; they were spatial emblems of power in society; they were artefacts in the creation of myth; and they influenced perceptions of place and space at a variety of geographical scales." ¹⁴⁶ Cartographical representations, like visual representations in general, had a persuasive power that went far beyond their descriptive functions. It is thus as inappropriate (or irrelevant) to ask of maps as of Arthurian histories whether they are true or false. It is more useful to ask about the use to which they are put; to consider maps "as actions rather than as impassive descriptions." ¹⁴⁷

From the beginning of European imperial enterprise, cartography played an indispensable role. Maps could monitor—and at the same time celebrate—the progress of a monarch's dominions. Such was the purpose of the Spanish padron general: it was "a kind of 'inventory' of the lands discovered, settled, or claimed by Spain" and "was kept up-to-date by continuous addition and correction." 148 Renaissance palaces were often adorned with maps intended to impress the visitor with the extent of a government's territorial power. The best chance to see this practice in action today is at the vast Cartographical Gallery in the Vatican, painted in the sixteenth century and representing the extensive papal dominion. While no examples from the English Renaissance survive. we know that Whitehall Palace had a large picture of fifteenthcentury battles, a sea chart of the whole world, a painting of Palestine, and maps charting and celebrating the great voyages of Sebastian Cabot and Francis Drake. 149 As Victor Morgan points out, "These shared the palace with, among other things, a moor's head in stone . . . , a black metal figure of Moses . . . , musical mechanisms from Cologne, trick mirrors and a clockwork globe."150

It is even more instructive to look at the studies and galleries of Lord Burghley. Burghley's cabinets were not so much spaces for collections of curiosities as for the business of political administration. Thanks to the efforts of R. A. Skelton, we now know that Burghley had an exhaustive collection of maps, which he organized in volumes and annotated thoroughly with practical and administrative details. These volumes survive at Hatfield and Burghley Houses, and in cataloguing them Skelton suggestively called them Burghley's "cartographical commonplace books." 151

DEE AND ENGLAND'S MARITIME EMPIRE

While a number of scholars—most recently and importantly Richard Helgerson¹⁵²—have focused on Queen Elizabeth's relationship to maps, it is Burghley rather than the queen who reveals the ways in which the government's management and colonization of space, ranging from estate surveying to military surveillance, depended upon the use of geographic representations and cartographic intelligence.

Maps could be used to support—to justify through representation—a monarch's imperial claims. On Emery Molyneux's 1592 terrestrial globe, the first printed in England, the queen's arms were superimposed on Atlantis and "were clearly designed to proclaim England's rights to the possession of the American continent north of Florida." But this same globe was also designed to act on the queen; to persuade her to pursue a policy of imperial (specifically naval) expansion. At the presentation of the globe to the queen there was a Florentine observer, Petruccio Ubaldini. In reporting the occasion to the grand duke of Tuscany he wrote, "it must be remembered that the Dedication to the Queen has to be printed with the royal arms and its wording suggests that he gave her the globe to let her see at a glance how much of the seas she could control by means of her naval forces." 153



Dee's maps acted in the same complex ways. Some were guides to mariners, or records of the routes of explorers. Others, such as the one that originally accompanied Limites, were used, like Molyneux's globe, both to support territorial claims on behalf of the monarch and to persuade the monarch herself. Dee's cartographic rhetoric and its role in Elizabethan imperialism emerge most dramatically from the fascinating passage that concludes the first section of Limites. After "reforming" Ortelius' and Mercator's charts of the arctic region around Cathay, Dee maps the Asian and American regions he wishes England to explore onto the queen's body itself: "the single little black circle shown on the left hand side of your majesty's throne, represents Cambalu, the chief city of Cathay. Meanwhile by a wonderful omen (as I hope) the City of Heaven (that is, of course, Quinsay) happens to be located at the middle joint of the index finger which encircles the hilt of your sword. And there are other things, extremely noteworthy, which, as if by Divine will, adorn the surroundings of your imperial seat. For under your Crown (the most glorious in the whole world), almost

WRITINGS

in the middle of it, is concealed an island; once known as Chryse, but now commonly called Japan. . . . Thirdly, at the right side of your Majesty, the coast of Atlantis is pleased to have its place—almost opposite Quinsay. But about the feet of your supreme highness lies the Strait of Anian, which your British subjects, voyaging in the Northern Seas both to the east & the west, were the first to sail through, to the honour of yourself & to the benefit of the common weal. And if those things are true which we have hitherto heard reported, those 4 places which I have named have thus their own geographical symmetry. But concerning these things & others related to them (which are known hitherto to have lain hidden under the shadows of your wings) before the next septenium [?] many wonderful Arcana will be revealed by you, if it pleases, our august & blessed Brytannic Empress, Almighty God willing." 154

This was a bold, graphic, and (to my knowledge) unique way to persuade the queen of her imperial opportunities; and it conveys a vivid sense of Dee at work as an imperial conjurer. Once again, he offers his patron advanced and aggressive geographical scholarship, and enhances it with the rhetoric of revelation: secrets are shared and imperial arcana are disclosed.

Dee was not the only Elizabethan to mobilize cartographic rhetoric in the service of maritime imperialism. In the famous "Armada portrait" Elizabeth's hand rests on a globe, while over her shoulder Spanish ships crash and burn. In the equally famous "Ditchley portrait" the queen stands on a map of England, protecting and in some way embodying her realm. In a Dutch engraving from 1598 she is represented as a map of Europe, holding a sword over the Spanish Armada. 155 But no one went as far as Dee in combining geographical exploration, geometrical symmetry, divine will, and the royal person to justify England's nascent maritime empire.





D. THALATTOKRATIA BRETTANIKI (1597)

In 1597, his seventieth year, Dee had little cause for contentment. His aspirations—both for himself and for his nation—had not been realized, and his years of hard work had failed to purchase him a comfortable retirement. His heyday as England's maritime adviser was long gone and, indeed, his whole mode of life was

Mary E. Hazard analyzes Elizabethan protocol, ceremony, costume, architecture and art, finding there's a lot more going on than what appears on the surface.

SILENT

LANGUAGE

TO TO THE THE THE THE THE THE THE

Mary E. Hazard

UNIVERSITY OF NEBRASKA PRESS

Lincoln and London

{ 174 } POSITION, GESTURE, MOTION, DURATION

It has long been a truism among historians, including specialists in the history of art and technology, that a primary distinction between the Renaissance and earlier history was a new interest in the nature of time and especially in its more accurate scientific measurement.²



LINE AS INTERSECTION { 67 }

It would be mistaken to suggest that modern scientific cartography, unlike that of the Elizabethans, is without bias. The place whereon the mapmaker stands, the surveyor perches, is staked out now as then by interests, interests of which the observer may be unaware, but that none-theless determine what is mapped and how it is rendered. Where one looks, how one sees, how one represents what is seen are also determined by history, and it almost goes without saying that when mapmakers are not copying their predecessors, they are attempting to correct them, inevitably conflating the two efforts. The disparity between modern cartographic conventions and a few Elizabethan examples demonstrates the difference a line can make; the difference indicates the use of line as silent language, a concept that today engages cartographers who are trying to integrate the many kinds of information offered by maps.

Many cartographers compare maps and verbal language, with varying degrees of literal application, and their discussion of the nature of the analogy summarily clarifies also the mode of Elizabethan maps as silent language. Robinson and Petchenik argue that, in a general sense, the term language can refer to mapping, but they disallow a stricter application because language as "discursive symbolism" differs from the "presentational symbolism" of mapping. Although conceding the linear organization of a sentence as opposed to the two-dimensional form of a map, Blakemore and Harley propose that "the concept of maps as language offers the most appropriate underlying structure for the history of cartography." Head supports this view by further arguing that the reading of a map activates the information-processing model of the reading of a linear text. In any case, analogy is not identity, and the objections raised do not gainsay prudent use of the similarity between literal and silent language. Perhaps a more recent definition of map as "any kind of a model of any spatial language" best describes the kinds of maps that served Elizabethan collectors, while also economically paraphrasing the nature of mapping as a silent language.30



Most known medieval and early Renaissance maps were designed, not to convey technical geographical information, but rather for other kinds of didactic purposes. Many world maps show their derivation from the ancient concept of history as an encyclopedic record of persons, places, and times—Hugh of Saint Victor's categories of universal knowledge adapted to pious purposes—and many city views embody the abstract quality of a site rather than its physical data in the practice of "moralized" geography.³¹ Maps and city views continued to serve exemplary and celebratory purposes through the sixteenth century, long after instruments such as the compass, the astrolabe, and the principles of triangulation were known, devices that might have made possible more geographically correct maps and views if scientific accuracy had been the main motive in mapping. It was not. John Dee outlines the scope of contemporary interest in maps:

While, some, to beautifie their Halls, Parlers, Chambers, Galeries, Studies, or Libraries with: other some, for thinges past, as battels fought, earthquakes, heauenly fyringes, & such occurentes, in histories mentioned: therby liuely, as it were, to vewe the place, the region adioyning, the distance from vs: and such other circumstances. . . . To conclude, some, for one purpose: and some, for an other, liketh, getteth, and vseth, Mappes, Chartes, & Geographicall Globes. (Preface to *The Elements of Geometrie* [London, 1570] a.iiij^f)



As Dee suggests, aesthetics, nostalgia, sensationalism, and other motives besides geographical accuracy generated interest in maps, and among these, metaphorical expression was historically foremost. Metaphorical motivations for maps may date back to Roman times, and examples certainly exist from the early Middle Ages through the Renaissance. World maps were generally oriented toward the east and Paradise, and a sixtheentury floor map of the world might be oriented to place the east at the top to coincide with the eastern end of the church, as in Madaba in Jordan; thirteenth-century English world maps include one at Hereford Cathedral whereon a Last Judgment hovers above the map, and another circular representation in a Latin psalter positions Jerusalem at the center of the world.³²

Elizabethans, too, metaphorically expressed ambition or possession through cartographic metaphor. One can only question, along with his biographer, Thomas Howard's motivation for displaying in a wainscot frame a map of the world inscribed within the form of an eagle—no doubt his enemies found it ominous—but there is little doubt about the assertive stance of Elizabeth of England standing upon the globe of the earth, her feet planted upon the map of her kingdom on the Ditchley portrait (fig. 6).³³ Several portraits of Elizabeth embody similar adaptations of ancient symbolic use's of geographical images. When globes appear on other portraits of the queen, they represent a symbolic assertion of power. The globe that appears on the right of the Sieve Portrait (fig. 18) is so highlighted as to feature its maritime images and so positioned as to lie just

In his 1998 book, *Time's Alteration*, Dr. Robert Poole includes a chapter on "John Dee and the Elizabethan calendar" and the reform proposal Dee single-handedly spearheaded.

Unfortunately, the Church of England rejected Dee's sage advice and the English calendar was out-of-sync with the sun, and with European calendars, for the next 166 years.

Time's alteration

Calendar reform in early modern England

Robert Poole

University College of St Martin



CHAPTER FIVE

John Dee and the Elizabethan calendar

As Caesar and Sosigenes, The vulgar kalendar did make, So Caesar's Pere, our true Empress, To Dee this work she did betake.

John Dee, A playne discourse (1583)



John Dee's treatise on the calendar has had a poor press. The historians of the Gregorian reform have had little time for it. Hoskin simply records it as a "favourable verdict" on the Gregorian reform.\(^1\) For North, Dee's astronomy is second-hand and inferior, his treatise "a pale shadow of the Gregorian recommendations", his outlook "excessively insular", his emphasis on the time of Christ rather than the time of Nicaea merely "a very refined form of nationalism", and his agreement to accept a ten-day reformation a sign of a contradictory willingness "to compromise with Rome".\(^2\) Dee's biographers have duly noted the calendar episode but have not followed it up, and this despite the exhaustive attention paid to his mystical obscurities and his marginalia.\(^3\) Understood in context, however, it emerges as the culmination of decades of better-known work on the history and future of the "Brytish empire", and as Dee's last attempt to gain recognition and patronage for his ideas in England before leaving for the continent.

The calendar in context

The part of Dee's *Playne discourse* which deals with the astronomical arguments is not the most significant part, and Dee did not pretend to any special expertise in this area.⁴ Unlike the Gregorian reformers, who envisaged an

TIME'S ALTERATION

integrated calendar in which astronomical and religious subtleties were to be reconciled in a single framework, Dee was quite clear that he was dealing simply with "the vulgar kalendar". As for the issue of Easter, the main motor behind the Vatican's project, Dee hardly saw the problem. Once the vernal equinox was set correctly, it would, he argued, be easy to determine when the next full moon was, and therefore the date of Easter. This matter-of-fact approach, which had no use for the complex *cyclus* traditionally used to calculate Easter, derived in part from a protestant emphasis on the spiritual content of feasts rather than their exact re-enactment. Purely scientific concerns were less important. Nor was Copernicanism an issue, although Dee was happy to use the observations of the Copernican Maestlin. He did not have the work of Clavius to pore over, merely the text of the papal bull.

Freed of such complications, Dee was able to produce his treatise inside three months. The issue of the actual length of the year was disposed of straightforwardly, if at length. Against the Gregorian measurement, Dee set the cumulative wisdom of astronomers from different cultures: the four classical cosmologists Meton, Eudemon, Hipparchus (the original heliocentrist) and Ptolemy, together with the arab Albategnius, the fourteenthcentury Welsh astronomer Simon Bredon, and Copernicus himself. He also emphasized the work of the thirteenth-century English friar Roger Bacon, who had famously lobbied the popes of his day for calendar reform; Dee owned many of Bacon's manuscripts, including copies of his correspondence with the pope and at least one of his calendars. He added a summary of the recent observations of the protestant astronomer Michael Maestlin, tutor of Kepler and critic of the Gregorian reform. Taken together the figures bore out the papal calculations: the Gregorian calendar was a good enough approximation upon which to base the vulgar calendar for millennia to come.

For Dee, as for the Gregorian reformers, correct observations were an essential tool for calendar reform, but they did not on their own dictate a solution. Dee, as we have seen, rejected the Gregorian calendar upon one simple ground: it started from the wrong base, from the time of the first general council of the Christian church rather than from the time of Christ. Between the pope's ten-day reform and Dee's eleven-day one lay a great theological divide. Like the council of Trent, Dee saw calendar reform as part of a much wider agenda. It is this wider vision which is dealt with in the all-important appendix to the *Playne discourse*. The appendix contained Dee's case for an Elizabethan protestant reform of the calendar, and finished with a formal petition to the queen to adopt it.

The widest perspective is revealed in the poem with which Dee concluded the treatise. It may or may not, as North judges, consist of "bad verses" of no scientific value, but it does bring together quite elegantly some of Dee's main concerns, and is worth considering in full.

JOHN DEE AND THE ELIZABETHAN CALENDAR

As Caesar and Sosigenes, The vulgar kalendar did make, So Caesar's Pere, our true Empress, To Dee this work she did betake.

To finde the Dayes superfluous, (which Caesar's false Hypothesis, Had bred; to Nature, odious:) Wherein, he found eleven amyss.

For he, from Christ, Chief Root of time The time did try, by heavenly wit: No Councell dan deme this a crime From CHRIST, to us, tear time to fit.

ELIZABETH our Empress bright, Who in the yere of eighty three, Thus made the truth to come to light, And civile yere with heaven agree.

But eighty foure, the Pattern is Of Christ's birth yere: and so for ay Eche Bissext shall fall little mys, To shew the sun of Christ birth day.

Three hundred yeres, shall not remove The sun, one day, from this new match: Nature, no more shall us reprove Her golden tyme, so yll to watch.

The God of might, our father dere, Whose raying no tyme can comprehend, Good time our Elizabeth grant here And Bliss aeternall, at her ende.

Amen.

The theme of the poem is that of restoring earthly affairs to an original harmony. This happens in several different ways; there are, in all, seven restorations proposed in Dee's short poem, and it will be useful to treat them one by one.

Seven restorations

Dee's first restoration is that of the calendar to its position at the time of Christ. He writes here of "Christ, chief root of time", and elsewhere in the

Poole see the connection between Dee's Calendar reform and his involvement in English exploration. Both projects were on Dee's desk at the same time, a time he envisioned as the beginning of a great new British Empire.

TIME'S ALTERATION

reference in the title of the *Playne discourse* to "accompting, or verifyeng" posits an identity between numbering and truth. The force thus becomes apparent of Dee's claim that his calendar reform "Thus made the truth to

come to light,/And civile yere with heaven agree".



The reformed calendar would have played a significant part in what Seymour has called "a British duty to bring order to a savage world". 17 Here lies Dee's fifth restoration: of Britain to her historic imperial role, under (as the verse has it) "Elizabeth, our Empress bright". All Christendom, Dee believed, would follow "Queen Elizabeth's perpetual calendar", to the advantage of international trade. This would be a matter of more than mere harmony, however. Dee had carefully adjusted his calculations of Christ's birth from the meridian of Bethlehem to that of London, so that "a marvelous Concordance (to our great Confort) may hereafter appear of the like places of the Sun orderly at the London Meridian". 18 This was not merely a protestant or an Elizabethan calendar; it was an imperial calendar. Dee was not the only one of his times to see a link between mathematics and empire. For Thomas Harriot and colleagues, it has been observed, "Mathematics... was part and parcel of the imperialist project of the age". 19 Dee took it farthest. For the full significance of this, we need to look at Dee's historical writings in the preceding years.

Dee has been credited with the popularization, and one of the earliest uses, of the term "British empire". This was well before the union of the crowns of England and Scotland gave the term "British" its modern use; Dee's Britain was the ancient Britain of Arthur, straddling England and Wales. Dee had close contacts with the leading antiquaries of his day. He followed Polydore Vergil in seeing Britain's founding in the landing of Brutus after the Trojan wars. Arthur was the restorer of this ancient empire of Britain, and this empire had in turn devolved by descent upon Elizabeth. Dee and the Tudors shared Welsh origins, and were (Dee believed) distantly related to each other and to Arthur; Dee, appropriately enough, believed himself to be related to the thirteenth-century friar Roger Bacon, whom he dubbed "David Dee of Radik" and who had long ago called upon the pope of the day to reform the calendar.



In 1576–8 Dee had published a four-volume work under the general title of *The Brytish monarchie*, in which he elaborated his imperial case. ²⁰ The well-known frontispiece to *The art of navigation* (1577) carried an image of the "Imperiall Ship" of Christendom, carrying the Empress Elizabeth on a mission to restore her empire through sea power. The same work carried extensive hydrographical tables, entitled "The Brytish Queene Elizabeth, Her Tables Gubernautik", an idea prefiguring "Queen Elizabeth's perpetual calendar". The preface carried an idiosyncratic date which was clearly meant to be of significance: "Anno, Stellae (Cœlo Demißae, rectaq́ Reversae) Quinto: Julii verò, Die. 4. et *Anno Mundi* 5540". ²¹ Historical recovery, geographical expansion and mathematical advance went hand in hand. He

JOHN DEE AND THE ELIZABETHAN CALENDAR

followed this four-volume work by drawing up for the queen her *Titles to far lands*: two manuscript rolls setting out her descent and her title to the empires of Brutus and Arthur. Dee was invited to court to present these in the autumn of 1580, and in an episode foreshadowing the fate of his *Playne discourse*, had found Burghley interested but sceptical. Elizabeth subsequently visited Dee at home to smooth him over and assure him of her and Burghley's appreciation of his work.



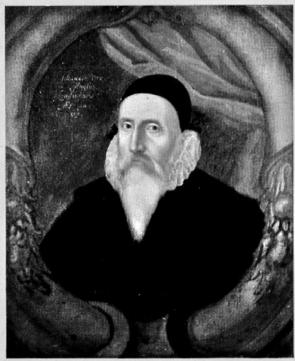
Dee at this period was personally involved in a number of schemes for exploration and recovery, supplying both navigational advice and an ideological rationale.²² He aided Gilbert's plans to colonize north America and (Dee hoped) evangelize the natives; Gilbert, indeed, had ceded to him for his trouble all land beyond 55°N (roughly speaking, Canada). Dee had advised, too, on Drake's circumnavigation; indeed, Drake's return with news of "New Albion" may have inspired his *Titles to far lands*. At the same time as he was working on his calendar treatise, Dee was advising Adrian Gilbert on further explorations. Indeed, when Walsingham dropped by on 23 January 1583 to (we may surmise) retrieve his copy of the papal bull reforming the calendar, he found Dee and Adrian Gilbert mulling over plans for a northwest passage, and joined in with the discussion, which was continued at a meeting the next day. A later letter from Walsingham to Dee about the calendar reform carried a postscript asking to discuss "the grawnt y^t is passd from the Compagnye of Muscovie unto Mr Adrian Gilbert".²³

Dee, in summary, foresaw "an Incomparable Ilandish monarchy" over "all the northern Ilands" (in practice, virtually the entire hemisphere): in a phrase pregnant with meaning, "a Cosmographicall Reformation". Cosmographie", the mapping of the world, had featured in Dee's Mathematicall praeface as an art which "matcheth Heauen, and the Earth, in one frame, and aptly applieth parts Correspondent: So, as the Heauenly Globe, may (in practise) be duely described upon the Geographicall, and Hydrographicall Globe". As Sherman puts it, "no-one went so far as Dee in combining geometrical symmetry, divine will, and the royal person to justify England's nascent maritime empire". The keystone of this whole enterprise was Dee's new and correct Elizabethan calendar, anchored on the London meridian. It was his faith in the British empire as much as his faith in the protestant religion which led him to believe that the Elizabethan calendar would in time be adopted everywhere.

Dee's sixth restoration was that of control of the calendar, out of the hands of the bishop of Rome and into those of a Christian empress, successor and imitator of Constantine. The Julian calendar was "Caesar's false hypothesis", to be corrected by "Caesar's Pere, our true Empress" Elizabeth. The message was obvious to a careful reader: Caesar, a secular dictator, had instituted a false calendar; Pope Gregory, a religious dictator, had reformed it badly; Elizabeth, a just Christian prince, would restore the true calendar, balancing earthly and heavenly imperatives in her policy as she harmonized

Gerald Suster provides an overview of Dee's life and excerpts from his most famous writings.

JOHN DEE ESSENTIAL READINGS



Selected and Introduced by
GERALD SUSTER

CHRONOLOGY

1527	John Dee born in London.
1542-5	Studies at St John's College, Cambridge.
1546	Created one of the original Fellows of Trinity College, Cambridge.
1548-51	Studies at Louvain; visits Antwerp, and lectures on Euclid at Paris.
1551-3	Tutors Robert Dudley, later Earl of Leicester.
1553	Two church livings conferred on Dee by Edward VI.
1555	Imprisoned under Queen Mary on suspicion of casting enchantments against her.
1558	Fixes date for the coronation of Queen Elizabeth I by casting horoscope.
1563	Travels to Antwerp, Zurich, Rome, and Hungary.
1564	Writes Monas hieroglyphica.
1565	Marries Katherine Constable.
1570	Publication of H. Billingsley's first English translation of Euclid, with a celebrated Preface by Dee.
1571	Visits Lorraine.
1575	Marries for the second time.
1576	His (unknown) second wife dies.
1577	Publication of Dee's General and Rare Memorials pertaining to the Perfect Art of Navigation.
1578	Marries Jane Fromond. Visits Frankfurt-on-Oder.
1582	Dee's abortive attempt to introduce the Gregorian Calendar to England. Meets Edward Kelley.
1583-9	Dee, Kelley, and their wives travel in Europe, including periods of residence with the King of Poland and the Emperor Rudolf in Prague. Magic and alchemy are major preoccupations.
1589	Dee and his wife return to England.
1595	Death of Kelley in Prague.
1596	Queen Elizabeth makes Dee Warden of Manchester College.
1605	The Fellows of Christ's College force Dee to relinquish his post.
1608	Death of Dee in poverty and obscurity.

CONTENTS

Chronology Page 7 Introduction Page 9 A Supplication to Queen Mary Page 15 Propaedeumata Aphoristica Page 20 To Sir William Cecil Page 24 From the Monas Hieroglyphica Page 30 The Preface to Euclid Page 37 General and Rare Memorials Pertaining to the Perfect Art of Navigation Page 47 Diaries 1577-83 Page 61 Spiritual Diaries 1583-7 Page 67 The Private Diary 1587 Page 95 Letter to Queen Elizabeth Page 97 Personal Diaries 1589-95 Page 99 The Compendious Rehearsal Page 104 _13_ Letter to the Archbishop of Canterbury Page 112 __14_ Personal Diaries 1600-1 Page 122 _15_ Letter to King James I Page 125 ___16_ A Later Spiritual Diary Page 127 ___17_ Some Opinions of Dee Page 130

INTRODUCTION

Hee had a very faire cleare rosie complexion; a long beard as white as milke; he was tall and slender; a very handsome man . . . he wore a Gowne like an Artist's gowne, with hanging sleeves, and a slitt; a mighty good man he was.

John Aubrey, Brief Lives



UNTIL comparatively recently, John Dee was regarded as an isolated crank on the margin of Tudor history, beyond the pale of serious academic consideration, and of interest only to a small minority of antiquarians and occultists. Even today, the *Encyclopaedia Britannica* gives Dee just one small paragraph of scanty and under-researched information — a sad fate for a man who was revered in his time as the most learned man in all Europe.

Recent years, however, have seen a steady revaluation: the admirable scholarship of the late Dame Frances Yates, for instance, has clearly demonstrated Dee's central position in the history of sixteenth-century thought. The present work is an endeavour to introduce the general reader to this highly complex figure. All who have turned their attention to Dee acknowledge that more scholarship is sorely required. So it is: but a guide for the student who is approaching Dee studies for the first time is equally necessary.

John Dee was born in London on 13 July 1527, the son of Rowland Dee, a courtier in attendance on King Henry VIII. From 1542-5, he studied at St John's College, Cambridge, later writing of this period:

I was so vehemently bent to studie, that for those yeares I did inviolably keepe this order; only to sleepe four houres every night; to allow to meate and drink (and some refreshing after) two houres every day; and of the other eighteen houres all (except the time of going to and being at divine service) was spent in my studies and learning. 1

The 2006 New England Antiquities Research Association monograph,

The Newport Tower: Arnold to Zeno, is chock full of information about the Newport Tower.

William S. Penhallow, professor emeritus from the University of Rhode Island, has updated his 1992 article on the astronomical alignments he found in the windows of the Tower. Though his presentation might at first too scientific for a layman to grasp, it includes some amazing insights.

ASTRONOMICAL ALIGNMENTS IN THE NEWPORT TOWER

WILLIAM S. PENHALLOW

Introduction

Archaeoastronomy provides us with a powerful tool to study the Newport Tower. Possible astronomical alignments in the Tower were first reported as part of the Vinland Revisited 1000 Years of Discovery program that brought three Viking replica ships to Newport in September, 1991. Some of the results of this preliminary study were reported at the 1992 ABC Conference held at Brown University (sponsored by NEARA) (Penhallow et al. 1992a), and at the 23rd Meeting of the Division of Dynamical Astronomy of the American Astronomical Society held in Chicago (Penhallow et al. 1992b). The possible alignments noted in these papers were based on Figures 5, 6, 7, 8, and 16 in Means (1942) and were known to be of limited accuracy. Instead, the reader should familiarize himself with our derivative Figures 1 and 2 (P1 through P8 indicate pillars, W1 through W5 indicate windows, N1 through N7 are niches, and FP is a fireplace).

EXTERNAL ALIGNMENTS

The Committee for Research on Norse Activities in North America A.D. 1000-1500, which was led by Mr. Jørgen Siemonsen of Denmark, commissioned the Technical University of Denmark to do a photogrammetric survey of the Tower. An abridged copy of the Siemonsen Survey, with a computer-drawn guide to the detailed drawings, was presented to the Newport City Council by Siemonsen to be made public for further study. I generated the data for my study of the Tower (Penhallow 1998) from that computerdrawn guide. It showed how carefully the eight pillars were laid out and how they are not oriented to the cardinal points of the compass, but are all rotated three degrees counterclockwise as viewed from above. This makes one think about a camera obscura, where a small hole in the roof of a cathedral is used to produce a meridiana (a meridian line on the floor) (Heilbron The Sun in the Church. 1999:Plate 2). A small hole, above the deep cup mark where W2 is located, could produce a meridiana on the ground (FIGURE 2). It would just miss column #1 located three degrees west of north. Of course there is no other evidence for this. Jim Egan has been doing some very interesting work on possible use of the camera obscura as an astronomy tool.

The declinations of all the alignments were calculated and the most probable identifications made. When I showed an early draft of my work to one archaeoastronomer, he remarked that from the inside of a building with windows, you could get alignments to anything you wanted. With this in mind, let's look at only the alignments that pass through the

Tower and which can be viewed externally from locations in the Park. They are all very well defined. Why the builders used external alignments in addition to the internal ones, I do not know. The alignments and the locations in the Park from which to view them are shown in Figures 3 and 4. For more details see Penhallow (1998).

The first alignment is to the sun at the winter solstice, not on the horizon, but when it has an azimuth equal to the azimuth of the Lunar Major. The sun can be seen shining through it at about 7:30 in the morning around December 21 from **Location 6**.

From Location 8, using a stepladder, you can look through the top of W3 and the bottom of W2 and see the full moon rising on the horizon (azimuth = 129 degrees) at the next Lunar Major (June 11, 2006). From Location 2 you will be able to see the full moon setting at dawn (azimuth = 309 degrees) at the next Lunar Major (December 5, 2006). From Location 5 the Lunar Minor can be observed early in the evening after the moon has risen and the sky is dark. The last one was seen by Doug Schwartz and Jim Egan on December 25,1996. It was also photographed by Jim (Egan 1997:111).

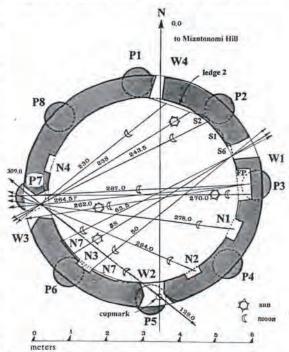


FIGURE 1. HORIZON ALIGNMENTS ON THE FIRST FLOOR.



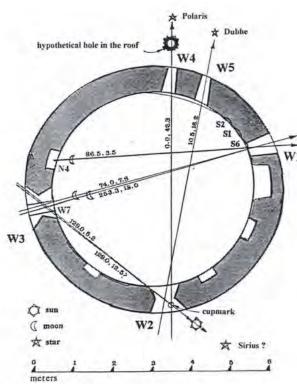


FIGURE 2. 3-D ALIGNMENT.

These four alignments involving the sun and the moon are produced by a very clever placing of the three openings Wl, W2, and W3 in azimuth and in height above the ground. The splaying of the windows also plays an important role: W2 and W3 have significant splaying to facilitate sights through them; W1 is splayed only slightly in such a way as to exclude an alignment between it and W2. Such an alignment would not point to anything significant. These alignments allow you to keep the lunar months in phase with the solar year resulting in a lunisolar calendar. To say that the three openings are randomly placed is simply not logical.

If the sun is seen through W1 and W7 from Location 1, and the full moon is seen through them 12 hours later, you know that the moon is at an extreme. This means that the nodes of its orbit are located near the solstices. This can occur shortly after the Spring Equinox or just before the Autumnal Equinox when the moon's orbit is properly oriented. The sun and the moon must both have a declination of +2.6 degrees. A corresponding phenomenon can occur a short time before the Spring Equinox and after the Autumnal Equinox when the declination of both are -2.6 degrees. At this time the sun can be seen setting a little south of due west and the full moon twelve hours later will be seen setting in the same location. This phenomenon can be observed from the fireplace look-

ing out W3. For a discussion of the other inside alignments see Penhallow (1998:85-96). Keeping track of the nodes of the moon's orbit is a strong indication that the builders were interested in eclipses.

Precession of the equinoxes shows that between A.D. 1200-1600 Dubhe (α Ursa Majoris) could be seen through **W2** and **W5** from **Location 4**. Furthermore, when this occurred, Polaris (α Ursa Minoris) was at upper culmination due north (true). See Brown (1979:201-207) for an excellent discussion with good diagrams. A sighting of Polaris could have been made at **Location 7**, looking through **W2** and a hypothetical hole in the roof, if there were a roof. If one needs evidence that precession was considered in the design of the Tower as it was in church buildings, see Heilbron (1999:156-162).

A sighting through W2 and W4 from Location 3 allows you to see Miantonomi Hill (buildings obscure the view now). On the sill of W2 there are a number of cup marks discovered by Jim Whittall. One is significantly deeper than the others. This is a terrestrial alignment to Miantonomi Hill that defines true north in the daytime for construction purposes. This alignment can also be used with an astrolabe to define the local meridian for observations of the sun at local noon. The alignments discussed above are summarized in Table 1.

All these alignments show ingenuity in their design and skill in their placement. Such an undertaking requires a knowledge of 3-D astronomy and a suitable instrument to lay them out. We are dealing here with more than just horizon astronomy.

LUNISOLAR ALIGNMENTS

Remember that the Tower is essentially a cylinder with arches, sitting on eight pillars. Our FIGURE 1 is a horizontal cross section and shows the location of the four windows W1, W2, W3, and W4 on the first floor above the arches, as well as the niches N1, N2, N3, N4, and N7. In addition, the fireplace FP, ledge 2, and indentations S1, S2, and S6 are indicated. The location of the eight pillars, P1 through P8, is also shown. Horizon alignments with their geodetic azimuths are superimposed (see FIGURES 4 and 5).

Our FIGURE 2 takes the openings W5 and W7 (which are at higher levels) and projects them down to the first floor level. The 3-D alignments with their azimuths and altitudes are shown. The N4→W1 (86.5 [azimuth]; 3.5 [altitude]) sight was carefully determined and found not to be due east as one might judge from Figure 7 in Means. Pictures taken at a spring equinox sunrise show that the sun shining through W1 does not extrapolate back to N4 when allowance is made for a house obstructing the sun in the east. Using the results of our reconstruction, based on the accurate NTPM survey, this alignment turns out to be a lunar extreme of 5.2 degrees



FIGURE 3. SIGHTING LOCATIONS IN TOURO PARK.

north declination. It can be observed in the early morning of April 4 and September 10 when the sun is at this declination shining through W1. The other sights were then determined from our reconstruction. FIGURES 3 and 4 show the location in Touro Park from which to view sights involving pairs of windows.

Lunisolar alignments are given in Table II. Column 1 gives the sight; column 2, the geodetic azimuth of the sight (north is 0.0); column 3, the altitude above the horizon, neglecting refraction; column 4, the declination determined (measured); column 5, the declination theoretical; column 6, the type of alignment. Taking each of the Table II alignments in turn:

BOTW2→W3 (309.0)

This alignment can be seen from the bottom of W2 looking through W3 as well as from Location 2 in the SE corner of Touro Park (see FIGURES 1 and 3). It represents the northernmost extreme of the moon's motion and is called a lunar major. It will occur next in December, 2006, when the full moon will be seen setting through these two windows at dawn.

N2→W3 (294.0)



FIGURE 4. TOURO PARK LOCATIONS.

TABLE 1. EXTERNAL ALIGNMENTS.

OBJECT	PARK LOCATION	SIGHT	AZIMUTH	ALTITUDE	DECLINATION	EVENT
Sun	From Loc 6	W3→W2	129.0	5.2	-23.5	Winter Solstice
Moon	From Loc 8	TOPW3→BOTW2	129.0	0.0	-28.5	Lunar Major
Moon	From Loc 2	BOTW2→TOPW3	309.0	0.0	28.5	Lunar Major
Moon	From Loc 5	W3→W1	74.0	7.8	18.4	Lunar Minor
Moon and Sun	From Loc 1	WI→W7	253.3	18.0	2.6	Lunar Extreme
Dubhe	From Loc 4	W2→W5	10.5	16.2	62 - 67	(A.D. 1200-1600)
Polaris	From Loc 7	W2→Hole (Hyp)	0.0	43.0	89.2	Upper Culm. (1984)
Miantonomi Hill	From Loc 3	W2→W4	0.0	0.0	_	_

The Newport Tower Amold to Zeno

This alignment represents the lunar extreme called the lunar minor, and occurs when the setting full moon illuminates N2 at dawn. The last lunar minor occurred in December, 1996, and was observed by Doug Schwartz and Jim Egan on December 25 of that year (FIGURE 5). The next lunar major moonrise will occur in December, 2006 (see FIGURE 1, and TABLE VII). The sun annually illuminates N2 at sunset on May 14 and July 31 (see FIGURE 1 and TABLE VI).

N7→W1 (50.0)

N7→W1 (58.0)

N7→W1 (63.5)

Niche 7 is a long groove in the SW sector of the inner wall at the same level as W1 (FIGURE 6). It might have had a shelf on which icons of the sun and the moon were placed. The lunar major moonrise, the summer solstice sunrise, and the lunar minor moonrise can be observed from this shelf.

This is also a lunar minor and was seen early in the evening at the full moon in December 1996, from Location 5 in the park. Since the sun is at this declination on May 14 and July 31, it can be seen shining through these windows early in the morning from this location on those dates (see FIGURES 2 and 3, and TABLE VI).

NI→W3 (278.0)

This is a lunar extreme associated with the equinoxes. At such time the full moon would illuminate N1 at dawn. Since the sun is at this declination on April 4 and September 10, N1 will be illuminated at sunset on these dates (see Figure 1 and Table VI).

N4-W1 (86.5; 3.5)

This is the same lunar extreme as N1→W3, but the full moon would be seen rising early in the evening, illuminating N4. The sun can be seen illuminating N4 early in the morning on April 4 and September 10 (see Figure 2 and Table VI).

W3→W1 (74.0; 7.8)

TABLE IL IDENTIFIED LUNISOLAR ALIGNMENTS

SIGHT	AZIMUTH (Geodetic)	ALTITUDE	DECLINATION (Measured)	DECLINATION (Theoretical)	TYPE of ALIGNMENT
BOTW2→W3	309.0	0.0	28.2	28.6	Lunar major
N7→WI	50.0	0.0	*	28.6	Lunar major
N7→W1	58.0	0.0	*	23.5	Summer solstice
N7→W1	63.5	0.0	19.5	18.4	Lunar minor
N2→W3	294.0	0.0	17.7	18.4	Lunar minor
W3→W1	74.0	7.8	17.8	18.4	Lunar minor
N1→W3	278.0	0.0	6.0	5.2	Lunar extreme
N4→W1	86.5	3.5	5.2	5.2	Lunar extreme
W1→W7	253.3	18.0	2.2	2.6	Lunar extreme
SFP→W3	270.0	0.0	0.0	0.0	Equinoxes
FP→NW3	267.0	0.0	-2.2	-2.6	Lunar extreme
FP→CW3→HOR	264.5?	0.0	-4.1	(Need to study horizon?)	
FP→SW3	262.0	0.0	-5.9	-5.2	Lunar extreme
S2→W3	243.5	0.0	-19.8	-18.4	Lunar minor
W3→W2	129.0	5.3	-23.6	-23.5	Winter solstice
L2→W3	238.0	0.0	*	-23.5	Winter solstice
L2→W3	230.0	0.0	*	-28.6	Lunar major
TOPW3→W2	129.0	0.0	-28.2	-28.6	Lunar major

*Simply drawn in where icons of the sun or the moon might have been located.



FIGURE 5. MOONRISE SHOWING LUNAR MINOR STANDSTILL.

W1→W7 (253.3; 18.0)

This is a lunar extreme at declination 2.6, which can occur when the sun is also at 2.6 declination. When this occurs, both the sun and the full moon will pass through this alignment (roughly 12 hours apart). Since the sun is at this declination on March 28 and September 17, it will shine through these windows in the afternoon on those days and be seen from Location 1 (see Figures 2 and 3, and Table VI).

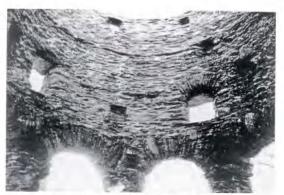


FIGURE 6. SOUTHWEST SECTOR OF THE INNER WALL.

SFP→W3 (270.0) FP→NW3 (267.0) FP→CW3→HOR (264.5?) FP→SW3 (262.0)

One notices that the azimuth defined by the center of the fireplace and the center of W3 is 264.5 degrees, very close to the azimuth of the hill BM120 on Jamestown (Conanicut) Island. In addition, one notices that the back of the fireplace is wider than the aperture defined by W3. This is the most complicated sight, probably involving both backsights and foresights. If one is located south of the center of the fireplace, the northern edge of W3 would be at 270 degrees and mark the equinoxes. The illumination of the fireplace could, of course, be seen at sunset on March 21 and September 23. There could also be a feature on the horizon that might be used for this purpose. The sweep from one side of the fireplace to the other allows for a range of 0 to -5.9 degrees in declination to be observed either in foresight and/or backsight. A very interesting sight works as follows: when the sun is at -2.6 declination and the full moon is also at -2.6 degrees (at a lunar extreme), the moon will set at the same location on the horizon as the sun. Both the sun and the full moon will fully illuminate the fireplace when they set individuallyvery auspicious occasion.

The usefulness of such an arrangement is suggested in the layout of the ground floor of the Østerlas round church in Bornholm, Denmark, where the altar replaces the fireplace (Penhallow et al. 1992a). An astronomical alignment at an upper level of the Østerlas church has already been videotaped (Whittall 1993a). The round churches on the island of Bornholm might be the prototypes for the Newport Tower. The converts who built those thirteenth century churches may have incorporated in their architecture a long pagan astronomical tradition. Remember, Christianity was not well established in Scandinavia until quite late. Prytz (1991: 211) says that according to Rafn the ruins of three round buildings have been found on Greenland. We should not forget that Greenland had many churches, a bishop, a cathedral, and several monasteries by the thirteenth century. Perhaps the time may be ripe for a study entitled Astronomy in the Service of Christianity, to borrow from King (1994).

When the sun is at -5.2 and the full moon is at 0.0 (a lunar extreme), each can be seen setting individually from the fireplace. The sun is at -5.2 degrees on March 8 and October 7. The sun illuminates the northern half at sunset and the full moon illuminates the southern half at sunrise (see Figure 1 and Table VI).

S2→W3 (243.5)

This is a lunar minor alignment and which occurred with the full moon setting at dawn in June, 1997. The sun can be seen illuminating S2 on both January 28 and November 15 at sunset (see Figure 1 and Table VI).

W3-W2 (129.0; 5.3)

This is a winter solstice alignment that can be seen from Location 6 on December 21 (see Figures 1 and 3 and Table VI).

L2→W3 (238) L2→W3 (230)

These alignments seem to mirror N7→W1. The ledge is probably used in the same manner as the shelf of N7. The winter solstice and the next lunar major, with the full moon setting at dawn in December, 2006, can be observed from the ledge (see Figure 1 and Table VI).

TOPW3→W2 (129.0)

This alignment can be seen from the top of W3 looking through W2. It is a lunar major and can next be observed with the full moon rising in June, 2006 (see FIGURE 1).

UNIDENTIFIED SIGHTLINES

The sightlines listed in Table III are a clear indication that more work needs to be done. Someone knowledgeable about practical astronomy might be able to shed some light on their significance.

THE ASTROLABE

Two important astronomical instruments of the Middle Ages were the astrolabe and the universal ring dial (see Swarup, Bag, and Shukla (1987: 227); Waugh (1973:157); Toomer (1984:217); and Neugebauer (1975:866, s71). To construct such instruments out of wood with simple tools, see Fisher (1995:22, 55). Evidence exists that an astrolabe made it to North America in the fourteenth century.

The theory of stereographic projection (of a sphere onto a plane) was developed by the Greeks and

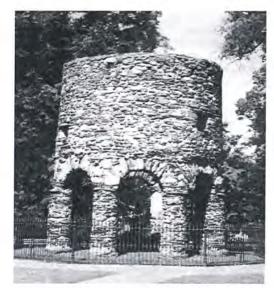


FIGURE 7. NEWPORT TOWER, C. 1860. W2 IS ON THE LEFT AND W1 ON THE RIGHT. PROVIDED BY JOHN HOPF

used in an instrument improved upon by the Arabs called the astrolabe (FIGURE 8). All this was lost to the Latin west during the Dark ages until contact between the Arabs and the Christians was made in Spain. Pope Sylvester II, an able mathematician who studied in Spain, introduced the astrolabe and Arabic numerals to the West at the turn of the millennium. At first the astrolabe was used to measure vertical and horizontal angles and to tell time. Greek treatises on the sphere were not translated until the middle of the 1200s. It took a while before this information became available in suitable texts for students in cathedral schools that were then becoming universities. Hence, it must have taken a while before many became proficient in the use of the instrument for 3-D work. This probably occurred around A.D. 1300. Therefore, it's unlikely that the Tower is older than this. McCluskey's Astronomies and Cultures in Early Medieval Europe (1998) is an excellent reference for this material.

TABLE III. UNIDENTIFIED SIGHTLINES

SIGHT	AZIMUTH	ALTITUDE	DECLINATION	TYPE OF ALIGNMENT
N7→W5	40.0 to 19.5	0.0	56.1 to 62.0	?
N2→W4	350.0	0.0	47.5	?
N7→W4	46.5 to -11.0	0.0	40.0 to 47.3	?
N3→W1	53.0	9.2	34.7	?
N4→W2 142.0		0.0	-36.2	?
FP→W2 218.0		2.2	-34.1	?

The Newport Tower Arnold to Zeno

Kirsten Seaver (1996:113-158) presents a summary of her thinking about the demise of the Western Settlement in Greenland. She mentions an English Minorite (Franciscan) friar who is said to have voyaged to Greenland and to have explored further north. The English scholar E.G.R.Taylor recounts a report that in 1364 eight people, including two priests, one of whom was carrying an astrolabe, were visiting the Norwegian king and his court in Bergen. That priest told the king that he had been given the astrolabe by an English Minorite who was an accomplished astronomer and mathematician from Oxford who had gone to Greenland from England in 1360. There seems to be good evidence that the Minorite had sailed across the Davis Straight and had reported on shipbuilding activities in Markland (thought to be Lab-



FIGURE 8. ASTROLABE.

rador or Nova Scotia). It is very likely that this person was the astronomer Nicholas of Lynn. Hence, we have evidence of an astrolabe—in very competent hands—that made it to North America in the fourteenth century.

Both the astrolabe and the universal ring dial were normally held so as to hang vertically (plumb) and be rotated in azimuth around the vertical axis. The astrolabe had sights so that vertical angles could be measured. The universal ring dial had a thin metal "bridge" with a slit in it that allowed the sun to shine through and strike a ring where the time of day could be read. According to Pedersen (1993:231), an anonymous astronomer at Roskilde, Denmark in A.D. 1274

was one of the first people in Europe to measure the altitude of the sun at noon every day of the year by means of an astrolabe. By using trigonometrical methods garnered from the Arabs, the astronomer applied the data to compute the length of day, which he noted daily in a calendar. It might be interesting to mention here a statement due to a Harald Akerlund (Demerliac 1988:51):

"One saga mentions a man, Oddi Helgason, who was known as 'Star Oddi' and who served as long-distance pilot for an Icelandic magnate toward the end of the 900s. He left notes that included a complete table of the changes in declination of the sun throughout the year, expressed as the height of the sun on the meridian in semi-diameters. There is also a small table of azimuths giving the direction at different times of the year, of dawn twilight, defined as being a faint band of light on the horizon, visible before sunrise. We know nothing of the instrument used to measure the altitude of the sun."

Kare Prytz (1991:14) also mentions astronomical "Rim" tables associated with the old Norse navigational system dating back to the 900s. The astrolabe and the Ring dial may well have been used to determine the time to observe the canonical offices of the Church which date back to the seven prayers of early Syrian Christianity, which in turn were based on the Old Testament (Psalm 119, vs. 62, 164) (see Whone 1990:32). The times of prayer for the Muslims have the same origin. To see the close ties between astronomy and religion, one should consult King (1994). Looking at N3-WI, N4-W2, and FP→W2, one notes an average value of declination ± 35 degrees. Could this have something to do with the observation of solar halos near the solstice? According to Minnaert (1954: 190), if you keep a close watch on the sun, you can expect to see a halo every four days on the average. See Cyr (1997) for a discussion on halos associated with Stonehenge.

STELLAR ALIGNMENTS

Alignments W3→W1 (74.0; 7.8), N4→W1 (86.5; 3.5), W1→W7 (258.5; 18.0), and W3→W2 (129.0; 5.3) provided the first clues to the 3-D design of the Tower (see FIGURE 2). The alignment W2→W5 (10.5; 16.2) to Alpha Ursae Majoris (Dubhe) at the time of upper culmination of Polaris was then discovered, and the connection with the horizontal north-south alignment W2→W4→HOR (0.0; 0.0) was appreciated (see FIGURES 1 and 2).

The perimeter of the W2 and the center of W5 define an area of the sky roughly 5.1 degrees by 5.7 degrees (azimuth x altitude) centered at 10.5; 16.2. Precession of the equinoxes affects Dubhe and Polaris in such a way that the azimuth of Dubhe when Polaris is at upper culmination changes by

less than a degree in the period A.D. 1200-1600. During the same period, the altitude changes by less than two degrees (see TABLE IV).

When Dubhe was seen through W2→W5 by an observer at Location 4 (during the period A.D. 1200-1600), Polaris was at its highest point in the sky due north. A sighting of Polaris with an astrolabe would then establish the local meridian. An error of one-third the width of W3 produces an error of twenty minutes in determining the hour angle of Dubhe. With Polaris at four degrees from the pole in A.D. 1400, this method produced an error of less than 0.3 degrees in azimuth. Hence, the builders had an accurate method of establishing the meridian at night (they probably used W2->W4->Miantonomi Hill in the daytime). Perhaps someone knowledgeable about medieval surveying or town layout could comment on this. Market crosses were located at the center of many English towns. One, octagonal in shape, with eight pillars, marks the center of Wymondham in Norfolk where wool merchants plied their trade (see Mottram 1948:190). Modern land surveyors and geodesists with theodolites use Polaris to determine azimuths with great accuracy. Tables for this purpose are found in the Astronomical Almanac (1992:862).

It should be noted that an instrument known as a "nocturnal" was developed in the 1200s. It made use of Polaris and the pointer of the Big Dipper to tell time at night (see Fisher 1995:60).

To test the visibility of Dubhe through W2→W5, a scale model of the Tower was used at a dark location. When the roof and a floor are added to the model, one immediately realizes that the interior of the Tower must have been jet black at night. The opening W5 in the model, with night sky illumination, was clearly visible against such a background. When an observer and the model were properly oriented,

TABLE IV. LOCATION OF DUBHE FOR UPPER CULMINATION OF POLARIS

EPOCH (A.D.)	HOUR ANGLE	DECLINATION	AZIMUTH/ ALTITUDE (Geodetic)
1200	13 47 40	65.9	11.3 19.4
1300	13 45 28	65.4	11.3 18.8
1400	13 44 11	64.9	11,3 18.3
1500	13 44 08	64.4	11.5 17.9
1600	13 45 58	63.9	11.9 17.5
1700	13 50 51	63.3	12.6 17.1
1800	14 01 33	62.8	14.0 17.1
1900	14 25 16	62.3	16.8 17.8
2000	15 28 07	61.8	23.6 21.5

Dubhe was readily seen. The limited size of the windows in the Tower also improved the chances of seeing the sun and the moon illuminate the various niches. As the Tower was once completely covered with a white plaster cement, observers may have closed shutters on the windows (those not being used) to enhance the contrast.

The hypothetical alignment **W2** \rightarrow **HI** (0.0; 42.3) to the North Star through the roof of the tower was then added. Finally, it was realized that Sirius could be sighted through **W3** \rightarrow **TOPW2** (129.0; 12.5) and that this might have been intentional (see Table V).

DISCUSSION

The sun and the moon have played an important role in the lives of mankind for tens of thousands of years. Rock art, bone incisions, calendar sticks, standing stones, stone circles, Stonehenge, stone chambers, kivas, earth lodges, ziggurats, temples, churches, mosques, and modern observatories all provide evidence of the universality of such a role. How does the Newport Tower fit into that role?

If one accepts an A.D. 1500-1630 dating of the Tower (Newport Tower Photogrammetric Measurement), the astronomical concepts used in its design and construction would probably predate the influence of Tyco Brahe, Kepler, and Newton. The technology available to the builders is most likely that of the Middle Ages (A.D. 1100-1500). The astronomy of that time was primarily Ptolemaic with some improvement in practice from India and the Arab world. Ptolemy was indebted to the Babylonians who had complete lunar eclipse records going back to Nabonassar (747 B.C.). These records provided accurate data for Ptolemy's development of a theory of the moon's motion.

One should realize that the motivation for the development of a theory of the motion of the moon is the calendar (Neugebauer 1962:106). The month begins when the thin crescent moon is first seen in the west after sunset. Predicting when this important event will occur has been of crucial importance to many civilizations (King 1991:223). To solve the problem, an analysis of the motions of both the sun and the moon are required. The solution which the Babylonians produced (Neugebauer 1962:117) not only gave you first visibilities of the crescent moon, but lunar eclipse predictions as well! Thus, we see how closely eclipses and the calendar are related.

TABLE V. ALIGNMENTS ASSOCIATED WITH STARS

SIGHT	AZIMUTH	ALTITUDE	DECLINATION	OBJECT	TYPE
W2→W4→HOR	0.0	0.0	48.5	Miantonomi Hill	Due north (HOR)
W2→W5	0.5	16.2	62 to 67	Dubhe	Upper culmination of Polaris
W2→H1*	0.0	42.3 (1994)	89.2 (1994)	Polaris	Upper culmination
W3→TOPW2	129.0	0.0 to 13.8	-27.5 to -15.4	Sirius?	Calendar**

^{*}H1 = Hypothetical hole in roof

In 1900, F. X. Kugler (Neugebauer 1962:142) showed that eclipses were computed in the Seleucid period (beginning in 331 B.C.) by the Babylonians from a careful analysis of the latitude of the moon (angle above or below the ecliptic) at the time of new and full moons. This angle results from the inclination of the moon's orbit to the ecliptic (yearly path of the sun seen against the background stars). The orientation of the moon's orbit regresses (moves westerly along the ecliptic) with a period of 18.61 years. The inclination and regression produce the extremes known as the lunar major and the lunar minor often associated with the solstices. We see alignments to these extremes in the Tower and at many other sites in the world. In Newport, alignments to the horizon and in 3-D allow the observer to view lunar extremes at and near the equinoxes as well.

If a full moon is observed at or near a lunar extreme, then an eclipse is likely to occur three months (or ninety degrees) later. See Brown (1976:115-136) for a discussion of eclipses from an archaeoastronomical point of view. The lunar extreme indicates the location of the antinode of the moon's orbit (the position along the ecliptic where the moon's latitude is \pm 5.2 degrees) from which the location of the nodes can be inferred. In three months the full moon will be located near a node where the sun, the earth, and the moon line up in 3-D to produce an eclipse. The location of the ascending node of the moon's orbit on December 31, 1991, according to the Astronomical Almanac (1992), was 279.85 degrees west of Aries or in the center of Sagittarius and moving westward at .05295377 degrees per day, or about 1.5 degrees per lunation.

The presence of the hill (BM120) on Jamestown at an azimuth 265 degrees and Miantonomi Hill due north was pointed out by Mavor (1992). The former is associated with the alignment FP→W3 and the latter with W2→W4. Jim Whittall (1993b) discovered a pattern of cup marks on the stone at the base of W2. The deepest cup mark (nine inches west

of the east side) and Miantonomi Hill define the accurate north-south sight through W2—W4. The association of cup marks with solar alignments at ancient sites has been noted by a number of investigators (MacKie (1988:220); Simpson and Thawley (1972:99); Gelling and Davidson (1969:103); and Morris (1969:51)). See Streit (1984:47-50) for a discussion of sun signs, drill holes, and solstice fires. The use of this north-south alignment for meridian observations in all likelihood determined the location of the Tower and explains why it was not built at the top of the hill near the art museum, which is twenty feet higher in elevation. Had it been built there, it would not be due south of Miantonomi Hill.

If you held an astrolabe above the cup mark on the outer portion of the bottom of W2 and sighted Miantonomi Hill, you could establish an accurate north-south line from the outside of the Tower. The sun at local noon could then be shot from the inside of the Tower. A universal ring dial might also be held there to determine the time of day. Reid (1993) suggested that the overhang at the top of the pillars on the outside might have supported a walkway around the Tower for observational purposes. At night when Alpha Ursa Majoris (Dubhe) was seen through W2→W5, Polaris was at upper culmination due north. Again holding the astrolabe above the cup mark, you could have sighted through a hypothetical hole in the roof to accurately establish the north-south line for meridian observations.

The use of the North Star for accurate alignment can be seen in the fourteenth century sundial depicted in Pedersen (1993:154). With Polaris at upper (or lower) culmination, the user sights through a hole on the north side of the device. When the north star is eclipsed by a plumb-line suspended from the top of the unit, the sundial is secured. It is then accurately aligned and ready for use the next day. Another example is depicted in *The Viking Compass* by Vebaek and Thirslund (1992:39) where a bearing dial is oriented by the north star for navigation (setting a course) at night.

^{**} Neugebauer (1975:598) states, "...of astronomical criteria, equinoxes and solstices are not well defined for primitive means of observation; obviously the heliacal risings and settings of bright stars or conspicuous constellations provide a much better guide for the steady progress of the solar year." There is a good chance that Sirius was used to keep a check on the lunisolar calendar. Remember that a lunisolar calendar based on a 19-year intercalation scheme gets out of whack about one day in 310 years.

TABLE VI. LUNISOLAR ALIGNMENTS VIEWED BY USING THE SUN

DAY	DECLINATION	SIGHT	SUN SHINING THROUGH	ILLUMINATING	APPROX. TIME EST / (EDT)
JAN 28	- 18.4	S2→W3	W3	S2	4:53 р.м.
MAR 8	- 5.2	FP→SW3	W3	NFP	5:42 р.м.
MAR 14	- 2.6	FP→NW3	W3	CFP	5:50 р.м.
MAR 21	0.0	SFP→W3	W3	SFP	5:56 р.м.
MAR 28	2.6	W7→W1	W7 & W1	LOC #1	4:31 р.м.
APR 4	5.2	N4→W1	W1	N4	5:51 а.м.
APR 4	5.2	N1→W3	W3	N1	6:12 р.м.
MAY 14	18.4	N7→W1	W1	WN7	(5:24 а.м.)
MAY 14	18.4	W3→W1	W3 & W1	LOC #5	(6:20 а.м.)
MAY 14	18.4	N2→W3	W3	N2	(7:58 р.м.)
JUN 21	23.5	N7→W1	W1	N7	(5:07 A.M.)
JUL 31	18.4	N7→W1	W1	WN7	(5:35 а.м.)
JUL 31	18.4	W3→W1	W3 & W1	LOC #5	(6:31 а.м.)
JUL 31	18.4	N2→W3	W3	N2	(8:05 р.м.)
SEP 10	5.2	N4→W1	W1	N4	(6:42 а.м.)
SEP 10	5.2	N1→W3	W3	N1	(7:03 р.м.)
SEP 17	2.6	W7→W1	W7 & W1	LOC#1	(5:20 р.м.)
SEP 23	0.0	SFP→W3	W3	SFP	(6:40 р.м.)
SEP 30	- 2.6	FP→NW3	W3	CFP	(6:28 р.м.)
OCT 7	- 5.2	FP→SW3	W3	NFP	(6:16 р.м.)
NOV 15	- 18.4	S2→W3	W3	S2	4:22 р.м.
DEC 21	- 23.5	W3→W2	W3 & W2	LOC #6	7:35 а.м.
DEC 21	- 23.5	L2→W3	W3	L2	4:14 р.м.

What could the purpose of the Tower have been? Possibly to provide the necessary information to determine the proper times and dates of religious observances. A religious building of this kind could have been the focus of activity for a group of Europeans seriously intent upon colonization since it represents a considerable expenditure of time and effort.

It is unlikely that Europeans arriving after A.D. 1500 would have erected a building to obtain information which was readily available in printed almanacs. Gutenburg had invented the printing press around A.D. 1450, and by A.D. 1500,

almanacs were available which provided religious calendars and other astronomical information. Moreover, on his fourth voyage, Columbus forced the reluctant West Indian natives to supply him with provisions by threatening them with an eclipse of the moon on the night of February 29, 1504 (Liu and Fiala 1992:142). According to Morison (1942:654), Columbus had aboard ship a copy of Regiomontanus' *Ephemerides* printed in Nuremberg toward the end of the fifteenth century. Neugebauer (1975:185) states that Columbus used Abraham Zacuto's *Almanach Perpetuum* printed at Salamanca. Thus, it is far more likely that the Europeans arriving after A.D. 1500 would

TABLE VII. NEXT LUNAR MAJOR

Dec 2006	Bottom W2→W3	Full moon	From LOC #2	Setting at dawn
----------	--------------	-----------	-------------	-----------------

The Newport Tower Arnold to Zeno.

have built a typical sixteenth century church or chapel as a central focus for their activity. Without further investigation we cannot rule out the possibility that this Tower (structure) was part of a pre-Columbian settlement established by a determined group of northern European Christians.

I hope this paper will invite constructive criticism and open new avenues of research. Early Sites Research Society conducted a ground-penetrating radar survey of Touro Park where the Tower is located. The survey was used as a guide for test borings which located the foundation of a structure northwest of the Tower, according to Whittall (1995b). Hopefully, someday a new comprehensive archaeological dig will be performed.

NOTE

Solar Azimuths — Accurate azimuths determined by sunbeams defined by the vertical edges of windows WI, W2, W3, W7, and the eight pillars were used to better locate some features of the Tower. By knowing the date and the time to the nearest minute, the following relation was used:

 $\tan Z = \sin(t)/[\sin(\phi)\cos(t)-\cos(\phi)\tan(d)]$ where $Z = \sin's$ azimuth measured from the south $t = \sin's$ hour/angle measured westward from the south $\phi = \text{your latitude}$ $d = \sin's$ declination

See Waugh (1973:6-17, 139, 205-206) for details and the necessary Tables. To watch the sun peek out around an edge you can use inexpensive eclipse glasses made with aluminized mylar to protect your eyes. These can be obtained from ABELexpress (1994).

ACKNOWLEDGMENTS

The author would like to thank the following:

Dr. Jurgen Stock of CIDA (Venezuelan National Observatory) and Dr. Arthur Upgren of the Van Vleck Observatory, Wesleyan University, for their useful suggestions and continued support; John Dawson, the Assistant Director of the Frosty Drew Observatory for his assistance; Cindy Ray, John Penhallow, and Joseph Dotolo for their help; Henry H. Anderson, Jr., for pointing out the usefulness of solar azimuths; the late Jim Whittall, III, for sharing his knowledge and enthusiasm; and finally, my colleague Mike Brennan of Newport for getting me into this.

BIBLIOGRAPHY

Biddle M., G. Avni, J. Seligman, T. Winter, M. Zabe, and G. Nalbandian. 2000. The Church of the Holy Sepulchre. New York: Rizzoli International Publications, Inc.

Brown, Lloyd A. 1979. The Story Of Maps. New York: Dover Publications, Inc.

Carlson, Suzanne O. 1996. "Tilting at Windmills: The Newport Tower." NEARA Journal Vol. 32, No 2.

Egan, James. 1977. "Newport Tower Moon Struck Christmas Night 1996." NEARA Journal Vol. 31, No 2. Ferryn, Patrick. 1998. "A European View of Diffusion and Transoceanic Contacts before 1492." Across Before Columbus? Edgecomb, ME: NEARA.

Fisher, Dennis. 1995. Latitude Hooks and Azimuth Rings. Camden ME: International Marine.

Fitzhugh, W.W. and E.I. Ward, Editors. 2000. Vikings: The North Atlantic Saga. Washington: Smithsonian Institution Press.

Fitzhugh, W.W. 2001. Reply to Don Gilmore. NEARA Journal Vol. 35. No. 1.

Gelling, P. and H. E. Davidson. 1969. Chariot of the Sun and Other Rites and Symbols of the Northern Bronze Age. New York: Praeger.

Gibson, Alex. 1998. Stonehenge & Timber Circles. Stroud, Gloucestershire: Tempus Publishing Limited.

Gordon, Cyrus H. 1974. Riddles in History. New York: Crown Publishers, Inc.

——. 2000. A Scholar's Odyssey. Atlanta: Society of Biblical Literature.

 Hanson, Barry J. 2002. Kensington Runestone: A Defense of Olaf Ohman-The Accused Forger. Kearney, NE: Morris Publishing.
 Heilbron, J. L. 1999. The Sun in the Church. Cambridge, MA: Harvard University Press.

Jacobi, O., D. Dueholm, and J. Hertz. 1992. Newport Tower: Photogrammetric Measurement. Copenhagen: Technical University of Denmark and Danish National Museum.

King, David A. 1991. "Lunar crescent visibility predictions in medieval Islamic ephemerides." In Arabic and Islamic Studies in Memory of Malcolm H. Kern. S. Seikaly, R. Baalbaki, P. Dodd, eds. Beirut: American University of Beirut.

——. 1994. Astronomy in the Service of Islam. Brookfield VT: Ashgate Publishing Company.

Krupp, E. C. 1996. "Merging traffic on the ecliptic." pp. 60-61. In Sky and Telescope, April.

Landsverk, O.G. 1974. Runic Records Of The Norsemen In America. Erik J. Friis, Publisher. New York: Irvington Press.

Lindberg, David C. 1992. The Beginnings of Western Science. Chicago: The University of Chicago Press.

Liu, B. L. and A. D. Fiala. 1992. Canon of Lunar Eclipses, 1500 B.C. - A.D. 3000. Richmond VA: Willmann-Bell, Inc.

Marshak, Alexander. 1991. The Roots of Civilization. Mount Kisco, NY: Moyer Bell Limited.

Mavor, James W., Jr. 1992. Personal communication.

MacKie, E. W. 1988. "Investigating the prehistoric calendar," pp. 206-231. In Records in Stone, Papers in Memory of Alexander Thom. C. Ruggles, ed. Cambridge: Cambridge University Press

McCluskey, Stephen C. 1998. Astronomies and Cultures in Early Medieval Europe. New York: Cambridge University Press. Means, Philip A. 1942. Newport Tower. New York: Henry Holt and Company.

Menzies, Gavin. 2002. 1421 The Year China Discovered America. New York: HarperCollins Publishers, Inc.

Minnaert, M. 1954. Light and Color in the Open Air. New York: Dover Publications, Inc.

Monge, A. and O.G. Landsverk. 1967. Norse Medieval Cryptography in Runic Carvings. Glendale CA: Norseman Press.

Morris, R. W. B. 1969. "The cup-and-ring marks and similar early sculptures of southwest Scotland, Part 2," pp. 37-76. In Transactions of the Ancient Monuments Society 16.

Morison, Samuel E. 1942. Admiral of the Ocean Sea. Boston:

Little Brown & Company

Mottram, C. Henry. 1948. "Norfolk," pp. 183-194. In The English Counties Illustrated. C. Joad, ed. London: Odhams Press Ltd.

Neilson, R. and Wolter, S. 2002. Oral Paper "The Kensington Runestone." NEARA ABC?+Ten Conference held in Waltham, Massachusetts, November 1-3, 2002.

Neugebauer, O. 1962. The Exact Sciences in Antiquity. New York: Harper & Brothers.

. 1975. HAMA (A History of Ancient Mathematical Astronomy). New York: Springer-Verlag.

"Newport Tower Photogrammetric Measurement." 1992. Copenhagen: Technical University of Denmark, Danish National Museum.

Payn, Marshall. 2002. "Ancients and Longitude: Did They Know It?" NEARA Journal, Vol. 36, No. 1, p. 25.

Pedersen, Olaf. 1993. Early Physics and Astronomy. Cambridge: Cambridge University Press.

Penhallow, William S. 1978. "Notes on a 16-inch Astrometric Reflector." Sky and Telescope Magazine, November, Vol. 56, No. 5, p. 455.

——1998. "Astronomical Alignments in the Newport Tower." In Across Before Columbus? Edgecomb, ME: NEARA.

Penhallow, William S., Michael J. Brennan, and Cynthia J.
Ray. 1992a. The Archaeoastronomy of The Old Stone Tower,
Newport, Rhode Island. A paper prepared for distribution at the
NEARA ABC Conference at Brown University, June 18-21.
Physics Department, University of Rhode Island, Kingston, RI.

Penhallow, William S., Michael J. Brennan, Cynthia J. Ray, A.Upgren, and J. Stock. 1992b. The Archaeoastronomy of the Old Stone Tower, Newport, Rhode Island (abstract). A paper presented at the 23rd Meeting of the Division of Dynamical Astronomy of the American Astronomical Society, Chicago IL, December, 1992.

Prytz, Kare. 1991. Westward Before Columbus. Oslo: Norsk Maritimt Forlag A/S.

Ritchie, Anna. 1993. Viking Scotland. London: BT Batsford, Ltd. Ruggles, Clive. 1999. Astronomy in Prehistoric Britain and Ireland. New Haven: Yale University Press.

Reid, William. 1993. Personal communication.

Seaver, Kirsten A. 1996. The Frozen Echo. Stanford, CA: Stanford University Press.

Siemonsen, Jørgen. 1993. Newport: Public press conference, September 22.

 Simpson, D. D. A. and J. E. Thawley. 1972. "Single-grave art in Britain," pp. 81-104. In Scottish Archaeological Forum 4.
 Streit, Jakob. 1984. Sun and Cross. Translation of Sonne and Kruz by Hugh Latham. Edinburgh: Floris Books.

Swarup, G., A. K. Bag, and K. S. Shukla, eds. 1987. "History of oriental astronomy." In International Astronomical Union Colloquium #91. Cambridge: Cambridge University Press.

Toomer, G. J. 1984. Ptolemy's Almagest. New York: Springer-Verlag.

Vebaek, C. L. and S. Thirslund. 1992. The Viking Compass. Skjern: Gullanders Bogtrykkeri A/S.

Walgren, Erik. 1986. The Vikings and America. London: Thames and Hudson.

Waugh, Albert E. 1973. Sundials. Their Theory and Construction. New York: Dover Publications, Inc.

Whittall, James P. Jr. 1993a. Personal communication.

——1993b. Personal communication.

———1995a. Personal communication.

———1995b. Personal communication.

Whone, Herbert. 1990. Church Monastery Cathedral. Longmead, Shaftesbury, Dorset: Element Books Ltd.

OTHER USEFUL REFERENCES

Berggren, J.L. and A. Jones. 2000. Ptolemy's Geography. Princeton: Princeton University Press.

Evans, James. 1998. The History and Practice of Ancient Astronomy. New York: Oxford University Press.

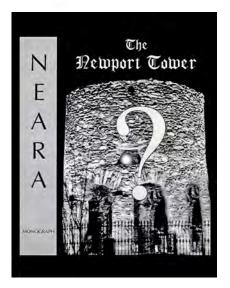
Mavor, James W. Jr. and Byron Dix. 1989. Manitou: The Sacred Landscape of New England's Native Civilizations. Rochester, VT: Inner Traditions.

Stevens, Wesley M. 1995. Cycles of Time and Scientific Learning in Medieval Europe. Brookfield, VT: Variorum, Ashgate Publishing Company.

Swerdlow, N.M., ed. 1999. Ancient Astronomy and Celestial Divination. Cambridge, MA: The MIT Press.

——1998. The Babylonian Theory of the Planets. Princeton: Princeton University Press.

Walker, C., ed. 1996. Astronomy Before the Telescope. New York: St. Martin's Press.



The Newport Tower Amold to Zeno