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I, II   xviii Illustrations 126, 127, and 128 are from Abraham ben Samuel Zacut, Almanach perpetuum . . . (Leiria, Portugal 1496). Harvard College Library.
I facing 425 Captions for Fig. 10 and 11 are transposed.
I 479   Line 10 of footnote 34, “Münchner.”
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II preceding 623 Caption for Fig. 93 should read “The North Pole presented according to the quaternary principi. Gerhardus Mercator, Septentrionalium terrarum descriptio (Duisburg 1595).”

1. Illustration from Gaspar de San Agustín’s Conquistas de las islas Filipinas (Madrid. 1698), depicting the complementary nature of the spiritual and the temporal conquest of the islands. San Agustín, O.E.S.A., was in the Philippines from 1668-1724, and this work covers the period 1511-1614.

2. The earliest European picture of Indians with some ethnographic accuracy: Tupinambas of coastal Brazil in a 1505 woodcut, now in Munich. Bayerische Staatsbibliothek, Munich.

3. Woodcuts by Hans Burgkmair, 1516-19, in The Triumph of Maximilian I. Tupinamba men and women wearing feather skirts. (From the atlas supplement to Jahrbuch der kunsthistorischen Sammlungen des allerhöchsten Kaiserhauses 1, Vienna 1883-84).


6. Method of starting fire with a palm drill, as used by the Indians of the Antilles and Panama, in a drawing by Oviedo, before 1557. The Huntington Library, San Marino.
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BOOKS
The New World
in French and English
Historians of the
Sixteenth Century

by Myron P. Gilmore

Both in England and in France, information about the New World first arrived in translations from Italian, Spanish, and Portuguese sources, written originally in those languages or in Latin: understandably since Italy and the Iberian countries had taken the lead in the voyages of discovery.¹ The account of Vespucci’s first voyage was translated into French by 1503, and the later narratives by 1515. Peter Martyr of Anghiera was translated by 1533, Oviedo in 1545 and 1555, Gómara in 1584.² In England Richard Eden translated and published in 1555 the first three Decades of Peter Martyr, carrying the story of Spanish discovery down to 1521. He appended an account of Magellan’s voyage up to 1522, the text of the Alexandrine bull of 1493, and additional descriptive matter on the New World from Oviedo and Gómara.³ Twenty-seven years later Richard Hakluyt brought out his Divers Voyages including the Cabot discoveries, the mythical voyage of the brothers Zeno to Greenland, Verrazano’s account of his exploration of 1524 translated from Ramusio, and Ribaut’s voyage to Florida.⁴
In both countries the translations stimulated the publication of native exploits, and by the end of the sixteenth century there was a considerable body of travel and geographical literature. Professor Parks with a somewhat restricted range lists 166 English works on geography and travel down to 1600. Professor Atkinson’s bibliography lists 524 vernacular impressions (and re impressions) intended to inform the French public about aspects of Asia, Africa, or America. He also reports cases in which the date of a re impression was changed to make it appear that the news had just arrived. For example, a Jesuit letter—describing the conversion of three heathen kings—published at Lyon and two other places in 1571, was republished in 1588 and again, in three places, in 1608 so that the readers in 1608 were deceived into thinking that the edifying conversions had just taken place.

Is there any quantitative indication of the degree of interest in descriptions of the New World? The figures given in the bibliographies are certainly not impressively large in comparison with the total book production of the sixteenth century. Even a cursory perusal of the Short-Title Catalogues of French and English books in the British Museum printed before 1600 indicates that books on geography and travel are far less numerous than other categories. Furthermore, of the total production of works on geography and travel produced in France between 1480 and 1609, there are more than twice as many on the Turks as on North and South America and the West Indies. Accordingly, by the first decade of the seventeenth century, there are three times as many books on the East Indies and the countries of Asia as on the New World. In the period of the religious wars from 1562 to 1598, understandably there was less interest in America, but on the eve of the great French colonization of Canada the absence of popular demand for more information on the newly discovered lands remains surprising. Even among the learned, North and South America and the West Indies were slighted in comparison with other, more “exotic” countries. Jean Bodin’s appendix to his Methodus ad facilem historiarum cognitionem of 1566 (probably the most complete bibliography of history compiled in the century) lists only three titles on the New World.

In England, although the total number of books may not have been as considerable as in France, the annual number of imprints on North and South America rose steadily in the later years of Elizabeth’s reign and amounted by the end of the century to at least five or six a year. Accounts of the exploits of Drake, Frobisher, Raleigh, and others were immensely popular and went through several editions.

Reflecting diverse backgrounds, the narratives differed widely in scope, style, and value. Consider André Thivet’s Singularitez de la France antarctique, published in 1558. Born in 1502, Thivet early entered the Franciscan order. His education appears to have been very superficial,
but he had a great desire to travel and see the world. When he was 47 he received the permission of his superiors to go to Italy and thereafter spent five years in the Eastern Mediterranean. On his return to France he joined the expedition of Villegagnon in 1555, backed by Admiral Coligny, for the purpose of establishing a colony for Huguenot refugees in Brazil. Thetvet served the expedition as almoner but remained a short time in Brazil, returning in the following year in time for the publication of his *Cosmographie du Levant*, followed almost immediately by his account of Brazil in *Les Singvlaritez*. This farrago combines his own fabrications with some observations, hearsay accounts, and reports of flora and fauna, cannibals, and monsters, and includes the statement that Aristotle and other ancients were proven wrong on the habitability of the tropics. Thetvet also affirms that the American savages recognize the eternal God and believe in the soul’s immortality; in this respect he considers them more tolerable than contemporary atheists—by which he means the Protestants.

In 1578 one of these Protestants produced a more accurate account of the Brazilian colony. Jean de Léry, a Burgundian, had gone to Geneva for theological studies and there responded to Villegagnon’s appeal to Calvin for settlers to be sent to the colony. He joined the group which set sail on 20 November 1556 from Honfleur in a small fleet of three vessels carrying not only the Genevan delegation and French soldiers, but other volunteers from France, including women. On arrival in Brazil many of the members of the expedition came into conflict with Villegagnon, and Léry himself took the first opportunity to return to France at the end of 1557. After a frightful voyage of four months, he reached France at the end of May. Returning to Geneva he became a pastor and composed his *Histoire d’un voyage fait en la terre du Bresil, avtrement dite Amerique...* (1578).

Léry’s vivid account is full of moralizing. He compares the strange inhabitants of Brazil to civilized European peoples. The savages’ nudity is reprehensible, but is it worse or more conducive to lust than the fashionable wigs and décolletés of European women? He deplores the cannibalism of some tribes but concludes that we have hardly the right to reproach them if we consider in good conscience that our great usurers suck the blood and marrow and therefore eat alive so many widows, orphans and poor persons that it would be better to cut their throats at once than to let them languish. We may say that they are still more cruel than the savages of whom I speak.

It was thus easy to pass from simple observation to a general reflection on the comparison between the savage and civilized states, and Léry’s particular observations were soon elaborated in the *Essais* of Montaigne.

After the turn of the century, accounts of particular voyages became increasingly analytical and increasingly concerned with comparing the
Books

phenomena of the New World with those familiar in the history and experience of the Old. Marc Lescarbot, an able young lawyer and poet, had accompanied the Sieur de Poutrincourt in 1606 on the expedition to Port Royal in New France. On his return a year later, he compiled his *Histoire de la Nouvelle France* using the accounts of Verrazano, Cartier, and others and adding his own history of the expedition in which he had participated. The work was published in 1609 and dedicated to the future king.\(^\text{15}\)

Lescarbot has more to say than his predecessors on the motives of overseas expeditions. In the dedication to Louis XIII he sets forth two causes which move kings to undertake conquests: zeal for the glory of God and desire to increase their own possessions.\(^\text{16}\) In the opening of the first book he quotes the Bible: “desire of gain has moved the spirit of man to search out the means of going upon the waters.”\(^\text{17}\) This motive, he maintains, has driven the Spanish and the Portuguese to risk their lives upon the ocean. But he contrasts them with “our Kings,” that is the French, “for I see by their commissions that they breath nothing save the advancement of the Christian religion, without any present gain . . . having more highly esteemed the conversion of souls to God, and the praise of mankind, than the possession of the earth.”\(^\text{18}\) By the time he reaches the account of Villegagnon’s expedition in the second book, he has a more detailed explanation of motives. Three things induce men to seek distant lands. The first is the hope of bettering their condition; the second is surplus population; and the third is “division, quarrels, strife,” such as were tearing France apart.\(^\text{19}\) Although he never arrives at a systematic conclusion on the motives for colonization, Lescarbot has at least thought more about the problem than the earlier voyagers, who hardly realized there was anything to be explained.

In other ways the vision of Lescarbot was much wider. The last section of his book is entirely devoted to describing the Indians of New France and comparing their civilization with that of the peoples of the Old World. The topics covered include language, education, sorcery, religion, literacy, dress, marriage, health, recreation, virtues and vices, war and peace, and burial customs.\(^\text{20}\) In many cases he ranges over the whole course of European history, comparing, for example, the Canadian Indians to the Germanic tribes described by Tacitus, pointing out that Tacitus had found their illiteracy compatible with a high morality.\(^\text{21}\) The picture as a whole is, however, not entirely favorable, for it includes vivid descriptions of the Indians’ vices. Lescarbot’s point of view is still centered in the European tradition, and although he provides much anthropological data, he is by no means as objective as the sixteenth-century Spanish Franciscan Bernardino de Sahagún, whose works on the Aztecs were not published in his lifetime and have only recently appeared in their entirety.\(^\text{22}\)
The English sixteenth-century literature of exploration and discovery has little of Lescarbot's analytical powers. Eden's compilation of 1555, *The Decades of the Neive Worlde*, brought together a mass of information from translated sources. Evidently printed in a large edition, it was not read from any widespread interest in North American colonization, but rather for information about gold and the possibilities of trade with Cathay and Russia.

In 1582 Richard Hakluyt, the learned cleric "who remained at home to travel," published his *Divers Voyages, touching the discoverie of America and the Ilands adiacent vnto the same*, and seven years later the first volume of his more famous *Principal Navigations, Voyages and Discoveries of the English Nation* (London 1589; an enlargement into three folio volumes appeared in 1599-1600). In a much-quoted remark Froude described this compilation of more than one hundred different accounts with additional documents and letters as "the Prose Epic of the modern English nation." The epic is united by a great theme—English expansion, commerce, and colonization overseas—and is organized in three broad stages with attention, as the author says in the preface, to "Geographie and Chronologie" as "the Sunne and the Moone of history." In the first period England begins to adventure on the seas, with voyages to the Canaries and to the Mediterranean; then a greater naval power develops, capable of mounting battles with Spanish and Portuguese ships; finally permanent overseas bases are created and commerce is organized within the bounds of what was to become an empire. Professor Parks insists on the greatness of Hakluyt's *magnum opus*: "the most important historical work of the century." A scrupulous collector of archival materials, Hakluyt rejected accounts which strained credibility, and provided a marvelously complete collection on English travels and commerce—which still serves as the indispensable source.

We may accept these judgments on the importance of the *Navigations* both for contemporaries and later ages, and yet argue that the uneven character of the selections and the lack of continuity deprives Hakluyt's collection of the claim to be a masterpiece of historical literature like the works of Thucydides, Gibbon, and Guicciardini. Hakluyt did conceive a great theme, but individual masterpieces, like Raleigh's account of his expedition to Guiana in 1595, are juxtaposed to narratives such as Master William Parker's account of his voyage to Jamaica and Honduras, which mostly details the landmarks the navigator must follow in setting his course for South America. Notwithstanding such accurate information, it is difficult to imagine many readers sustaining an interest in the great theme through all three folio volumes.

How may one assess the accounts of the New World in France and England at the end of the sixteenth century? How much use did general historians make of them? Although the great voyages find a place in the
contemporary chronicles, they do not constitute a major theme. John Hooker continued Holinshed’s *Chronicles* after 1580. The second edition (in 1586) was heavily censored by the Privy Council. Among the sections removed for political reasons were accounts of Drake’s return from the circumnavigation of the globe in 1580 and of his voyage of 1585-86. Elizabeth’s policy toward Spain was still ambiguous, and the government was wary of providing Philip II with a justification for reprisals against Drake’s activities. However, the material on Drake, restored in modern editions, is skimpy compared with the 23 pages which Hooker devotes to the Babington plot. Later, in his *Annals of Elizabeth*, Camden gives only four pages to Drake’s return with potatoes and tobacco in 1586, while the remainder of his history for this twenty-ninth year of the reign is devoted to the Babington plot and to England’s relations with the Netherlands.

In France the historian Jacques Auguste de Thou published the first edition of his *Histoire de son temps* in Latin (*Historiarum sui temporis libri*, Paris 1604), and successive editions and enlargements followed. In his review of the years preceding 1543, he allots one paragraph to the voyages of Columbus and the Portuguese, but concludes that the aggrandizement of Spain resulted from the dynastic succession to many crowns. At the beginning of Book LXXVIII he reports the expeditions of Fray Agustín Ruiz and Antonio de Espejo to the Southwest. Accurately summarizing their accounts, he expresses no surprise at the mention of cities of 20,000 and four- and five-story houses. He notes that the search for gain was just as futile as it had been for Coronado 40 years earlier and that de Espejo brought back only “des charbons au lieu de trésor.” On the motivation of the expedition, he declares that the desire for riches had at least as great a part as religious zeal.

On the few occasions he indulges in general reflections on the New World, de Thou condemns Spanish colonial administration. He praises Las Casas’ attempt to improve the lot of the Indians, but observes that the Spaniards slaked with their own blood their insatiable thirst for gold. Still, even while they destroyed each other, their principal victims were the native inhabitants. The benefit of Christianity had been purchased at a price.

Of the French voyages de Thou gives a succinct account, summarizing from Thevet, Léry, and Lescarbot. His two pages from Lescarbot describe Poutrincourt’s expedition in 1606 with none of Lescarbot’s enthusiasm for colonization. De Thou’s perception of the difficulties of Christianizing the Indians and his emphasis on the severity of the climate may well reflect a general attitude among the French which, in addition to the religious wars and the insufficient support of the monarchy, helps to explain the failure of French colonization up to that time. It has been suggested that the little space de Thou
devotes to the New World (calculated at about 80 pages out of 17 volumes of the 1734 French edition) is a measure of America's place in the French mentality at the turn of the sixteenth century. If the authors of the national annals of France and England gave scant attention to America, other writers had a more philosophic interest in history and assessed the significance of the discoveries in a wider perspective. In his *De la vicissitude ou variété des choses en l'univers...* (Paris 1575), Louis Le Roy has a chapter on the comparison of navigations and discoveries. He contrasts the ancients' limited conception of the inhabited world with what has been revealed by the voyages of the sixteenth century: "So we can now actually affirm that the entire world has been made manifest, and the whole human race known." Furthermore, in his description of the course of history from primitive society he combines the accounts of the classical writers with information derived from the literature on the New World: "And in order to navigate they hollowed out the trunks of the trees in the manner of Indian canoes and made boats." Le Roy's ideas on the effect of climate on human societies, on cycles in history, on the "good" savage, and on the position of the present age all take some account of the new discoveries. Le Roy places his own time at the height of civilization, stressing the importance of three inventions: printing, the mariner's compass, and gunpowder. The result of the second has been the discovering of the whole earth. On the other hand the same generation has seen terrible afflictions: epidemic syphilis, constant warfare, the eruption of heretical sects. Quoting Fracastoro, Le Roy seems to adopt a doctrine of compensation, by which the great gains of cultural and geographical discoveries were balanced by the afflictions of disease and war. Thus the idea of progress, the Golden Age, the relation of the ancients and the moderns, relativism, and comparative religion all owed much of their formulation in Le Roy, Bodin, Montaigne, and others to the enlargement of the European horizon.

This brief survey suggests the following conclusions. (1) Information on the New World was less popular in France and England and circulated later than has sometimes been supposed. Translations as well as accounts by the French and English themselves had fewer imprints than books on Russia, Turkey, the East Indies, and Cathay. (2) In both countries the narratives of expeditions (especially Lescarbot and Hakluyt) stimulated the government to embark on a policy of colonization. (3) In both countries the literature on the New World furnished material for religious and national polemics: condemnation of Spanish colonialism and of forced conversion, praise for French and English motives and for their treatment of Indians. (4) The official or semi-official historians (Holinshed, Camden, de Thou) give comparatively little space either to describing exploits in the New World or to interpreting their importance.
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(5) The wider significance of the New World and its impact on the European cultural tradition in the sixteenth century were best formulated by historians like Le Roy and Bodin and by great literary figures like Rabelais, Montaigne, Shakespeare.

The question why the English and the French were slow to respond to the opportunities presented by the discoveries suggests many answers. The Spanish and the Portuguese were first in the field and claimed a monopoly of the western hemisphere as well as the routes to Asia, whereas for France and England the need to deal with pressing European and domestic problems remained paramount for most of the sixteenth century.

It was only in the seventeenth century that changed conditions permitted the enterprises which led to the building of the French and British colonial empires. Not surprisingly, therefore, the impact of the discovery of America on historical writing in the two northern monarchies was long deferred.

NOTES

2. See Atkinson, Littérature (n. 1 above).
3. On Eden, see Parks, Richard Hakluyt (n. 1 above) 21-24; and Franklin T. McCann, English Discovery of America to 1585 (New York 1952), 121-138.
5. Parks, Richard Hakluyt (n. 1 above) 269-277.
6. Atkinson, Les nouveaux horizons (n. 1 above) 4. For a discussion of the present state of bibliographies of early works relating to America see the papers by Thomas R. Adams and Rudolf Hirsch in this collection, 529 ff. and 537 ff.
9. Parks, Richard Hakluyt (n. 1 above) 269-277. See also Wright (n. 1 above) Ch. 14.
11. Thevet (n. 10 above) 180-183.
12. On Léry, see Le voyage au Brésil de Jean de Léry 1556-58, ed. with introduction by Charly Clerc (Paris 1927), and Chinard (n. 1 above) Ch. 6.
13. On nudity, see Léry (n. 12 above) 160, and on cannibals, 206.
14. On parallel passages between Léry and Montaigne see Chinard (n. 1 above) Ch. 9.
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16. Ibid., I. 3.
17. Ibid., I. 27.
18. Ibid., I. 28.
19. Ibid., I. 145-146.
20. Ibid., III. 79-203.
21. Ibid., III. 128.
23. McCann (n. 3 above) 121-137.
24. Ibid., 137.
27. Ibid., 183.
34. Ibid., 6. 290-293.
35. Ibid., I. 95-96.
41. See Gundersheimer (n. 39 above) Ch. 9.
42. Le Roy (n. 39 above) 21-44.
Some Bibliographical Observations on and Questions about the Relationship between the Discovery of America and the Invention of Printing

by Thomas R. Adams

It has long been the practice, among those concerned with the early history of the Americas, to point out that the discovery of the New World and the invention of movable type have an important relationship to each other. Yet comparatively little has ever been done to establish what that relationship is. The thesis of this paper is that the reason for this lies in the state of bibliography as a whole, and the state of bibliographical control over the field we call Americana in particular.

The first published list of printed works relating to America appeared almost 100 years after Columbus returned from his first voyage: Antonio Possevino's *Apparatus ad omnium gentium historiam* (Venice 1597)
Books includes, in Section 6, Chapter xxvi, a list of some 30 titles about the Indies. The most recent attempt at a comprehensive bibliography of the subject was Joseph Sabin’s *A Dictionary of Books Relating to America, from Its Discovery to the Present Time*, begun in 1868 and completed in 1936 in 29 volumes. It lists 150,756 items. The trend, however, is toward more specialized studies such as those done by Medina for Spanish America, Borba de Moraes for Portuguese America, Vail for English America and Harrisse for French America. At present, at least 90 percent of the books which are concerned entirely or primarily with the New World, published before 1800, have been identified in one way or another. It may require some skill to find one’s way through the bibliographical apparatus which has grown up around the subject, but the information is there for those who seek it. We know, however, that these books, which I shall call “Obvious Americana,” constitute a comparatively small portion of the body of printed words which reflect what happened because the New World was discovered.

To begin with, there is “Lost Americana,” that is, those books of which no copy has survived. We have some idea how large this group is, but I suspect that it is larger than we realize. The first things to be printed in Mexico, in the United States, and in Canada have not survived. The extraordinary scarcity of such ephemera as the editions of the Columbus letter, Vespucci’s *Mundus novus*, and the German newspaper reporting Cortés’ conquest of Mexico make it clear that the rate of destruction has been substantial. In a much more recent period, that of the British pamphlets relating to the American Revolution, at least six percent of those known to have been published cannot at present be found. It is unlikely that the “Lost Americana” will ever make a substantial contribution to the subject, but it should alert those working in the field that a portion of the evidence is missing.

The next category I call “Partial Americana,” that is, those publications in which America is subordinate to the main purpose of the book, occupying anything from one sentence to a group of chapters. This body of literature Henry Harrisse included in his *Bibliotheca americana vetustissima. A Description of Works Relating to America, Published Between the Years 1492 and 1551* (New York 1866). Joseph Sabin used the same criteria for his *Dictionary*. Here we find that current bibliographical coverage is far from complete. In the John Carter Brown Library we have been attempting to find out just how incomplete it is. Our most intensive work has been with Harrisse’s *BAV*, which with his *Additions* of 1872 included 431 items. Today we have raised that total to 790. The work on Sabin has not been intense. We are concerned with the years before 1800, for which Sabin records 50,000 items. That number has been increased by more than one third, and a new item appears every week.
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If “Partial Americana” is only under partial control then what Harrisse called “Inferential Americana” is an area which we are only just beginning to grasp; that is, those cases in which no specific references to America appear, but in which all or part of the book took the form it did because the New World was discovered. Perhaps it would be better to say “New Worlds,” because when we move into this area it becomes apparent that the parochial use of the term America, in its geographical sense, must be discarded. What we are talking about was perceptive captured by John H. Parry with his title Europe and a Wider World, 1415-1715. Quite obviously, overseas expansion touched almost every facet of European life, but areas which from the bibliographical point of view invite immediate attention are: maritime history in all its departments; cosmography; geography; the spread of Christianity; the development of trade and commerce; and certain aspects of the history of science, particularly those dealing with the spread of plants from and to the New World; and tropical medicine. Perhaps it would be better to say that the image of America is not an aspect of American history but rather a facet of European history concerned with America. Here the as yet undefined books are legion.

A final category which has been long neglected by both bibliographers and historians is “Iconographical Americana,” that is, maps and prints. In general, the early work on the history of cartography has been carried on outside this country, but there are three pioneers who should be mentioned. Justin Winsor’s eight-volume Narrative and Critical History of America (Boston and New York 1884-89) was bibliographically a seminal book in many respects, but none more so than in the way in which it brought order out of the chaos of early maps of America. On a more limited scale, Harrisse carried the work forward in his The Discovery of North America . . . (London 1892). Then, Philip Lee Phillips, with his A List of Maps of America in the Library of Congress (Washington 1901) and later with his meticulously indexed A List of Geographical Atlases in the Library of Congress, begun in 1909 and still being carried on by Clara Le Gear, opened up the whole field of maps for American scholars in an unprecedented way. Further impetus came in 1935 with the founding of Imago mundi. The growth of the field of carto-bibliography during the post-World War II years has resulted in a vigorous specialty practiced by people from a variety of disciplines. An important factor in all this has been the development of high quality offset printing which made possible the publication, on a large scale, of accurate and legible reproductions. However, the current state of bibliographical controls leaves much to be desired. The publications by G. K. Hall and Company of the catalogues of the map collections in the William L. Clements Library and the New York Public Library, as well as the Bibliography of
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*Cartography* in the Map Division of the Library of Congress, are all extremely helpful. An excellent start at dealing with the overall problems of the whole field has been made by Ronald V. Tooley with his *Map Collectors’ Circle*, a series of monographs begun in 1963 and now numbering 100, which cover in a preliminary way a wide variety of carto-bibliographical problems. *Theatrum Orbis Terrarum Ltd.* has done invaluable service with its facsimile reproductions of early atlases and other cartographical works such as the many scattered studies reprinted in the *Acta cartographica*, begun in 1967 and now in its nineteenth volume. However, we still do not control early maps of the Americas in the same measure as the “Obvious Americana.”

When we turn to prints of America, we find the field in a formative state both in terms of the work being done on the subject and controls over the material. Art historians have yet to undertake any systematic effort to trace the pictorial images used to depict America from the woodblocks of the fifteenth century to lithography in the nineteenth. A few people, such as Bradford Swan with his work on the North American Indian,¹⁰ have explored bits and pieces of the subject, but the only major undertaking which comes immediately to mind is the work of I. N. Phelps Stokes, particularly in his *The Iconography of Manhattan Island, 1498-1909*, published between 1915 and 1928 in six handsomely illustrated volumes. Indeed, it would not be unreasonable to say that in all probability the best controls over American prints are to be found in the editorial offices of *American Heritage*, *The National Geographic*, and the other publishers who have so successfully filled the market with picture history books. Obviously, the demand for access to iconographic materials will increase with the growth of a generation whose formative years included intensive pictorial experience from both television and the teaching of art.

Anyone who seeks to explore the significance of the relationship between the invention of printing and the discovery of America is confronted by an enormous body of material, the full extent of which is still uncertain. The obvious books, particularly voyages and travels of the early period, have been the subject of a number of studies by people such as Boies Penrose, John Parker, and Francis Rogers.¹¹ However, when one seeks to find out how the fact of America permeated literature as a whole the going becomes more difficult.¹² Bibliographically speaking the ground is well prepared for books of the fifteenth century, particularly since the publication of the *Gesamtkatalog der Wiegendrucke* has started again. The sixteenth century is well on its way toward control, with many special studies and with the beginning of the *Index Aureliensis, Catalogus librorum sedecimo saeculo impressorum* in 1965. The seventeenth century is still in the early stages. Only the English books
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are under control, with the STC and Wing. In general, the eighteenth century has yet to be attacked bibliographically, although certain areas have been completed, for instance the books printed in the Americas, in the works of Medina, Evans, and Tremaine. However, the great bulk of the books printed in Europe is yet to be treated comprehensively.

When we turn to the techniques for using bibliographical evidence it should be understood that the term is used in the sense so well expressed by D. F. McKenzie: "Bibliography has nothing to do with bibliographies. . . . The essential task of the bibliographer is to establish the facts of transmission for a particular text, and he will use all relevant evidence to determine the bibliographical truth." Bibliography is a tool for those who would answer the question "What difference did it make that that book was published?" It is, of course, impossible to answer that question with any kind of finality with direct cause-and-effect relationships. The most that can be done is to establish a series of indirect relationships between the physical processes which brought the book into existence in order to perform its function as a literary force, and the object toward which it was presumably directed—the reader. Bibliography at least narrows the areas in which hypothesis and deduction have to be employed.

The point of departure is the book itself, that is, the history of printing and publishing, which in turn is part of economic history. Books are primarily economic objects which conform to the pressures of the marketplace. Someone had to pay the printer’s bill. What follows then is a series of questions, which can be answered with varying degrees of completeness depending upon individual cases. When these questions have been asked and answered enough times, a body of data will have accumulated to narrow the gap in our understanding of the fact of publication and its results.

The questions fall into three broad categories which overlap but provide a rough and ready framework for us. They concern (1) the decisions made prior to printing; (2) the elements in the manufacturing process; and (3) the method of distribution. First, what brought the text and the printer together? There is a great deal of writing which was never intended for publication. What were the added factors which called forth the extra effort to translate the author’s work into type? Was the author himself the moving force, or the needs of the state, the church, or some other outside factor; or did the publisher see it as a commercially viable venture? Next, why was it that that particular printer or publisher was involved instead of one of his competitors? Again, why did the book get published in a particular place instead of another? Moving closer to the manufacturing process, who, if anyone, besides the author had a hand in the final form of the text: editors and translators, publishers,
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As a topic becomes more popular, more and more people write about it. Why was this author’s work chosen for publication rather than another’s? Finally, why did the book appear when it did?

The manufacturing process raises a number of questions. The choice of the format used, folio, quarto, octavo, or duodecimo, was a conscious one. Why was it made? Why was a particular type-face used or a particular paper size chosen? By varying these three elements a printer can produce a text in any form from a broadside to substantial bound volumes. These in turn can be issued folded and sewn or bound in a variety of ways, including elaborate tooled leather. If the book is illustrated, why and how was it done? How long did it take to print the piece? Was it given a high priority in the shop or did it take the normal length of time or was it delayed? How many copies were printed? Then the most important question of all from the point of view of assessing popularity: how many editions were printed? Here we have to be careful because of the use of standing type. A book or pamphlet which has a number of different edition statements on the title-page may, in fact, have been printed entirely from the same type in the same press run with the edition statements altered as stop press corrections to give the appearance of popularity. Type was also taken out of the forms but kept standing for further use with or without changes. There are numerous examples of what appear to be two or more different editions of a book with different title-pages which are, in fact, the sheets of the first printing with new title-pages substituted because the piece did not sell in its original form. Then there were the author’s alterations between and even during printings. If a book went through more than one edition, presumably there was a demand for it. However, the evidence must be looked at closely before it is used.

Now to questions about distribution. Was the publication a private one with a restricted distribution or was it put on public sale? If it was offered for sale, what efforts were made to obtain a wide distribution through advertising and farming out copies to other booksellers or to agents? To what extent were the books exported from the city and country of their origin? Then, finally, who acquired copies? A number of elements enter here, such as the location of the bookshop in relation to the residential and commercial patterns of the city, the price, the reputation of the bookseller, and the literacy level of the public. An obvious source of information is the libraries which have survived, but it is important to know as much as possible about how they were assembled, for what purpose, when particular books arrived and under what circumstances. Was the library a completely private one or did outsiders have access to it? Less satisfactory are the libraries which have been broken up for which lists or catalogues have survived. However,
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when properly done, these can be reconstructed with reasonable success. Other sources of information about who obtained copies of a book are presentation inscriptions, the owner’s autograph, annotations, and mention of the piece in contemporary correspondence.

The starting point in answering all these questions is the book itself. The most recent sweeping attempt to draw attention to the influence of the printed word is Printing and the Mind of Man, a Descriptive Catalogue Illustrating the Impact of Print on the Evolution of Western Civilization during Five Centuries (London 1967) compiled by John Carter, Percy H. Muir, and others. A significant feature of the exhibition upon which that book was based is that it was part of the Eleventh International Printing Machinery and Allied Trades Exhibition held in 1963. It was a trade fair devoted to showing “the latest machinery, equipment, materials, and services available to the many crafts... employed in the printing and allied trades.”

The occasion for Printing and the Mind of Man did not have its origins in the world which uses books but in the world which makes books.

We are still a long way from understanding the impact of printing in projecting the images of the New World to the Old. There is more groundwork to be done. Most important, perhaps, is the need for full bibliographical control over all the books printed during what can generally be called the colonial era. Books, unlike many other artifacts, were designed to be dispersed. Before they can be studied they must be reassembled. They must be examined as physical objects. Reproductions can be useful, but at some point the book itself must be handled and handled by someone who knows what he is looking at. Of the two elements in the question “What effect did a book have?” one element no longer exists—the reader. Only the book remains. It must be the point of departure in our attempt to reconstruct the part played by the printed word in the intellectual process which made the concept we know as “America” what it is today.

NOTES

1. I have not attempted to establish when this relationship was first commented upon, but its bibliographical features were pointed out by Margaret Bingham Stillwell in Incunabula and Americana, 1450-1800; A Key to Bibliographical Study (New York 1931).

2. The number with which Sabin ended was 106,413. The number 150,756 includes additional titles and editions which are often included under one entry. The long period of time over which Sabin was compiled resulted in duplication and ghosts so that the actual total is somewhere between five and ten percent less than 150,756.

3. José Toribio Medina, Biblioteca hispano-americana (1493-1810) (7 vols. Santiago de Chile 1898-1907); Biblioteca hispano-chilena (1523-1817) (3 vols. Santiago de Chile 1897-99); for a full list of Medina’s writings, see Guillermo Feliú Cruz, José Toribio Medina, historiador
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y bibliógrafo de América (Santiago de Chile 1952); Rubens Borba de Moraes, Bibliographia brasiliana (2 vols. Amsterdam and Rio de Janeiro 1958); R. W. G. Vail, The Voice of the Old Frontier (Philadelphia 1949); [Henry Harrisse] Notes pour servir à l’histoire, à la bibliographie et à la cartographie de la Nouvelle-France et des pays adjacents 1545-1700 (Paris 1872).


5. For a light-hearted account of these and some other scarce Americana, see Rare Americana, A Selection of One Hundred & One Books, Maps and Prints not in the John Carter Brown Library (Providence 1974).

6. This statement is based on work I am currently doing with the British pamphlets published between 1764 and 1783 relating to the American Controversy. It is to be published as a bibliographical study and as an essay in a volume on The Press in the American Revolution to be published by the American Antiquarian Society.


12. One area that has received extensive treatment as an accepted part of the scholarly apparatus is the influence of America on French literature. The primary importance of the work of Gilbert Chinard in the field was celebrated in the Spring 1965 issue of The Princeton University Library Chronicle. Among his many students who have carried on that work is Durand Echeverria, who is at present completing an important bibliographical contribution: a bibliography of French books relating to that part of British America which became the United States, printed between the end of the sixteenth century and 1815.


14. For a list of Medina's many bibliographies of printing in Spanish America, see G. Felú Cruz (n. 3 above); Charles Evans, American Bibliography (14 vols. Chicago 1903-59); Roger P. Bristol, Supplement to Charles Evans' American Bibliography (Charlottesville [1970]); Marie Tremaine, A Bibliography of Canadian Imprints, 1751-1800 (Toronto 1952).


16. Printing and the Mind of Man, assembled at the British Museum and at Earls Court, London, 16-17 July 1963 (London 1963) 7. This is the catalogue of the exhibition proper. The Carter-Muir book published in 1967 is a revision and expansion omitting the printing equipment which was shown at Earls Court.
Printed Reports

on the Early Discoveries and Their Reception

by Rudolf Hirsch

The Discoveries may have been talked about everywhere in Europe,¹ as stated by Luis de Matos, yet the extent and content of such talk remained almost entirely unrecorded. Only the printed reports on explorations had a sufficiently wide circulation—and audience wherever read aloud to others—to enable us to assess the response of broad segments of the population in various countries. The present paper is concerned accordingly only with printed records: from the first Columbus letter (1493) to the major exploits of Cortés (1526 and slightly beyond), and is limited to titles specifically devoted to explorations. Allusions and descriptions in general geographies or atlases, scientific or pseudoscientific treatises (like booklets on syphilis), literary works, and the like, are omitted since they cannot automatically be accepted as proof of interest in the Discoveries.

Formerly, just as today, what was novel, exotic, sensational, or dramatic attracted readers, and printers early became aware of this; hence the record of the frequency and duration of publication is the best index of readers’ interest or taste (even though items sold were not always read). Facts and interpretation throughout this study are based on a list of exploration reports—including different issues or variants, since it is impossible to tell whether they represent mere corrections or
improvements made while running off an edition, or a second printing after the original run had been completed. The list consists of 119 main items, printed between 1493 and 1526, and five re-edicitions of items previously published, reprinted between 1527 and 1532. The scarcity of many items suggests that entire texts, or more likely single editions or variants, have been permanently lost. Care has been taken to make the basic list as complete as possible; omissions, if any, should be few, and they would hardly change the nature of the findings.

The history of published reports on the voyages of Columbus, Vespucci, Cortés, and others is presented in summary form in Table 1 (and in fuller form in Appendix II).

Table 1

<table>
<thead>
<tr>
<th>Explorer or exploration</th>
<th>No. of editions or issues</th>
<th>Period covered</th>
<th>Average per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Columbus</td>
<td>22</td>
<td>1493-1522</td>
<td>0.73</td>
</tr>
<tr>
<td>2. Vespucci</td>
<td>60</td>
<td>ca. 1502-1529?</td>
<td>2.14</td>
</tr>
<tr>
<td>3. Cortés</td>
<td>18</td>
<td>1522-1532</td>
<td>1.64</td>
</tr>
<tr>
<td>4. Others³</td>
<td>30</td>
<td>1504-1530</td>
<td>1.11</td>
</tr>
</tbody>
</table>

The full meaning of the figures becomes evident as we consider each group separately and in detail. Eighteen of the 22 imprints specifically dealing with the voyages of Columbus are concentrated over the brief period 1493-97. Eleven of these contain simply the first Columbus letter (nos. 1-6, 10-12, 17-18); the same text is also appended to Verardo’s praise of King Ferdinand of Spain for expelling the Moors from Granada (no. 13, printed in Basel rather than in Spain as one would expect). The contents of the letter was also paraphrased in Italian rhymes by Dati and published five times (nos. 7-9, 15-16). One edition was printed of Columbus’ second voyage, dedicated by a professor of Pavia named Scyllacio to Lodovico Maria Sforza, the duke of Milan (no. 14). Ten of these 18 are in Latin, produced therefore for the well-educated, among whom secular princes and their courts, Pope Alexander (a Spaniard) and his entourage, highly placed members of the hierarchy, internationally oriented businessmen like the Medici and Capponi in Florence or the Fugger and Welser in Augsburg, and finally some scholars must have been the main readers. Eight imprints are in modern languages: five in Italian, two in Spanish, and one in German. Only the paraphrase of Dati was well enough received to be reprinted four times in quick succession. Its popularity may have been due to love of the literary genre rather than interest in its contents. The very scarcity of
the two Spanish imprints (each known in only one copy) suggests that they might have been issued for private distribution by the court of Spain. The edition in German (no. 18) has characteristics which indicate that it was meant for a wider market,

Figure 81.
King Ferdinand viewing Columbus’ discovery of 1492, as shown in an oftencopied illustration which first appeared in a poetic rendering of the exploration, printed in Rome in 1493.

video its title (Ein schön hübsch Lesen—“nice pleasant reading”) and the title cut showing the king of Spain approaching Christ—apparently a device to mislead customers into believing that the text had religious relevance (fig. 82).

Columbus items published after 1497 offer little of interest, with two exceptions: the report of Columbus’ fourth voyage was published only once, in Venice in Italian (no. 35). The second item, generally classified with Columbus, is the only English-language item in the entire list, published not in England, but in Antwerp (no. 93; ca. 1520-22, or perhaps earlier). The lack of any further item in the English language among the 124 items in Appendix 1 leads to the conclusion that interest in the explorations was limited in England to those who had their private sources of information or had access to editions printed in Latin or foreign languages. The English-reading public also remained unaware of the approach by Columbus to the king of England for financial support for his first voyage, and of Cabot’s voyage under the English flag in 1496.

Surveying the complete publishing history of Columbus-related items, we find that their popularity was confined to limited groups of readers, and little intrigued the general public, possibly because Columbus’ search for a westward route to India was not recognized as anything beyond a mere extension of Portuguese explorations to the south and
east. Nevertheless the publicity given to Columbus set the scene for the greater impact of Vespucci’s voyages.

Reports on Vespucci’s travels exceed those of Columbus almost threefold (60 as against 22). The predominance of Latin ceased as modern languages took the lead. A breakdown of Vespucci items by languages follows:

<table>
<thead>
<tr>
<th>Language</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin</td>
<td>23</td>
</tr>
<tr>
<td>German</td>
<td>17 (incl. 2 in Low German)</td>
</tr>
<tr>
<td>Italian</td>
<td>8</td>
</tr>
<tr>
<td>French</td>
<td>8</td>
</tr>
<tr>
<td>Dutch-Flemish</td>
<td>3</td>
</tr>
<tr>
<td>Czech</td>
<td>1</td>
</tr>
<tr>
<td>Spanish</td>
<td>0</td>
</tr>
<tr>
<td>English</td>
<td>0</td>
</tr>
</tbody>
</table>

Fourteen out of the 23 Latin imprints were published in a brief period, extending from ca. 1502 to 1505, five (?) in Paris (nos. 19?, 20-21, 24-25), three (?) in Venice (nos. 26?, 32-33?), one each in Antwerp (no. 22), Florence (no. 23?), Cologne (no. 27), Nuremberg (or Basel; no. 29), Augsburg (no. 30) and Strasbourg (no. 34).

The distribution of the vernacular versions of the *Mundus novus*
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deserves special attention as an index of readers' interest. Almost half of the 37 items are in German (nos. 34, 38-44, 47-50, 60-63, 68-69; 1505-09), and were published in quick succession. Two of these are in Northern German dialects (nos. 50 and 63), though one was printed, undoubtedly for distribution in the Low German-speaking area, in Nuremberg (no. 63). Newsworthy pamphlets on a variety of topics had greater appeal to German readers of the period than to those in other language spheres. The ferment and unrest of the people of the Holy Roman Empire in the pre-Reformation years apparently stimulated the avid reading of this type of ephemeral publication. Another factor also influenced the attitude of readers. As is well known, the major commercial and financial business enterprises, and particularly those of Nuremberg and Augsburg, showed keen interest in the discoveries East and West. Merchants and bankers played an important part in the life of their cities and beyond, and it is most probable that their pecuniary and political interests were reflected in the reading habits of the lower strata of German society.

It is worth noting how far Italian translations (nos. 45, 55-56, 59, 73, 83-84, 95; ca. 1505-21) lagged behind the German, in spite of Vespucci's Italian birth which should have generated special interest among many levels of Italian readers. The eight French translations (nos. 77-80, 82, 96, 120-121; 1515?29) began amazingly late, three years after Vespucci's death, more than a decade after the five Latin editions and variants from Parisian presses, which were published between 1502 and 1504 (nos. 19-21, 24-25). We must conclude that during the earlier period interest was limited to Frenchmen who read Latin, while the lesser educated remained largely oblivious to the deeds of Vespucci. The reason for the Czech edition (no. 46) is the connection between Bohemian mining interests and South German financiers. Produced in Pilsen, this item was issued in folio, the one and only folio among the 37

Figure 83.

German newsletter with largely irrelevant illustrations, reporting voyage to Yucatan (1521) as well as the Turkish threat, probably published in 1522.
vernacular imprints which were quartos or smaller. The existence of this lone Czech item is less of a surprise than the absence of any edition in Spanish or Portuguese. Boies Penrose speaks of “a conspiracy of silence” in another connection, and absence of publicity is further evidence of the crown’s monopolistic attitude toward native competition. Three items were published in Dutch (or Flemish; nos. 57, 64-65; 1507?-08), all in Antwerp, which had replaced the once powerful Hanseatic town of Bruges as an immensely important port and trade center.

Within the chronological time span of this paper only a brief period covers the items recording the deeds and voyages of Cortés. Within 13 years (1520-32) three Latin editions were issued, two in Nuremberg (nos. 111-112) and one in Cologne (no. 123). Among vernacular imprints, items in German no longer dominate (nos. 91, 101-103). For the first time Spanish-language items lead (nos. 100, 106-107, 117, 119). The preeminence of the latter is due without doubt to the ascension of Charles I (later to be elected emperor of the Holy Roman Empire as Charles V) to the throne of Spain in 1516. The internationally oriented policies of the Habsburg replaced the narrow monopolistic attitude of the Aragonese kings. The involvement of the Habsburg can be documented in other ways. Waldseemüller dedicated his Cosmographia to Emperor Maximilian I (nos. 51-54; 1507); Enciso’s Suma de geographia
Figure 85. Indian couple as reported in an edition of Cortés, Antwerp, 1523. Habsburg coat of arms at upper center.

(no. 85; 1519) was published “for the instruction of Charles V” and many other items (for example, nos. 105, 107, 111-112, 117) honored Charles as emperor or king by reproducing his portrait or coat of arms on the title.

The language distribution of the 18 Cortés items appears in Table 3.

<table>
<thead>
<tr>
<th>Language</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin</td>
<td>3</td>
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<tr>
<td>Spanish</td>
<td>5</td>
</tr>
<tr>
<td>German</td>
<td>4</td>
</tr>
<tr>
<td>Italian</td>
<td>3</td>
</tr>
<tr>
<td>French</td>
<td>2</td>
</tr>
<tr>
<td>Dutch-Flemish</td>
<td>1</td>
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</tbody>
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The dramatic increase of vernacular items over the years, fully documented in Appendices I and II, is summarized in Table 4.

<table>
<thead>
<tr>
<th>Explorer</th>
<th>Latin items</th>
<th>Vernacular items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbus</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Vespucci</td>
<td>23</td>
<td>37</td>
</tr>
<tr>
<td>Cortés</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

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Books

Miscellaneous reports and the Decades of Peter Martyr are accounted for in Table 1 under the heading "Others" and are detailed in Appendices I and II. Examination of Appendix II tells the reader that of ten topically separate text types (a-j) only three were issued in four or more editions, that is, Grijalva (two of these appended to Varthema's Itinerario), Magellan (all these reported by Maximilian of Transylvania, the secretary of Emperor Charles V), and Peter Martyr's Decades. In all ten groups, Latin and Italian predominate (Latin 11, Italian 10; all others together 9). The exploits of the Cabots, of Pacheco Pereira, Verrazano, Ponce de León, etc., were not recorded at all in print during the period covered by this paper. The 30 items (a-j) have their beginning with the first Decade (Libretto de tutta la navigation) of Peter Martyr, published in Venice in 1504. In period II (1501-08) only three more items were published: Cabral’s (contained in a letter from Emanuel, king of Portugal, nos. 36-37); and the collection of Zorzi-Madrigano (no. 58). Another six followed between 1509 and 1516. The great majority (20), however, falls within period IV (1517-26).

By arranging all the main items (Appendix I, nos. 1-119) by country of origin (or by language area) we gain further insight into national awareness. To mark the changes during the years 1493 to 1526, it seemed advantageous to divide the 34 years into the mentioned periods:

i. 1493-1500, with the impact of the discoveries of Columbus,
ii. 1501-1508, with the impact of the discoveries of Vespucci,
iii. 1509-1516, interim period,
iv. 1517-1526, including the discoveries of Cortés.

| Table 5 |
| --- | --- | --- | --- |
| **Period** | I | II | III | IV | Grand Total |
| Italy | 4 5 9 5 8 13 | -- -- -- | -- 1 1 | 2 12 14 | 37 |
| France | 3 -- 3 5 -- 5 | 1 5 6 | 1 2 3 | 17 |
| Spain | -- 2 2 -- -- | 3 -- 3 | 1 7 8 | 13 |
| German speak. area | 2 13 9 15 24 | 2 5 7 | 4 5 9 | 43 |
| Low Countries | 1 -- 1 1 3 4 | -- -- -- | -- 3 3 | 8 |
| Bohemia | -- -- -- -- 1 1 | -- -- -- | -- -- -- | 1 |
| Totals | 10 8 18 | 20 27 47 | 6 11 17 | 8 29 37 | 119 |

The evidence is clear. The grand totals show that the German-speaking area and Italy taken together far outdistance all remaining
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countries (80 as against 39); this is also true if we take the size of population and territory into consideration (with the exception of the Low Countries). Turning to the comparison of totals by periods, note the dramatic increase in period II (47 as against 18 in period I), the steep decrease to the lowest of all totals in period III (17), and the resumption of activity in period IV (to 37). Passing on to the individual countries (including St. Dié in the German-speaking area because of the character of the press) we notice the sharp increase in that area during period II (24 against 3), a more moderate one in Italy (13 as against 9), and contrarily the complete absence of any item produced in Spain. The slackening of activity in period III was greatest in Italy, but a recovery took place in period IV, while the output in the German area remained relatively low, perhaps because of readers' great interest in the flood of Reformation and anti-Reformation pamphlets.

As a further step the present analysis could deal with individual places of printing, noting for example the large number of Parisian imprints (16) or the minimal number in Lyon (1). These two were the only places in France which produced relevant texts; this accounts for the large number of imprints that came off the presses of Paris, but does not explain the failure of the many able printers in Lyon to enter the field, notwithstanding the eminence of their city as an international center of commerce and finance. Likewise I could include the trend from pamphlet to respectable volume, or the use of occasionally fantastic illustrations. Even the addition of vocabularies to some few works (e.g. no. 81), or the use of privileges against reprinting (e.g. no. 31) are relevant to the dissemination of knowledge about the New World. But I cannot attempt to be exhaustive here, and shall proceed to a brief survey of printers who may be called specialists in "Americana" since they issued two or more items (proof that they at least considered reports on the Discoveries good business). Since many items were issued without place or name of printer the following tabulation is by necessity incomplete and somewhat tentative.

<table>
<thead>
<tr>
<th>Printer</th>
<th>City or town</th>
<th>Nos.*</th>
<th>Period</th>
<th>No. of years</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Printers producing 4 or 5 items</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cromberger</td>
<td>Seville</td>
<td>71, (72), 85, 100, 106</td>
<td>1511-1523</td>
<td>13</td>
</tr>
<tr>
<td>Doesborch</td>
<td>Antwerp</td>
<td>57, 64, (65), 93</td>
<td>1507?-1522</td>
<td>16</td>
</tr>
<tr>
<td>Grüninger</td>
<td>Strasbourg</td>
<td>66, (67), 68, (69), D</td>
<td>1509-1511</td>
<td>3</td>
</tr>
<tr>
<td>Risconi</td>
<td>Venice</td>
<td>83, 89, 95, 97</td>
<td>1517-1522</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>St. Dié</td>
<td>51, (52), 53, (54)</td>
<td>1509</td>
<td>1</td>
</tr>
</tbody>
</table>
If we accept the thesis that repeat performance by printers serves as an index of sales' success and concurrently of readers' interest (certainly a reprint is issued only after the earlier imprint has been nearly or completely exhausted), it follows that items selected by them for production can be termed bestsellers. Eight texts qualify here:

1. Vespucci, *Mundus novus*

   German: Nos. 38, 44? (Höltzel)  
   43, 49 (Hupfuff)  
   61, 63 (Stuchs)  

   Dutch-Flemish:  
   57, 64-65 (Doesborch)  

   French:  
   120-121 (Janot)  

   Total 12  

   (1505-1529?)

2. Montalboddo, *Paesi novamente ritrovati*

   Italian:  
   55-56 (Henr. Vicentinus)  
   59, 73, 84 (Scinzenzeler)  
   83, 95 (Risconi)  

   French:  
   77-79 (Trepperel)  
   80 (Janot)  

   Total 11  

   (1507-1515?)

3. Waldseemüller, *Cosmographia*

   Latin:  
   51-54 (St. Dié)  
   66-67 (Grüninger)  

   German:  
   68-69 (Grüninger)  

   Total 8  

   (1507-1509)

4. Columbus, *Epistolae*

   Latin:  
   2-3 (Plannck)  
   4 (Silber)  

   Total 3  

   (1493)

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**Books**

<table>
<thead>
<tr>
<th>Printers producing 3 items</th>
<th>Books</th>
</tr>
</thead>
</table>
| Höltzel Nuremberg | 38, 44?, 76?  
| 1505-1514? | 10 |
| Hupfuff Strasbourg | 34, 43, 49  
| 1505-1506 | 2 |
| Janot Paris | 80, 120, 121  
| 1515-1529? | 15 |
| Peypus Nuremberg | 91, 111, 112  
| 1520-1524 | 5 |
| Scinzenzeler Milan | 59, 73, 84  
| 1508-1519 | 12 |
| Stuchs Nuremberg | 61, (62), 63  
| 1508 | 1 |
| Trepperel Paris | 77, (78-79)  
| 1515? | 1 |

<table>
<thead>
<tr>
<th>Printers producing 2 items</th>
<th>Books</th>
</tr>
</thead>
</table>
| Calvi Rome | 104, 110  
| 1523-1524 | 2 |
| Hochstraten Antwerp | 99 (French), 108 (English)  
| 1522-1523 | 2 |
| Morgiani Florence | 8, 15  
| 1493-1495 | 3 |
| Oeglin Augsburg | 74, 75  
| 1514? | 1 |
| Plannck Rome | 2, 3  
| 1493 | 1 |
| Silber Rome | 4, 7  
| 1493 | 1 |
| Henr. Vicentinus Vicenza | 55, (56)  
| 1507 | 1 |
5. Dati, Lettere

Italian: 7 (Silber) 8, 15 (Morgiani)  
Total 3  
(1493-1495)

6. Newe Zeytung auss Presillg Landt

German: 74-75 (Oeglin) 76 (Höltzel)  
Total 3  
(1514?)

7. Peter Martyr, Oceani decades

Latin: 71-72 (Cromberger)  
Total 2  
(1511)

8. Cortés, De nova maris oceani Hyspania

Latin: 111-112 (Peypus)  
Total 2  
(1524)

SUMMARY AND CONCLUSIONS

This study of the impact of the Discoveries on the reading public is based on 124 imprints, from the Columbus letter of 1493 to an edition of Cortés which appeared in 1532. In physical appearance they range from slight pamphlets, generally four leaves in quarto, to folio volumes of more than 100 leaves. Slightly more than one sixth concern the explorations of Columbus (distributed over 30 years); almost one half deal with Vespucci (over a period of 28 years); one sixth is concerned with the voyages of Cortés (extending over only 13 years, because of the chronological limitations of this study); a final one fourth covers a miscellany of travels (1504-30).

The preponderance of Vespucci-connected items justifies a more extended commentary. If we assume that printer-publishers responded to public interest, it follows that curiosity about Vespucci’s travels exceeded that about any other discovery in the Western Hemisphere during these 40 years.

Twenty-three Vespucci-related reports are in Latin and could therefore be read by the educated anywhere in Europe. By contrast the 37 vernacular imprints circulated primarily within clearly circumscribed language areas. Seventeen out of these 37 are in German, published within the brief span of five years (1505-09). Eight are in Italian, issued over a longer period (1505-21); and another eight are in French, the latter published after the death of Vespucci, as late as 1515 (-1529?)

It is difficult to establish an entirely convincing explanation for the national differences in the reception of the news about Vespucci. The state of literacy is a contributing factor, but fails to explain the cessation of publications after 1509 in German lands, or the late start in France.
Commercial interest, political conditions, and the attitude of readers were contributing factors.

One report on Vespucci was also published in Bohemia, but none in Latin or the vernacular in Portugal, Spain, or in England. The absence of a single English imprint is surprising; the vacuum in Portugal and Spain is astounding, since these two countries played the major role in early explorations. It is almost certain that the monopolistic policies of the rulers of the Iberian peninsula directed against native competition prevented publication. The attitude in Spain changed with the ascent of a Habsburg, Charles I, to the Spanish throne in 1516.

With the exploits of Cortés, reports in Spanish lead with five imprints, followed closely by four in German, three each in Latin and Italian, two in French, and one in Dutch or Flemish. The Latin texts of Cortés appeared not in Spain, France, or Italy, as one might expect, but in Nuremberg (2) and Cologne (1). The only English-language item in the entire list of 124 imprints appeared ca. 1520, not in England but in Antwerp.

Among printed reports on other explorations only two sets achieved a measure of success: Magellan's voyages are recorded in six imprints (4 Latin, 1 French, and 1 German), and the composite history by Peter Martyr in eight (5 Latin, 1 each in Italian, Spanish, and German). During the 40 years 1493-1532, no printed reports appeared on the voyages of the Cabots, Pacheco, Verrazano, or Ponce de León.

To clarify trends the 119 imprints produced between 1493 and 1526 are divided into the four periods which were already outlined, and which are presented in the chart below.

The chart clarifies the overall development, the general rise in period II (with the sole exception of Spain), the ebbing in period III (again with one exception, that is, French vernacular imprints), and the partial recovery in period IV. In Italy the acceleration was considerable in period II, though it lagged behind the steeper rise in Germany; the decrescendo was dramatic in period III; and the recovery spectacular in IV, but then largely limited to vernacular imprints. Imprints in French began only in period III and slowed in period IV. Spanish imprints began auspiciously in period I, disappeared in period II, reappeared in III (but only in Latin), and increased in the vernacular in period IV. In the German-speaking region the increase was steep in period II, production decreased in III, and recovered only very slightly in IV. The number of imprints in the Low Countries is worth noting in spite of the limited number—territory and population were considerably smaller than in the other regions. All imprints of the Low Countries originated in Antwerp.

Whether we include or exclude variants and issues, the rank of the centers producing the largest number of "Americana" remains the same. Paris heads the list (notice that with one exception [Lyon] all items in
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Chart 1

Number of imprints per language area graphically represented

France were produced in Paris). Venice comes next, its rank based on a massive production in the final period. Nuremberg is third; fourth place is shared by Antwerp, Rome, and Strasbourg; and Augsburg follows closely in fifth position.

The data presented in this paper lead me to the conclusion that a definite and broadly based interest in early Discoveries did exist. It was uneven, varying from country to country and from period to period, and was not limited to the truly educated who read Latin texts, but reached
Books

in ever increasing number those who could not, or would not, read Latin. The concern with explorations was not unique, and was not greater than, or even equal to, the concern with the Turkish threat, or religious fervor, or popular science and medicine, or abuses of temporal power.

The framework of this paper allowed no comparison with other readers’ interests, and no detailed analysis of the rationale behind my findings. It can be argued that the excursions into Italy by successive rulers of France (Louis XII, Charles VIII, and Francis I) detracted from French concern with the explorations; that the weakness of the French and English naval forces hindered their participation in exploration and that this in turn negatively affected their public’s interest; that active trade to the East and a special concern with African and Asiatic ventures detracted, especially in Portugal, Spain, and Italy, from the glamour of Western discoveries; or, as a last example, that the large number of Reformation pamphlets reduced the interest in the Holy Roman Empire, beginning in 1517. Most points dealing with the intellectual, political, economic, and financial, and technical influences have been omitted, because they are outside the scope of a bibliographical study, and my competence, and because they are dealt with by other contributors to this collection.

NOTES


2. The list is reproduced as Appendix I. Arranged in chronological order, it provides—as far as available—information on compilers or authors, names of explorers, the language of publication, imprints, sizes, the collation, and bibliographical references for verification. It will be noted that dates are at times vague, reflecting the fact that many items appeared without indicating the year of printing, just as many do not provide the place of printing or the name of the printer. In cases of doubt question marks appear as a warning to the reader. The spelling of titles has been simplified, except where the accurate reproduction seems important to indicate that we are dealing with a special setting. Titles are given in shortened form. Appendix I also includes a few unnumbered items (listed under capital letters), like a pictorial representation of the landing in the New World (B), a hypothetically existing but unknown item (A), a misdated item (I), etc. These were not included in the tables and were disregarded in the commentary.

3. Others include Arias, Cabral, Diaz, Grijalva, Magellan, Velasquez, pamphlets on the discovery of Brazil not assigned to any specific explorer with certainty, and the composite history of Peter Martyr (of Anghiera, Angliara, Angleria).

4. The size of the editions of any of these items is unknown. It is fair to assume that none were issued in less than 200 and none, or very few, in more than 500 copies. Editions increased presumably when and where proof of a wider interest could be established. Note too that single copies circulated, and that some of the items were read aloud to an audience of several persons.

5. A similar use of an irrelevant detail or illustration occurred in Vespucci’s Mundus novus, printed in Cologne, ca. 1504 (no. 27) depicting women saints holding Christ.
6. It is possible that the French exploration of Brazil caused the comparatively large number of Latin imprints of the Vespucci report which was issued in Paris. No explanation is offered for the probable three Venetian imprints in Latin, beyond the suggestion that these in particular were meant for an international market (as were so many items produced by enterprising Venetian presses). Since the Mundus novus is dedicated to Lorenzo di Piero de’ Medici, it is perhaps surprising that only one Florentine edition is recorded. But it may have been caused by the expulsion of Lorenzo’s father Piero in 1494 and the delayed return to power by the Medici in 1512. The absence of any Spanish or Portuguese imprint seems puzzling; an explanation is suggested in the text.

7. See among others Konrad Haebler, Die überseeischen Unternehmungen der Welser und ihrer Gesellschafter (Leipzig 1903); Percy E. Schramm, Deutschland und Übersee (Brunswick [1950]); and especially the recent article by M. H. Kellenbenz, “La participation des capitaux de l’Allemagne méridionale aux entreprises portugaises d’outremer au tournant du XVe siècle,” in Les aspects internationaux de la découverte océanique . . . (n. 1 above) 309-317 with ample references to relevant books and articles.


9. Variants or issues appear in parentheses to distinguish them from true editions (for an explanation of issues and variants see pp. 537-538 above).

REFERENCES IN APPENDIX I


Baudrier H. L. Baudrier, Bibliographie lyonnaise . . . Lyon 1895-1921.


**Books**


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<th></th>
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<td>Columbus</td>
<td>De insulis inventis, Epist.</td>
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<td>Dati-Columbus</td>
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<td>Columbus</td>
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<td>Year</td>
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<td>35.</td>
<td>----</td>
<td>Columbus</td>
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<td>36.</td>
<td>----</td>
<td>Emanuel, king of Portugal-Cabral</td>
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<td>37.</td>
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Printed Reports on the Early Discoveries and Their Reception
<table>
<thead>
<tr>
<th>No.</th>
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<th>Title</th>
<th>Edition</th>
<th>Location</th>
<th>Author</th>
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<tr>
<td>51.</td>
<td>1507</td>
<td>Waldseemüller Vespucci</td>
<td>L</td>
<td>St. Dié</td>
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<td>40 ff. Harr.83(Fracanzoni); A.-A.p.122; Vignaud 57; n.b. also Columbus, etc.</td>
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Part VII

LANGUAGE
At the close of *Musophilus*, Samuel Daniel’s brooding philosophical poem of 1599, the poet’s spokesman, anxious and uncertain through much of the dialogue in the face of his opponent’s skepticism, at last rises to a ringing defense of eloquence, and particularly English eloquence, culminating in a vision of its future possibilities:

And who in time knowes whither we may vent  
The treasure of our tongue, to what strange shores  
This gaine of our best glorie shall be sent,  
T'inrich vnknowing Nations with our stores?  
What worlds in th’yet vnformed Occident  
May come refin’d with th’accents that are ours?¹

For Daniel, the New World is a vast, rich field for the plantation of the English language. Deftly he reverses the conventional image and imagines argosies freighted with a cargo of priceless words, sailing west “T’inrich vnknowing Nations with our stores.” There is another reversal of sorts here: the “best glorie” that the English voyagers will carry with
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them is not “the treasure of our faith” but “the treasure of our tongue.” It is as if in place of the evangelical spirit, which in the early English voyages is but a small flame compared to the blazing mission of the Spanish friars, Daniel would substitute a linguistic mission, the propagation of English speech.

Linguistic colonialism is mentioned by continental writers as well but usually as a small part of the larger enterprise of conquest, conversion, and settlement. Thus Peter Martyr writes to Pope Leo X of the “large landes and many regyons whiche shal hereafter receaue owre nations, tounges, and maners: and therwith embrase owre relygion.” Occasionally, more substantial claims are made. In 1492, in the introduction to his Gramática, the first grammar of a modern European tongue, Antonio de Nebrija writes that language has always been the partner (“companera”) of empire. And in the ceremonial presentation of the volume to Queen Isabella, the bishop of Avila, speaking on the scholar’s behalf, claimed a still more central role for language. When the queen asked flatly, “What is it for?” the bishop replied, “Your Majesty, language is the perfect instrument of empire.” But for Daniel, English is neither partner nor instrument; its expansion is virtually the goal of the whole enterprise.

Daniel does not consider the spread of English a conquest but rather a gift of inestimable value. He hasn’t the slightest sense that the natives might be reluctant to abandon their own tongue; for him, the Occident is “yet unformed,” its nations “unknowing.” Or, as Peter Martyr puts it, the natives are a tabula rasa ready to take the imprint of European civilization: “For lyke as rased or vnpaynted tables, are apte to receaue what formes soo euer are fyrst drawen theron by the hande of the paynter, euen soo these naked and simple people, doo soone receae the customes of owre Religion, and by conuersation with owre men, shake of theyr fierce and natieue barbarousnes.” The mention of the nakedness of the Indians is typical; to a ruling class obsessed with the symbolism of dress, the Indians’ physical appearance was a token of a cultural void. In the eyes of the Europeans, the Indians were culturally naked.

This illusion that the inhabitants of the New World are essentially without a culture of their own is both early and remarkably persistent, even in the face of overwhelming contradictory evidence. In his journal entry for the day of days, 12 October 1492, Columbus expresses the thought that the Indians ought to make good servants, “for I see that they repeat very quickly whatever was said to them.” He thinks, too, that they would easily be converted to Christianity, “because it seemed to me that they belonged to no religion.” And he continues: “I, please Our Lord, will carry off six of them at my departure to Your Highnesses, that they may learn to speak.” The first of the endless series of kidnap-
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...ings, then, was plotted in order to secure interpreters; the primal crime in the New World was committed in the interest of language. But the actual phrase of the journal merits close attention: "that they may learn to speak" (para que aprendan a hablar). We are dealing, of course, with an idiom: Columbus must have known, even in that first encounter, that the Indians could speak, and he argued from the beginning that they were rational human beings. But the idiom has a life of its own; it implies that the Indians had no language at all.

This is, in part, an aspect of that linguistic colonialism we have already encountered in Musophilus: to speak is to speak one's own language, or at least a language with which one is familiar. "A man would be more cheerful with his dog for company," writes Saint Augustine, "than with a foreigner." The unfamiliarity of their speech is a recurrent motif in the early accounts of the New World's inhabitants, and it is paraded forth in the company of all their other strange and often repellent qualities. The chronicler Robert Fabian writes of three savages presented to Henry VII that they "were clothed in beasts skins, & did eate raw flesh, and spake such speach that no man could understand them, and in their demeanour like to bruite beastes." Roy Harvey Pearce cites this as an example of the typical English view of the Indians as animals, but Fabian is far more ambiguous, for he continues: "Of the which upon two yeeres after, I saw two apparelled after the maner of Englishmen in Westminster pallace, which that time I could not discerne from Englishmen, til I was learned what they were, but as for speach, I heard none of them utter one word." When he sees the natives again, are they still savages, now masked by their dress, or was his first impression misleading? And the seal of the ambiguity is the fact that he did not hear them utter a word, as if the real test of their conversion to civilization would be whether they had been able to master a language that "men" could understand.

In the 1570's the strangeness of Indian language can still be used in precisely the same way. In his first voyage to "Meta Incognita," as George Best reports, Frobisher captured a savage to take home with him as "... a sufficient witnesse of the captaines farre and tedious travell towards the unknowne parts of the world, as did well appeare by this strange infidell, whose like was never seene, read, nor heard of before, and whose language was neither knowne nor understood of any. ..." For Gregorio Garcia, whose massive study of the origins of the Indians was published in 1607, there was something diabolical about the difficulty and variety of languages in the New World: Satan had helped the Indians to invent new tongues, thus impeding the labors of Christian missionaries. And even the young John Milton, attacking the legal jargon of his time, can say in rhetorical outrage, "our speech is, I know not what, American, I suppose, or not even human!"
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Of course, there were many early attempts to treat Indian speech as something men could come to understand. According to John H. Parry, "All the early friars endeavoured to master Indian languages, usually Nahuatl, though some acquired other languages; the learned Andrés de Olmos, an early companion of Zumárraga, was credited with ten." Traders and settlers also had an obvious interest in learning at least a few Indian words, and there are numerous word lists in the early accounts, facilitated as Peter Martyr points out by the fortuitous circumstance that "the languages of all the nations of these Ilandes, maye well be written with our Latine letters." Such lists even suggested to one observer, Marc Lescarbot, the fact the Indian languages could change in time, just as French had changed from the age of Charlemagne. This, he explains, is why Cartier’s dictionary of Indian words, compiled in the 1530’s, is no longer of much use in the early seventeenth century.

Indian languages even found some influential European admirers. In a famous passage, Montaigne approvingly quotes in translation several Indian songs, noting of one that "the invention hath no barbarism at all in it, but is altogether Anacreontic." In his judgment, "Their language is a kind of pleasant speech, and hath a pleasing sound and some affinity with the Greek terminations." Raleigh, likewise, finds that the Tivitivas of Guiana have "the most manlie speech and most deliberate that euer I heard of what nation soeuer," while, in the next century, William Penn judges Indian speech "lofty" and full of words "of more sweetness or greatness" than most European tongues. And the great Bartolomé de Las Casas, as he so often does, turns the tables on the Europeans:

A man is apt to be called barbarous, in comparison with another, because he is strange in his manner of speech and mispronounces the language of the other. . . . According to Strabo, Book XIV, this was the chief reason the Greeks called other peoples barbarous, that is, because they were mispronouncing the Greek language. But from this point of view, there is no man or race which is not barbarous with respect to some other man or race. . . . Thus, just as we esteemed these peoples of these Indies barbarous, so they considered us, because of not understanding us.

Simple and obvious as this point seems to us, it does not appear to have taken firm hold in the early years of conquest and settlement. Something of its spirit may be found in Oviedo’s observation of an Indian interpreter failing to communicate with the members of another tribe: "[he] did not understand them better than a Biscayan talking Basque could make himself intelligible to a person speaking German or Arabic, or any other strange language." But the view that Indian speech was close to gibberish remained current in intellectual as well as popular circles at least into the seventeenth century. Indeed it is precisely in educated, and particularly humanist, circles that the view
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proved most tenacious and extreme. The rough, illiterate sea dog, bartering for gold trinkets on a faraway beach, was far more likely than the scholar to understand that the natives had their own tongue. The captains or lieutenants whose accounts we read had stood on the same beach, but when they sat down to record their experiences, powerful cultural presuppositions asserted themselves almost irresistibly.

For long before men without the full command of language, which is to say without eloquence, were thought to have been discovered in the New World, Renaissance humanists knew that such men existed, rather as modern scientists knew from the periodic table of the necessary existence of elements yet undiscovered. Virtually every Renaissance schoolboy read in Cicero’s De oratore that only eloquence had been powerful enough “to gather scattered mankind together in one place, to transplant human beings from a barbarous life in the wilderness to a civilized social system, to establish organized communities, to equip them with laws and judicial safeguards and civic rights.” These lines, and similar passages from Isocrates and Quintilian, are echoed again and again in the fifteenth and sixteenth centuries as the proudest boast of the studium humanitatis. Eloquence, wrote Andrea Ugo of Siena in 1421, led wandering humanity from a savage, bestial existence to civilized culture. Likewise, Andrea Brenta of Padua declared in 1480 that primitive men had led brutish and lawless lives in the fields until eloquence brought them together and converted barbaric violence into humanity and culture. And more than a hundred years later, Puttenham can make the same claim, in the same terms, on behalf of poetry:

Poesie was th’originall cause and occasion of their first assemblies, when before the people remained in the woods and mountains, vagrant and dispersed like the wild beasts, lawlesse and naked, or verie ill clad, and of all good and necessarie prouision for harbour or sustenance utterly vnfrunished: so as they little diffred for their manner of life, from the very brute beasts of the field.

Curiously enough, a few pages later Puttenham cites the peoples of the New World as proof that poetry is more ancient than prose:

This is proved by certificate of marchants & trauellers, who by late nauigations haue surveyued the whole world, and discouered large countries and strange peoples wild and savage, affirming that the American, the Perusine & the very Canniball, do sing and also say, their highest and holiest matters in certaine riming versicles and not in prose.

But it was more reasonable and logically consistent to conclude, as others did, that the savages of America were without eloquence or even without language. To validate one of their major tenets, humanists needed to reach such a conclusion, and they clung to it, in the face of all the evidence, with corresponding tenacity.
Moreover, both intellectual and popular culture in the Renaissance had kept alive the medieval figure of the Wild Man, one of whose common characteristics is the absence of speech. Thus when Spenser's Salvage Man, in Book 1 of the *Faerie Queene*, wishes to express his compassion for a distressed damsel, he kisses his hands and crouches low to the ground,

*...other language had he none, nor speach,\nBut a soft murmure, and confused sound\nOf senselesse words, which Nature did him teach.*

To be sure, the Wild Man of medieval and Renaissance literature often turns out to be of gentle blood, having been lost, as an infant, in the woods; his language problem, then, is a consequence of his condition, rather than, as in Cicero, its prime cause. But this view accorded perfectly with the various speculations about the origins of the Indians, whether they were seen as lost descendants of the Trojans, Hebrews, Carthaginians, or Chinese. Indian speech, that speech no man could understand, could be viewed as the tattered remnants of a lost language.

It is only a slight exaggeration, I think, to suggest that Europeans had, for centuries, rehearsed their encounter with the peoples of the New World, acting out, in their response to the legendary Wild Man, their mingled attraction and revulsion, longing and hatred. In the Christian Middle Ages, according to a recent account, "the Wild Man is the distillation of the specific anxieties underlying the three securities supposedly provided by the specifically Christian institutions of civilized life: the securities of *sex* (as organized by the institution of the family), *sustenance* (as provided by the political, social, and economic institutions), and *salvation* (as provided by the Church)." These are precisely the areas in which the Indians most disturb their early observers. They appear to some to have no stable family life and are given instead to wantonness and perversion. Nor, according to others, are they capable of political organization or settled social life. Against the campaign to free the enslaved Indians, it was argued that once given their liberty, they would return to their old ways: "For being idle and slothfull, they wander vp & downe, and returne to their olde rites and ceremonies, and foule and mischieuous actes." And everywhere we hear of their worship of idols which, in the eyes of the Europeans, strikingly resemble the images of devils in Christian art.

Certainly the Indians were again and again identified as Wild Men, as wild, in the words of Francis Pretty, "as ever was a bucke or any other wilde beast." "These men may very well and truely be called Wilde," writes Jacques Cartier, at once confirming and qualifying the popular name, "because there is no poorer people in the world." Peter Martyr
records tales of Wild Men in the New World, but he distinguishes them from the majority of the inhabitants:

They say there are certeyne wyld men whiche lyue in the caues and dennes of the montaynes, contented onely with wilde fruites. These men neuer vsed the companye of any other: nor wyll by any meanes become tame. They lyue without any certayne dwellynge places, and with owte tyllage or culturynge of the grounde, as wee reade of them whiche in oulde tyme lyued in the golden age. They say also that these men are withowte any certayne language. They are sumtymes seene. But owre men haue yet layde handes on none of them.32

As Martyr’s description suggests, Wild Men live beyond the pale of civilized life, outside all institutions, untouched by the long, slow development of human culture. If their existence is rude and repugnant, it also has, as Martyr’s curious mention of the Golden Age suggests, a disturbing allure. The figure of the Wild Man, and the Indians identified as Wild Men, serve as a screen onto which Renaissance Europeans, bound by their institutions, project their darkest and yet most compelling fantasies. In the words of the earliest English tract on America:

the people of this lande haue no kynge nor lorde nor theyr god. But all things is comune/this people goeth all naked. . . . These folke lyuen lyke bestes without any resonablenes and the wymen be also as comon. And the men hath conversascyon with the wymen/who that they ben or who they fyrst mete/is she his syster/his mother/his daughter/or any other kyndred. And the wymen be very hoote and dysposed to lecherdnes. And they ete also on[e] a nother. The man etethe his wyfe his chylderne. . . . And that lande is ryght full of folke/for they lyue commonly, iii. C. [300] yere and more as with sykenesse·they dye nat.33

This bizarre description is, of course, an almost embarrassingly clinical delineation of the Freudian id. And the id, according to Freud, is without language.

At the furthest extreme, the Wild Man shades into the animal—one possible source of the medieval legend being European observation of the great apes.34 Language is, after all, one of the crucial ways of distinguishing between men and beasts: “The one special advantage we enjoy over animals,” writes Cicero, “is our power to speak with one another, to express our thoughts in words.”35 Not surprisingly, then, there was some early speculation that the Indians were subhuman and thus, among other things, incapable of receiving the true faith. One of the early advocates on their behalf, Bernadino de Minaya, recalls that, on his return to Spain from the New World,

I went on foot, begging, to Valladolid, where I visited the cardinal and informed him that Friar Domingo [de Betanzos, an exponent of the theory that the Indians were beasts] knew neither the Indians’ language nor their
true nature. I told him of their ability and the right they had to become Christians. He replied that I was much deceived, for he understood that the Indians were no more than parrots, and he believed that Friar Domingo spoke with prophetic spirit. . . .

The debate was dampened but by no means extinguished by Pope Paul III’s condemnation, in the bull *Sublimis Deus* (1537), of the opinion that the Indians are “dumb brutes created for our service” and “incapable of receiving the Catholic faith.” Friar Domingo conceded in 1544 that the Indians had language but argued against training them for the clergy on the grounds that their language was defective, lacking the character and copiousness necessary to explain Christian doctrine without introducing great improprieties which could easily lead to great errors. Similarly, Pierre Massée observes that the Brazilian Indians lack the letters F, L, and R, which they could only receive by divine inspiration, insofar as they have neither “Foy, Loy, ne Roy.” Ironically, it is here, in these virtual slanders, that we find some of the fullest acknowledgement of the enormous cultural gap between Europeans and Indians, and of the near impossibility of translating concepts like conversion, Incarnation, or the Trinity into native speech.

Perhaps the profoundest literary exploration of these themes in the Renaissance is to be found in Shakespeare. In *The Tempest* the startling encounter between a lettered and an unlettered culture is heightened, almost parodied, in the relationship between a European whose entire source of power is his library and a savage who had no speech at all before the European’s arrival. “Remember / First to possess his books,” Caliban warns the lower-class and presumably illiterate Stephano and Trinculo,

for without them
He’s but a sot, as I am, nor hath not
One spirit to command: they all do hate him
As rootedly as I. Burn but his books.

This idea may well have had some historical analogue in the early years of conquest. In his *Thresor de l’histoire des langues de cest univers* (1607), Claude Duret reports that the Indians, fearing that their secrets would be recorded and revealed, would not approach certain trees whose leaves the Spanish used for paper, and Father Chaumonot writes in 1640 that the Hurons “were convinced that we were sorcerers, imposters come to take possession of their country, after having made them perish by our spells, which were shut up in our inkstands, in our books, etc.,—inasmuch that we dared not, without hiding ourselves, open a book or write anything.”

The link between *The Tempest* and the New World has often been noted, most recently by Terence Hawkes who suggests, in his book
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*Shakespeare's Talking Animals,* that in creating Prospero, the playwright’s imagination was fired by the resemblance he perceived between himself and a colonist. “A colonist,” writes Hawkes,

acts essentially as a dramatist. He imposes the ‘shape’ of his own culture, *embodied in his speech,* on the new world, and makes that world recognizable, habitable, ‘natural,’ able to speak his language. 43

Conversely,

the dramatist is metaphorically a colonist. His art penetrates new areas of experience, his language expands the boundaries of our culture, and makes the new territory over in its own image. His ‘raids on the inarticulate’ open up new worlds for the imagination. (212) 44

To read such glowing tribute, one would never know that there had been a single doubt whispered in the twentieth century about the virtues of European colonialism. More important, one would never know that Prospero and the other Europeans leave the island at the end of the play. If *The Tempest* is holding up a mirror to colonialism, Shakespeare is far more ambivalent than Terence Hawkes about the reflected image.

Caliban enters in Act I, cursing Prospero and protesting bitterly: “This island’s mine, by Sycorax my mother, / Which thou tak’st from me” (I. ii. 333-334). When he first arrived, Prospero made much of Caliban, and Caliban, in turn, showed Prospero “all the qualities o’th’isle.” But now, Caliban complains, “I am all the subjects that you have, / Which first was mine own King.” Prospero replies angrily that he had treated Caliban “with human care” until he tried to rape Miranda, a charge Caliban does not deny. At this point, Miranda herself chimes in, with a speech Dryden and others have found disturbingly indelicate:

Abhorred slave,
Which any print of goodness wilt not take,
Being capable of all ill! I pitied thee,
Took pains to make thee speak, taught thee each hour
One thing or other: when thou didst not, savage,
Know thine own meaning, but wouldst gabble like
A thing most brutish, I endow’d thy purposes
With words that made them known. But thy vile race,
Though thou didst learn, had that in’t which good natures
Could not abide to be with; therefore wast thou
Deservedly confin’d into this rock,
Who hadst deserv’d more than a prison. 45

To this, Caliban replies:

You taught me language; and my profit on’t
Is, I know how to curse. The red plague rid you
For learning me your language! (I. ii. 353-367)
Caliban’s retort might be taken as self-indictment: even with the gift of language, his nature is so debased that he can only learn to curse. But the lines refuse to mean this; what we experience instead is a sense of their devastating justness. Ugly, rude, savage, Caliban nevertheless achieves for an instant an absolute, if intolerably bitter, moral victory. There is no reply; only Prospero’s command: “Hag-seed, hence! / Fetch us in fuel,” coupled with an ugly threat:

If thou neglect’st, or dost unwillingly
What I command, I’ll rack thee with old cramps,
Fill all thy bones with aches, make thee roar,
That beasts shall tremble at thy din. (I. ii. 370-373)

What makes this exchange so powerful, I think, is that Caliban is anything but a Noble Savage. Shakespeare does not shrink from the darkest European fantasies about the Wild Man; indeed he exaggerates them: Caliban is deformed, lecherous, evil-smelling, idle, treacherous, naive, drunken, rebellious, violent, and devil-worshipping. According to Prospero, he is not even human: a “born devil,” “got by the devil himself / Upon thy wicked dam” (I. ii. 321-322). The Tempest utterly rejects the uniformitarian view of the human race, the view that would later triumph in the Enlightenment and prevail in the West to this day. All men, the play seems to suggest, are not alike; strip away the adornments of culture and you will not reach a single human essence. If anything, the Tempest seems closer in spirit to the attitude of the present-day inhabitants of Java who, according to Clifford Geertz, quite flatly say, “To be human is to be Javanese.”

And yet out of the midst of this attitude Caliban wins a momentary victory that is, quite simply, an assertion of inconsolable human pain and bitterness. And out of the midst of this attitude Prospero comes, at the end of the play, to say of Caliban, “this thing of darkness I / Acknowledge mine” (V. i. 275-276). Like Caliban’s earlier reply, Prospero’s words are ambiguous; they might be taken as a bare statement that the strange “demi-devil” is one of Prospero’s party as opposed to Alonso’s, or even that Caliban is Prospero’s slave. But again the lines refuse to mean this: they acknowledge a deep, if entirely unsentimental, bond. By no means is Caliban accepted into the family of man; rather, he is claimed as Philoctetes might claim his own festering wound. Perhaps, too, the word “acknowledge” implies some moral responsibility, as when the Lord, in the King James translation of Jeremiah, exhorts men to “acknowledge thine iniquity, that thou hast transgressed against the Lord thy God” (3:13). Certainly the Caliban of Act V is in a very real sense Prospero’s creature, and the bitter justness of his retort early in the play still casts a shadow at its close. With Prospero restored to his dukedom, the match of Ferdinand and Miranda blessed, Ariel freed to the elements, and even the wind and tides of the return voyage settled,
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Shakespeare leaves Caliban’s fate naggingly unclear. Prospero has acknowledged a bond; that is all.

Arrogant, blindly obstinate, and destructive as was the belief that the Indians had no language at all, the opposite conviction—that there was no significant language barrier between Europeans and savages—may have had consequences as bad or worse. Superficially, this latter view is the more sympathetic and seductive, in that it never needs to be stated. It is hard, after all, to resist the story of the caciques of the Cenú Indians who are reported by the Spanish captain to have rebutted the official claim to their land thus:

what I said about the Pope being the Lord of all the universe in the place of God, and that he had given the land of the Indies to the King of Castille, the Pope must have been drunk when he did it, for he gave what was not his; also . . . the King, who asked for, or received, this gift, must be some madman, for that he asked to have that given him which belonged to others.48

It is considerably less hard to resist the account of the caciques of New Granada who declared in a memorial sent to the pope in 1553 that “if by chance Your Holiness has been told that we are bestial, you are to understand that this is true inasmuch as we follow devilish rites and ceremonies.”49 The principle in both cases is the same: whatever the natives may have actually thought and said has been altered out of recognition by being cast in European diction and syntax.

Again and again in the early accounts, Europeans and Indians, after looking on each other’s faces for the first time, converse without the slightest difficulty; indeed the Indians often speak with as great a facility in English or Spanish as the Renaissance gentlemen themselves. There were interpreters, to be sure, but these are frequently credited with linguistic feats that challenge belief. Thus Las Casas indignantly objects to the pretense that complex negotiations were conducted through the mediation of interpreters who, in actual fact, “communicate with a few phrases like ‘Gimme bread,’ ‘Gimme food,’ ‘Take this, gimme that,’ and otherwise carry on with gestures.”50 He argues that the narratives are intentionally falsified, to make the conquistadores’ actions appear fairer and more deliberative than they actually were. There may have been such willful falsification, but there also seems to have been a great deal of what we may call “filling in the blanks.” The Europeans and the interpreters themselves translated such fragments as they understood or thought they understood into a coherent story, and they came to believe quite easily that the story was what they had actually heard. There could be, and apparently were, murderous results.51

The savages in the early accounts of the New World may occasionally make strange noises—“Oh ho” or “bow-wow”52—but, once cred-
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itted with intelligible speech, they employ our accents and are comfortable in our modes of thought. Thus the amorous daughter of a cruel cacique, we learn in The Florida of the Inca, saved the young Spanish captive with the following words:

Lest you lose faith in me and despair of your life or doubt that I will do everything in my power to save you ... I will assist you to escape and find refuge if you are a man and have the courage to flee. For tonight, if you will come at a certain hour to a certain place, you will find an Indian in whom I shall entrust both your welfare and mine.53

It may be objected that this is narrative convention: as in adventure movies, the natives look exotic but speak our language. But such conventions are almost never mere technical conveniences. If it was immensely difficult in sixteenth-century narratives to represent a language barrier, it is because embedded in the narrative convention of the period was a powerful, unspoken belief in the isomorphic relationship between language and reality. The denial of Indian language or of the language barrier grew out of the same soil that, in the mid-seventeenth century, would bring forth the search for a universal language. Many sixteenth-century observers of the Indians seem to have assumed that language—their language—represented the true, rational order of things in the world. Accordingly, Indians were frequently either found defective in speech, and hence pushed toward the zone of wild things, or granted essentially the same speech as the Europeans. Linguists in the seventeenth century brought the underlying assumption to the surface, not, of course, to claim that English, or Latin, or even Hebrew expressed the shape of reality, but to advocate the discovery or fashioning of a universal language that would do so.

Behind this project, and behind the narrative convention that fore-shadowed it, lay the conviction that reality was one and universal, constituted identically for all men at all times and in all places. The ultimate grounds for this faith were theological and were many times explicitly voiced, as here by Raleigh in his History of the World:

The same just God who liueth and gouerneth all thinges for euer, doeth in these our times giue victorie, courage, and discouragye, raise, and throw downe Kinges, Estates, Cities, and Nations, for the same offenses which were committted of old, and are committted in the present.54

There is a single faith, a single text, a single reality.

This complex of convictions may illuminate that most startling document, the Requerimiento, which was drawn up in 1513 and put into effect the next year. The Requerimiento was to be read aloud to newly encountered peoples in the New World; it demands both obedience to the king and queen of Spain as rulers of the Indies by virtue of the donation of the pope, and permission for the religious fathers to preach the true
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faith. If these demands are promptly met, many benefits are promised, but if there should be refusal or malicious delay, the consequences are made perfectly clear:

We shall take you and your wives and your children, and shall make slaves of them, and as such shall sell and dispose of them as their Highnesses may command; and we shall take away your goods, and shall do you all the mischief and damage that we can, as to vassals who do not obey, and refuse to receive their lord, and resist and contradict him; and we protest that the deaths and losses which shall accrue from this are your fault, and not that of their Highnesses, or ours, nor of these cavaliers who come with us. And that we have said this to you and made this Requisition, we request the notary here present to give us his testimony in writing, and we ask the rest who are present that they should be witnesses of this Requisition. 55

Las Casas writes that he doesn’t know “whether to laugh or cry at the absurdity” of the Requerimiento, an absurdity born out in the stories of its actual use. 56 In our times, Madariaga calls it “quaint and naive,” but neither adjective seems to me appropriate for what is a diabolical and, in its way, sophisticated document. 57

A strange blend of ritual, cynicism, legal fiction, and perverse idealism, the Requerimiento contains at its core the conviction that there is no serious language barrier between the Indians and the Europeans. To be sure, there are one or two hints of uneasiness, but they are not allowed to disrupt the illusion of scrupulous and meaningful communication established from the beginning:

On the part of the King, Don Fernando, and of Doña Juana, his daughter, Queen of Castille and Leon, subduers of the barbarous nations, we their servants notify and make known to you, as best we can, that the Lord our God, Living and Eternal, created the Heaven and the Earth, and one man and one woman, of whom you and we, and all the men of the world, were and are descendants, and all those who come after us. 58

The proclamation that all men are brothers may seem an odd way to begin a document that ends with threats of enslavement and a denial of responsibility for all ensuing deaths and losses, but it is precisely this opening that justifies the close. That all human beings are descended from “one man and one woman” proves that there is a single human essence, a single reality. As such, all problems of communication are merely accidental. Indeed, the Requerimiento conveniently passes over in silence the biblical account of the variety of languages and the scattering of mankind. In Genesis 11, we are told that “the whole earth was of one language, and of one speech,” until men began to build the tower of Babel:

And the Lord said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from
them, which they have imagined to do. Go to, let us go down, and there confound their language, that they may not understand one another’s speech. So the Lord scattered them abroad from thence upon the face of all the earth: and they left off to build the city. (Gen. 11:6-8)

In place of this, the Requerimiento offers a demographic account of the dispersion of the human race:

on account of the multitude which has sprung from this man and woman in the five thousand years since the world was created, it was necessary that some men should go one way and some another, and that they should be divided into many kingdoms and provinces, for in one alone they could not be sustained.59

The Babel story has to be omitted, for to acknowledge it here would be to undermine the basic linguistic premise of the whole document.

The Requerimiento, then, forces us to confront the dangers inherent in what most of us would consider the central liberal tenet, namely the basic unity of mankind. The belief that a shared essence lies beneath our particular customs, stories, and language turns out to be the cornerstone of the document’s self-righteousness and arrogance. It certainly did not cause the horrors of the Conquest, but it made those horrors easier for those at home to live with. After all, the Indians had been warned. The king and queen had promised “joyfully and benignantly” to receive them as vassals. The Requerimiento even offered to let them see the “certain writings” wherein the pope made his donation of the Indies. If, after all this, the Indians obstinately refused to comply, they themselves would have to bear responsibility for the inevitable consequences.

The two beliefs that I have discussed in this paper—that Indian language was deficient or non-existent and that there was no serious language barrier—are not, of course, the only sixteenth-century attitudes toward American speech. I have already mentioned some of the Europeans, missionaries, and laymen who took native tongues seriously. There are, moreover, numerous practical acknowledgements of the language problem which do not simply reduce the native speech to gibberish. Thus René de Laudonnière reports that the Indians “every houre made us a 1000 discourses, being merveilous sory that we could not understand them.” Instead of simply throwing up his hands, he proceeds to ask the Indian names for various objects and comes gradually to understand a part of what they are saying.60

But the theoretical positions on Indian speech that we have considered press in from either side on the Old World’s experience of the New. Though they seem to be opposite extremes, both positions reflect a fundamental inability to sustain the simultaneous perception of likeness
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and difference, the very special perception we give to metaphor. Instead they either push the Indians toward utter difference—and thus silence—or toward utter likeness—and thus the collapse of their own, unique identity. Shakespeare, in *The Tempest*, experiments with an extreme version of this problem, placing Caliban at the outer limits of difference only to insist upon a mysterious measure of resemblance. It is as if he were testing our capacity to sustain metaphor. And in this instance only, the audience achieves a fullness of understanding before Prospero does, an understanding that Prospero is only groping toward at the play’s close. In the poisoned relationship between master and slave, Caliban can only curse; but we know that Caliban’s consciousness is not simply a warped negation of Prospero’s:

> I prithee, let me bring thee where crabs grow;  
> And I with my long nails will dig thee pig-nuts;  
> Show thee a jay’s nest, and instruct thee how  
> To snare the nimble mamoset; I’ll bring thee  
> To clustering filberts, and sometimes I’ll get thee  
> Young scamels from the rock. (II. ii. 167-172)

The rich, irreducible concreteness of the verse compels us to acknowledge the independence and integrity of Caliban’s construction of reality. We do not sentimentalize this construction—indeed the play insists that we judge it and that we prefer another—but we cannot make it vanish into silence. Caliban’s world has what we may call *opacity*, and the perfect emblem of that opacity is the fact that we do not to this day know the meaning of the word “scamel.”

But it is not until Vico’s *New Science* (1725) that we find a genuine theoretical breakthrough, a radical shift from the philosophical assumptions that helped to determine European response to alien languages and cultures. Vico refuses to accept the position by then widely held that “in the vulgar languages meanings were fixed by convention,” that “articulate human words have arbitrary significations.” On the contrary, he insists, “because of their natural origins, they must have had natural significations.” Up to this point, he seems simply to be reverting to the old search for a universal character. But then he makes a momentous leap:

> There remains, however, the very great difficulty: How is it that there are as many different vulgar tongues as there are peoples? To solve it, we must here establish this great truth: that, as the peoples have certainly by diversity of climates acquired different natures, from which have sprung as many different customs, so from their different natures and customs as many different languages have arisen. (p. 133)

For Vico, the key to the diversity of languages is not the arbitrary
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character of signs but the variety of human natures. Each language reflects and substantiates the specific character of the culture out of which it springs.

Vico, however, is far away from the first impact of the New World upon the Old, and, in truth, his insights have scarcely been fully explored in our own times. Europeans in the sixteenth century, like ourselves, find it difficult to credit another language with opacity. In other words, they render Indian language transparent, either by limiting or denying its existence or by dismissing its significance as an obstacle to communication between peoples. And as opacity is denied to native speech, so, by the same token, is it denied to native culture. For a specific language and a specific culture are not here, nor are they ever, entirely separable. To divorce them is to turn from the messy, confusing welter of details that characterize a particular society at a particular time to the cool realm of abstract principles. It is precisely to validate such high-sounding principles—'Eloquence brought men from barbarism to civility' or 'All men are descended from one man and one woman'—that the Indian languages are peeled away and discarded like rubbish by so many of the early writers. But as we are now beginning fully to understand, reality for each society is constructed to a significant degree out of the specific qualities of its language and symbols. Discard the particular words and you have discarded the particular men. And so most of the people of the New World will never speak to us. That communication, with all that we might have learned, is lost to us forever.

NOTES

4. Martyr (n. 2 above) Decade 2, Book 1, p. 106.
5. Christopher Columbus, Journals and Other Documents on the Life and Voyages of Christopher Columbus, trans. and ed. Samuel Eliot Morison (New York 1963) 65. For the Spanish, see Cristoforo Colombo, Diario de Colón, libro de la primera navegación y descubrimiento de las Indias, ed. Carlos Sanz López [facsimile of the original transcript] (Madrid 1962) fol. 9b. There has been considerable debate about Columbus’ journal, which survived only in Las Casas’ transcription. But Las Casas indicates that he is quoting Columbus here, and the words are revealing, no matter who penned them.
6. Augustine, Concerning The City of God against the Pagans, trans. Henry Bettenson, ed. David Knowles (Harmondsworth 1972) Book 19, Ch. 7, p. 861. The whole passage, with its reference to Roman linguistic colonialism, is interesting in this context:
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...the diversity of languages separates man from man. For if two men meet, and are forced by some compelling reason not to pass on but to stay in company, then if neither knows the other's language, it is easier for dumb animals, even of different kinds, to associate together than these men, although both are human beings. For when men cannot communicate their thoughts to each other, simply because of difference of language, all the similarity of their common human nature is of no avail to unite them in fellowship. So true is this that a man would be more cheerful with his dog for company than with a foreigner. I shall be told that the Imperial City has been at pains to impose on conquered peoples not only her yoke but her language also, as a bond of peace and fellowship, so that there should be no lack of interpreters but even a profusion of them. True; but think of the cost of this achievement! Consider the scale of those wars, with all that slaughter of human beings, all the human blood that was shed!

For a variation of the theme of linguistic isolation, see Shakespeare, Richard II, ed. Peter Ure (Cambridge, Mass. 1956) I. iii. 159-173.


8. In Hakluyt (n. 7 above) 7. 282.


13. Lescarbot, in Claude Duret, Thresor de l'histoire des langues de cest univers (Cologny 1613) 954-955. I am indebted for this reference and for many useful suggestions to Professor Natalie Zemon Davis.


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17. Bartolome de Las Casas, A Selection of his Writings, trans. and ed. George Sanderlin (New York 1971) 144. Thomas More makes the same point in the early sixteenth century to defend English: “For as for that our tong is called barbarous, is but a fantasy. For so is, as ever learned man knoweth, euery strange language to other.” (Dialogue concerning Heresies, quoted in J. L. Moore, Tudor-Stuart Views on the Growth, Status, and Destiny of the English Language, Studien zur Englischen Philologie 41 (Halle 1920) 19.


19. For a nineteenth-century variation, see Daniel Webster’s remark in a letter to Ticknor, 1 March 1826: “I ought to say that I am a total unbeliever in the new doctrines about the Indian languages. I believe them to be the rudest forms of speech; and I believe there is as little in the languages of the tribes as in their laws, manners, and customs, worth studying or worth knowing. All this is heresy, I know, but so I think”; see George Ticknor Curtis, Life of Daniel Webster (2 vols. New York 1872) 1. 260. By 1826, it should be noted, Webster is on the defensive. I owe this reference to Professor Larzer Ziff.


21. Andrea Ugo and Andrea Brenta, in Karl Müllner, Reden und Briefe Italienischer Humanisten (Vienna 1899) 110-111, 75-76. See, likewise in the same volume, the orations of Lapo de Castiglionchio, Andrea Giuliano of Venice, Francesco Filello, Antonio da Rho, Tiphernas (Gregorio da Città di Castello), and Giovanni Toscanello.

22. George(?) Puttenham, The Arte of English Poesie (London 1589; Scolar Press facs. ed. Menston 1968) 3-4. The myth that Orpheus tamed wild beasts by his music is intended to show, according to Puttenham, “how by his discreete and wholsome lessons vttred in harmonie and with melodious instruments, he brought the rude and sausage people to a more ciuill and orderly life, nothing, as it seemeth, more preuailing or fit to redresse and edifie the cruell and sturdie courage of man then it” (4). Without speech, according to Hobbes, “there had been amongst men, neither commonwealth, nor society, nor contract, nor peace, no more than amongst lions, bears, and wolves”: Leviathan, ed. Michael Oakeshott (Oxford 1960) 18.

23. Puttenham (n. 22 above) 7. See also Sir Philip Sidney, An Apologie for Poetrie, in English Literary Criticism: The Renaissance, ed. O. B. Hardison, Jr. (New York 1963): “Euen among the most barbarous and simple Indians where no writing is, yet haue they their Poets, who make and sing songs, which they call Areytos, both of theyr Auncestors deedes and praises of theyr Gods: a sufficient probabilite that if euer learning come among them, it must be by hauing theyr hard dull wits softned and sharpened with the sweete delights of Poetrie. For vntill they find a pleasure in the exercises of the minde, great promises of much knowledge will little perswade them that knowe not the fruities of knowledge” (102). On the Indian Areytos, see Martyr (n. 2 above) Decade 3, Book 7, pp. 166-167; likewise, Las Casas, History of the Indies, trans. and ed. Andree Collard (New York 1971) 279-280. For a comparable phenomenon in the British Isles, see J. E. C. Hill, “Puritans and ‘The Dark Corners of the Land’,” Royal Historical Society Transactions, Ser. 5, 13 (1963) 82: “On Sundays and holy days, we are told of North Wales about 1600, ‘the multitude of all sorts of men, women and children’ used to meet to hear ‘their harpers and crowthers sing them songs of the doings of their ancestors.’’’

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25. On the comparision of Indian and Old World words, see Huddleston (n. 9 above) esp. 23, 30, 37, 44, 91-92. The Indians were described by Cotton Mather as "the veriest ruins of mankind, which [were] to be found anywhere upon the face of the earth": quoted in Roy Harvey Pearce, Savagism and Civilization: A Study of the Indian and the American Mind (Baltimore 1965; rpt. 1967) 29.


27. "Thei vse no lawful coniunction of mariage, but euery one hath as many women as him listeth, and leaueth them agayn at his pleasure," Sebastian Munster, A Treatyse of the Newe 'India', trans. Richard Eden, in Arber (n. 2 above) 37. See, likewise, Martyr (n. 2 above) Decade 3, Book 1, p. 138; Martyr, trans. Michael Lok, in A Selection of Curious, Rare, and Early Voyages and Histories of Interesting Discoveries chiefly published by Hakluyt . . . (London 1812) Decade 8, Ch. 8, p. 673; Laudonnière, in Hakluyt (n. 7 above) 8. 453; Henry Hawks, in Hakluyt (n. 7 above) 9. 386; Bernal Diaz del Castillo, The Conquest of New Spain, trans. J. M. Cohen (Baltimore 1963) 19, 122, 124. On one of Frobisher's voyages, a native man and woman, captured separately, are brought together before the silent and eagerly expectant sailors. The observers are astonished at the "shamefastnes and chastity of those Savage captives" (in Hakluyt [n. 7 above] 7. 306).

28. Martyr, trans. Lok (n. 27 above) Decade 7, Ch. 4, p. 627. "Wandering up and down" seems almost as much of an offense as idolatry. There is a trace of this disapproval and anxiety in Iago's description of Othello as an "erring barbarian," an "extravagant and wheeling stranger."

29. See for example, Martyr, trans. Lok (n. 27 above) Decade 4, Ch. 9, p. 539: "with such a countenance, as we use to paint hobgoblins or spirites which walke by night."

30. In Hakluyt (n. 7 above) 11. 297. Note that Spenser uses the same metaphor for his Wild Man: "For he was swift as any bucke in chace" (FQ, VI. iv. 8).


34. Horst Woldemar Janson, Apes and Ape Lore in the Middle Ages and the Renaissance (London 1952).

35. Cicero, De oratore I. viii. 32, in On the Good Life (n. 20 above) 247.


37. Quoted in Hanke (n. 36 above) 72; likewise in Hanke (n. 3 above) 19.

38. Quoted in Hanke (n. 36 above) 102. On his death-bed, Domingo de Betanzos recanted his denigration of the Indians.


40. For a more sympathetic grasp of the problem of translating religious concepts, see Las Casas (n. 23 above) 238-239; Marc Lescarbot, History of New France, trans W. L. Grant (3 vols. Toronto 1907-14) 2. 179-180; José de Acosta, The Natural and Moral History of the Indies, trans. Edward Grimston [1604], ed. Clements R. Markham, Hakluyt Society 60-61 (2 vols. London 1880) 2. 301-302. Cornelius Jaenen (n. 16 above) suggests that the difficulty was more cultural than linguistic: "The natives saw some danger in divulging their religious vocabulary to the evangelists of the new religion, therefore they refused to cooperate extensively in the linguistic task of compiling dictionaries and grammars, and of translating religious books" (277).


42. Duret (n. 13 above) 935; Chaumonot, quoted in Jaenen (n. 16 above) 275-276.


44. "Raids on the inarticulate"—the quotation is from T. S. Eliot's Four Quartets and, as Hawkes uses it, suggests that the sixteenth-century fantasy that the Indians were without speech is alive in the 1970's.
45. The lines are sometimes attributed, without any textual authority, to Prospero. "Which any print of goodness wilt not take," it might be noted, plays on the *tabula rasa* theme.

46. Shakespeare even appeals to early seventeenth-century class fears by having Caliban form an alliance with the lower-class Stephano and Trinculo to overthrow the noble Prospero. On class-consciousness in the period, see Christopher Hill, "The Many-Headed Monster in Late Tudor and Early Stuart Political Thinking," in *From the Renaissance to the Counter-Reformation. Essays in Honor of Garrett Mattingly*, ed. Charles H. Carter (New York 1965) 296-324.

47. Clifford Geertz, "The Impact of the Concept of Culture on the Concept of Man," in his selected essays, *The Interpretation of Cultures* (New York 1973) 52. I am indebted throughout to this suggestive essay.


49. Quoted in Hanke (n. 36 above) 95. It is not impossible that the *caciques* said something vaguely similar; see Las Casas (n. 23 above) 82: "what could we expect from these gentle and unprotected Indians suffering such torments, servitude and decimation but immense pusillanimity, profound discouragement and annihilation of their inner selves, to the point of doubting whether they were men or mere cats?"

50. Las Casas (n. 23 above) 241.


52. Both are in James Rosier (n. 12 above) 18. 342, 344.


55. In Helps (n. 18 above) 1. 266-267.


58. In Helps (n. 18 above) 1. 264.


60. In Hakluyt (n. 7 above) 8. 466.

Changes in
the European Languages
under a New Set of
Sociolinguistic Circumstances

by Yakov Malkiel

When we speak of the New World, we ordinarily mean the Western Hemisphere, specifically the Americas, and when we refer to its discovery, we consequently have in mind the event of 1492 and its immediate as well as delayed reverberations. This self-imposed restriction is opportune, because it gives a sharp focus to our discussions. It is technically arguable that the seizure and colonization of the Philippine Islands falls into the same cultural climate of the sixteenth century. Shifting the definitional criterion from culture to geography, we can also affirm that Australia and New Zealand, indeed Antarctica, a continent discovered in our own century, pertain to the New World and ought to fall within our purview. Antarctica is, of course, irrelevant, because its discovery has entailed no attempts at permanent settlement, while Australia and New Zealand are marginally pertinent to the problem under study. If we agree to place historico-cultural considerations above rigidly geographic criteria, it is the settle-
ment of Siberia by the Russians, which started in the sixteenth and seventeenth centuries, that will provide the closest and most significant parallel to the exploration of the Americas by enterprising groups of daredevil Europeans.

To the cultural historian, in general, and to the linguist, in particular, two facts stand out quite clearly from the start: the initial confrontation was between a wide variety of aboriginal Indian tribes and either Germanic or Romance groups of sailors, settlers, soldiers, and missionaries. The Germanic group is the older of the two, if we include—as I think we should—the earliest Scandinavian efforts to establish a precarious foothold in coastal and insular North America, however controversial the interpretation of their thrust beyond Greenland, toward Vinland. Now it is an incontrovertible fact that each group, especially the one we called Romance, was, internally, something of a melting pot, but that the two groups did not mix very well with each other. Areas of friction between the two European cultures, divided by language affinities and, starting with the sixteenth century, by religious loyalties as well, are to this day observable—in the western section of the province of Québec (around Montréal) and in Puerto Rico, say—but on the whole the geographic dividing lines have been drawn more sharply in the last three centuries than they were at the outset. The Dutch have pulled out of northern Brazil, exert little influence in Surinam, their last Continental stronghold, and have entrenched themselves only in the Caribbean, after merging with the Anglo-Americans in and around Manhattan; the Danes have extricated themselves from their commitment vis-à-vis the Virgin Islands; the daring attempt of the German Fugger family and its clients to strike root in present-day Venezuela has come to naught; and the French, under Napoleon, abandoned their claims to the Great Lakes area and the Mississippi Valley (I am hinting at the Louisiana Purchase), keeping, aside from Québec, just a couple of islands in the Caribbean plus a thin slice of Guiana. We thus recognize on the map two big chunks, Germanic (which today practically means English) America and Latin America, a neat division made even neater by the purchase of Alaska from Imperial Russia. To the linguist and anthropologist the dichotomy is made doubly important by the distinctive circumstance that of the two groups the "Romance" invaders showed a distinctly greater readiness to mix and blend with the aborigines.

When we invoke the "first images of America" as a set of linguistic problems, must we limit this impact to the infiltration of colorful exotic words and, by accurately etymologizing them, help the historian to reconstruct the early contacts, friendly or hostile, between newcomers and oldtimers on these shores? Is our central problem the tracing of lexical trajectories for such items, in English, as, let us say, moccasin (mocassin) 'heelless shoe or boot of soft leather' (which happens to be of
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Algonquian parentage)? Similar problems prevail with *toboggan* 'long flat-bottomed light sled made of thin boards curved up at one end' (likewise Algonquian); or *wigwam* 'hut of the Indians (of the Great Lakes area),' as against the Navahos' *hogan* and the Plains tribes' *tepee*; plus the zoonyms *moose, opossum,* and *raccoon,* all three of Algonquian ancestry, whereas *coyote* is of Aztec provenience and must have penetrated through Mexico; or, in Spanish, as the famous series *baquiano* 'guide,' *batata* 'potato,' *bohío* 'hut,' later also 'brothel,' *cacique* 'chief, boss,' *caníbal* 'cannibal, anthropophagite,' lit. 'strong man, brave man' (cf. Shakespeare's Caliban), *canoa* 'canoe, launch,' i.e., 'long narrow boat propelled by hand-driven paddles,' *carey* 'hawksbill turtle,' also 'tortoise shell,' *(e)naguas* 'petticoat, underskirt,' *guacamayo* 'macaw,' i.e., 'large parrot with a very long tail, a naked space around the eyes, a strong hooked bill, a harsh voice, and brilliantly and contrastively colored plumage,' also, figuratively, as a qualifier: 'flashy, sporty,' *maíz* 'Indian corn,' *nigua* 'sand flea,' *sabana* 'savannah,' treeless plain, (sub)tropical grassland, open level region,' *tabaco* 'tobacco,' *tiburon* 'shark,' *yuca* 1 'manioc, tapioca plant' = *cas(s)ava* (as distinct from *yuca* 2 'yucca,' i.e., 'sometimes arborescent plant having long pointed often rigid fibrous, margined leaves on a woody caudex and bearing a large panicle of white blossoms')—all of them absorbed at the moment of contact from Arawak in Haiti or Cuba, and not a few of them recorded by Columbus.

To revert to our question, "What was the first image of America?"—for most European adventurers and emigrants of the sixteenth century the initial image formed not upon arrival, but much earlier. It began to emerge during the long voyage from the port of embarkment, say Seville or Lisbon, where the greenhorns were apt to meet and question experienced fellow travelers. In fact, its embryonic stage must be traced to the long periods of waiting and preparation—months and, no doubt, in many cases even years—which the prospective sailor or settler would spend in the unique environment of sea ports, like Seville and Lisbon, teeming with emigrants and remigrants. Beyond that stage of a collective experience which actually began the powerful shaping, remodeling, and adjusting process, we may hypothesize each individual's first emotional reaction to fantastic reports about fabulous overseas countries—reports overheard and absorbed in the home town's shops and markets, in the tavern, in the army barracks, after church, in school or college. The American experience thus began on European ground, and the opening step was not the direct contact with exotic cultures in tropical countries, but the gradual coming-together of persons of like minds, similar backgrounds, comparable tastes, and—last but by no means least—converging linguistic habits and leanings.

This analysis seems obvious, but until recently certain facets of the situation just outlined were not fully grasped even by scholars known
otherwise for their finesse and sensitivity. Thus, there has been, quite rightly, a consensus that the contingent of early settlers included few persons of intellectual, and least of all of puristic, proclivities. But in their critique of the so-called andalucismo of American Spanish, that is, of striking phonetic resemblances between southernmost Peninsular Spanish and many characteristic varieties of Ultramarine Spanish best explained through the Andalusian provenience of a plurality, if not a majority, of early immigrants, a scholar as refined as Pedro Henriquez Ureña and his supporters resorted to a technique as simplistic as the identification of the actual birthplaces of early settlers. While such archival research can indeed be historically very rewarding, its yield for linguistics is meager without preliminary agreement on certain hidden assumptions. One such tacit presupposition is that a person blessed or cursed with certain speech habits cannot rid himself of this heritage, however great the temptation to do so. Such belief in the rigidity of social habits seems exaggerated. The young men, fortune-seekers, drifters, or escapists, who would flock from Beira and Estremadura to Lisbon or from Castile and Navarre to Seville in search of thrilling experiences and adventures, were for the most part young and flexible, hence eager to join a new crowd of friends and associates, a crowd whose basic ingredients were certain elements of the local population of Lisbon and Seville, especially of the maritime districts of these key cities which long enjoyed a monopoly on emigration and overseas trade. These subsocieties must have come into existence long before Columbus. The preparation for the rejuvenating plunge into a new world began right there, and part of this adjustment may have been the shedding of a set of earlier speech habits. We must therefore, realistically, posit a compromise between inherited and acquired habits in pronunciation, grammar, semantics, and phraseology. Part of the "first images of America," then, was the anticipation and actual experience of hardship and hazard, also the keen awareness of the need to gain a foothold in newly-recruited crews, gangs, teams, patrols for the sake of bare survival. And the linguistic correlate of this reshuffling and accommodation to a revised set of values was ruthless leveling, the weeding-out of features that tended to make one conspicuous, hence ridiculous, objectionable: the voluntary retreat from the luxury of private idiosyncrasies. All of this enormously reduced the scale of dialectal division. There exist, all in all, two major varieties of Canadian French and just three major classes of North American English, Canada included; compare this relative monotony with the extreme differentiation of patois at a certain distance from Paris and of British English dialects as well. Whether the eventual product of this leveling process is close to the literary standard will depend on local
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circumstances. Most of the early settlers of Québec came from the Atlantic-oriented western section of France; thus the provincial variety of rural French one associates with Anjou and Poitou underlies New World French, just as, centuries earlier, the Norman and the Picard dialects, characteristic of the north, fed English through the Anglo-Norman traceable to a conquest, and later through a slow peaceful infiltration across the Channel. Neither the western nor the northern belt of dialects is particularly close to tone-setting Parisian French, which rests on a subsoil of Ile-de-France speech; hence the cultural and linguistic gap between rural Québec and Paris.

Parallels, near-parallels, and contrastive examples from the Old World can be readily supplied. Whatever the degree of regional differentiation of Afrikaans, the provincial rural varieties of Dutch that fed this offshoot differ markedly, for demographic reasons, from those that nourished the speech of the major Hollandish emporia which have, over the centuries, set the standards of correctness for the Netherlands. Thus Dutch, Afrikaans, Flemish used in Belgium, and the middle Rhenish variety of Low German surviving in the vicinity of Cologne are divergent dialectal varieties of essentially the same language dramatically split along lines of political allegiance. The Russian of Siberia displays the expected leveling, but its case differs sharply from that of Canadian French: Siberian Russian is close to the finest tradition of Central Russian speech, as heard in Moscow and Tula. It is esthetically and in terms of social acceptability most pleasing and truly represents a golden mean.

To come back to the Americas: much depended during the first centuries on the local residents' eagerness or disinclination to maintain ties with the old countries. The glamorous presence of a viceroy and his retinue and court was, of course, a constant reminder of the cultural splendor of the metropolis, and this climate of admiration was translated into the eager acceptance of at least some linguistic fads and fashions raying out from London, Paris, Madrid, and Lisbon, hence invested with authority, and into simultaneous rejection of such local innovations as carried with them, if only by implication, the stigma of vulgarity and spontaneity. The classic example is, of course, the polarized forms of address: formal usted 'your grace' vs. informal tú 'thou' that Mexico City and Lima (and, secondarily, the surrounding territories) adopted in the sixteenth century and at present share with Spain, whereas in the remainder of Spanish America some variety of racy vosoe (genetically, a compromise between tú and vos) has struck root. In Brazil, the Carioca speech of Rio de Janeiro immediately reminds one of Lisbon through its indulgence of /ʃ/, a feature totally alien to nearby Paulista speech. In North America, Bostonian English, through deliberate lexical choice and
through less intentionally controlled phonic traits (for example, the loss of final *r* in words like *father*), is reminiscent of the British standard, prestigious in Massachusetts.

Closely related to the process of intralinguistic leveling were those of interlinguistic diffusion and mixture, intensified by early contacts with the New World. The most obvious aspect of this set of phenomena was the spread of numerous *indigenismos*, that is, Amerindian words, usually via Spanish, into other European languages, regardless of how closely these were, in turn, related to Spanish. Thus, certain exoticsisms so transmitted before long appeared in Elizabethan English. As Margaret Nicholson remarks,\(^9\) words like *alligator, potato, tobacco, sassafras,* and *sarsaparilla* were familiar in London around 1600, that is, decades before an autonomous variety of overseas English began to crystallize, by and large as a result of the founding of Jamestown. In other contexts, it is the settlers, not the sophisticated Londoners, who absorbed the exotic words from Spanish-speaking fellow-colonists, as seems to be true of *cockroach,* from *cucaracha,* and in yet other instances the settlers enriched their nascent lexicon through contact with aborigines, witness *hickory* and *squash.* One could similarly examine the infiltration into German of exotic words, specifically those of New World background—a study made easy by the availability of excellent dictionaries and monographs from the pens of seasoned Central European etymologists.\(^10\) Not unexpectedly, certain groups of dialect speakers in Germany put up stiff resistance to the infiltration of foreignisms, casting around for colorful circumlocutions.

Far more interesting than these predictable processes of lexical oozing (which, after all, in essence involved a repetition of the pattern of diffusion of Arabisms and other Orientalisms in medieval Europe, through Spain and in the wake of the Crusades) was the impetus the voyages and discoveries gave to long-divergent groups of speakers of Romance to embark on a course of mutual rapprochement, of convergence.\(^11\) One detects early traces of this new tendency—reversing, at least in part, the regional disintegration of Vulgar Latin, as it were—during the prelude to the trans-Atlantic voyages, if one may so label the occupation of the four mid-Atlantic archipelagos. Analysis of Canary Island Spanish discloses the heavy admixture of Galician-Portuguese words; from this one can infer that the early crews and groups of settlers, so far as their provenience and native speech are concerned, were a decidedly motley crowd.\(^12\)

Two facts stand out very neatly. For one thing, the speakers of Portuguese mixed freely with those of Spanish (an amalgam quite unavoidable in the years 1580-1640, when Portugal temporarily forfeited its political independence), and both groups had no qualms about absorbing individual Italians, who were ordinarily speakers of Genoese
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or perhaps of Neapolitan, rather than of Tuscan—the result being, if not a *lingua franca*, at least a kind of variable "southern Romance" with all sorts of foreign lexical incrustations. In this respect, the language of Christopher Columbus, as pieced together from his letters, diaries, and reports, is nothing short of paradigmatic. This native of Genoa, who divided the best years of his life between Portugal and Spain as well as Spain’s newly-acquired possessions, used a Castilian generously interspersed with echoes of his earlier experiences and exposures, as has been very convincingly demonstrated by Menéndez Pidal in one of his most celebrated essays of late vintage. 13

The French, for a variety of reasons, steered a course apart. Such contacts between New World French and New World Spanish (as can be reconstructed, e.g., intermittently, in the Caribbean 14 and in certain sections of Louisiana, after that territory began to change hands and groups of settlers from the Canary Islands were transferred to St. Bernard parish 15) remained marginal and fell, as a rule, into a distinctly later period—typically, the eighteenth century. One can think of many reasons for the relative aloofness of French voyagers, adventurers, and immigrants. Among plausible cultural factors—which may or may not have played a subsidiary role—let me cite the circumstance that a strikingly high percentage of Atlantic-oriented French were, at the outset, of Breton stock, hence native speakers of a Celtic language, who felt little, if any, affinity to the "linguistic space" of the western Mediterranean and lacked bonds of intensely-felt kinship to any Latin "cousins." The French Basques, on the other hand, appear to have played, at best, a subordinate part in overseas explorations, in strong contrast to Spanish Basques, whose impressive role can be easily measured by the abundance of Euskaric family names in colonial records. Basque, however, was everywhere a language restricted to the intimate family circle. Those among its speakers who were venturesome enough to embark on voyages across the Atlantic were practically all bilingual and left an impact on their new surroundings through their command of Spanish rather than of archaic, unassimilable Basque.

Interestingly, this situation was to repeat itself at a later date. While there is no dearth of individual Frenchmen who rose to prominence, intellectually or along some other path, in Spanish- and Portuguese-America, one finds no urban districts in, say, Buenos Aires, Montevideo, and São Paulo dominated by groups of newcomers from France, the way one discovers whole clusters of Italian urban settlements in those very same places. Thus, the annals of New World history do bear out the propriety of the cultural label "Südliche Romania," launched by Karl Vossler, whereas the practitioners of strictly phonological analysis, including a Wilhelm Meyer-Lübke and a Walther von Wartburg, have, of course, with rare exceptions favored a cleavage of Romance languages
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into a Western and an Eastern branch, granting no separate status to the south.

As a matter of historical curiosity and for the sake of its intrinsic "intérêt humain" let me point out one more milieu in which Romance dialects and languages, at precisely the same juncture and under partially similar conditions, amalgamated rather freely: in the scattering of formally-organized Sephardic communities and among the informal—but nonetheless very real—clusters of marranos, that is, conversos secretly practicing Judaism. When the Jews were expelled from Spain in 1492, many of them went first to Portugal, where they would stay unmolested for another quarter century and, in the process, their Castilian, Leonese, and Aragonese dialects were naturally colored by an influx of Portuguese words, if not phonic peculiarities. In certain multilingual Sephardic and marrano groups, Castilian emerged as the more formal and Portuguese as the more familiar or intimate socio-stylistic register. Further complications arose when some of these groups, already variegated, settled in an Italian environment, in such centers as Ferrara and Livorno. I shall not further refer to them, nor to their cousins in the Balkan peninsula or in North Africa, but rather stress the fact that numerous conglomerations of marranos settled in Curaçao and other New World commercial centers, adding to the picturesqueness of the linguistic landscapes by their alternate use of Spanish and Portuguese. 16 This is, all told, a minor but very striking facet of the linguistic impact of the New World on Europe.

Let me round out the discussion by dwelling on two special problems which tend to reinforce my thesis that the "American experience"—at the dawn of the colonial age no less, and presumably more, than in the third quarter of our own century—actually began with the long and perilous voyage, the travesía, and even with the taxing preparations for it. Various scholars active in Argentina three decades or so ago—Juan Corominas, at that time a resident of Mendoza; Berta Elena Vidal de Battini, a tireless explorer of her native province of Entre Ríos; plus D. L. Garasa 17—focused attention on the metaphorically extended use of nautical terms in the varieties of American Spanish best-known to each. After the two to three months spent at sea, often amid storms and other hazards, the immigrants landed on the shores of the New World with their heads apparently replete and "buzzing" with the sailors' semi-technical jargon and began to transfer it—in some instances at first facetiously?—from the seascapes to the newly-unveiled landscapes. Playa, for instance, instead of signifying 'beach,' as it at all times has done in metropolitan Spanish—cf. Fr. plage, It. piaggia—can, in South America, designate 'any open and unencumbered place,' like those used for rodeos, so much so that a new adjective playo 'even, level, flat' has locally been extracted from this new semantic nuance of playa; cf. also
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the past-participially-contoured desplayado 'free, open, clear,' where standard Spanish makes do with descampado, used in contradistinction to 'hilly' or 'wooded.' Similarly, abra, in addition to its traditional semantic range of 'bay, haven,' acquires the innovative meaning of 'valley, gorge between steep elevations'; farallón, the designation of a 'cliff, isolated rock protruding into the sea' along Spain's Mediterranean coast, becomes any kind of 'crag' in Argentina, etc. Rancho, whose semantic spectrum includes 'cabin,' may also belong to this category.

One feature has led to an interesting diversity of opinions. In encountering all over the New World previously unseen (and unheard-of) varieties of animal and plant life, the early settlers would transfer, with greater or lesser felicity, the closest available approximations from the nomenclatural stock familiar to them from their Old World schooling and experiences. The Elizabethans' power of observation and inference as amateur naturalists seems to have been fairly weak; they mistook the American hare for a rabbit and the local species of a grouse for a partridge. In any event, Margaret Nicholson rates their ingenuity and resourcefulness as coiners of racy, pungent designations (bullfrog, catfish, June bug, live oak; also, in other realms, corn dodger, hog-wallow, mossback, razorback) as superior to their accuracy. On the "Latin" scene, the "realists" and the "idealists" among cultural historians are split in their assessments of the mental processes involved. The earliest explorer of the Caribbean believed he heard the singing of a nightingale, even though the area at issue has from time immemorial been outside the habitat of that bird. In 1941, Menéndez Pidal, as the spokesman for the realistic school of thought, saw in this slip of Columbus just another example of gross approximation or careless equation between the facts of life in the two hemispheres, and refused to follow the "idealist" Leonardo Olschki who, a few years earlier, had charged this false identification to the early navigators' and conquerors' readings about all sorts of distant and fabulous countries—readings which included not solely scholarly and prescientific literature, but also romances of chivalry. The two approaches are not mutually exclusive; multiple causation remains an ever-present possibility, and every controversial case should be judged on its own merits. Whatever the pigeonhole we assign to each individual case history, one can no longer dispute the fact, particularly in the light of María Rosa Lida de Malkiel's research on reverberations of Josephus in the least-expected places, such as mid-sixteenth-century Buenos Aires, that the minds of tone-setting newcomers, presumably an influential minority, were imbued with recollections of their readings, whether geographic or historical. And, whichever our favorite formula for the elusive relation between language, sensory apperception, and patterns of thought, there is no denying that the peculiar lifestyle of a gaucho in the Argentinian pampa (or of a gaúcho in the adjoining zone...
of Brazil) found a fairly close correlate in characteristic sectors of these roaming, restless primitives' idiosyncratic lexicon.20

Thus, with the years the arresting problem of "the first images of America" has gained in complexity and lost nothing in freshness and promise. Our understanding of its many facets and dimensions is apt to improve if we overcome an endemic parochialism and strive to isolate the universals that can be abstracted from the separate records of English, Dutch, Scandinavian, French, Spanish, Portuguese, and Italian speech projected onto the soil of the Western Hemisphere. Another beckoning avenue of approach stems from the resolve to interpret "impact" very generously, subsuming under it not only the speakers' reactions to the initial shock of suddenly finding themselves almost on another planet, but also their joyful and anxious anticipations of this turning-point in their lives.

NOTES

1. For quick preliminary information, one can profitably use the relevant entries, drafted by experts, in such etymologically dependable reference works for the generalist as Webster's Third New International Dictionary of the English Language Unabridged (Springfield, Mass. 1961). A richer inventory of source forms and early spellings is offered by C. T. Onions et al., The Oxford Dictionary of English Etymology (Oxford 1966).

2. A satisfactory bird's-eye view is provided by Ch. xvii, "El español de América," in Rafael Lapesa, Historia de la lengua española, (ed. 4 Madrid 1959) 341-364. Also see Tuttle, in this collection, 2. 595 ff.

3. The few literary figures that may have joined the stream of early immigrants were, typically, the unsuccessful writers—those who had occasionally, intermittently, dabbled in belles-lettres; there is usually no continuity between the European and the New World phase of their gropings, so much so that one is sometimes left wondering whether two separate bearers of the same name happen to be involved. This situation raises fascinating problems of identity, with circumstantial or stylistic evidence replacing or complementing archival clues. About one such case see two perceptive studies by María Rosa Lida de Malkiel: "El 'Romance', la Comedia Próvida, las Coplas a la muerte de un amigo y la Carta al Rey (1545) de Luis de Miranda," Romance Philology 26 (1972-73) 57-61, and Jerusalén: el tema literario de su cerco y destrucción por los romanos (Buenos Aires 1972) 160-171.


5. A solid basis for overseas expeditions must have existed in southern Spain before the occupation of the Canary Islands. For Portugal the cut-off point was doubtless the seizure of three Atlantic archipelagos conducive to intensified exploration of Africa's Atlantic coast.

6. The breakthrough in our understanding of the presumable social and psychological substrata involved was the publication of one of the last—and, remarkably, most persuasive—articles by R. Menéndez Pidal: "Sevilla frente a Madrid: Algunas precisiones sobre el español de América," in Estructuralismo e historia: miscelánea-homenaje a
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While Menéndez Pidal correctly recognized in the ships from Seville docking in the New World ports living messages of the latest stages of metropolitan Spanish, avidly picked up and imitated by the culturally impoverished colonials, I am inclined to go one step further and to add to the influence wielded by Seville (and Lisbon) the pressure of their speech prior to embarkation—in docks, wharfs, repair shops, storehouses, taverns, and inns. On a curious parallelism with Chinese emigrants see William G. Boltz, “Canton: the Seville of China,” Romance Philology 21 (1967-68) 171-174.

7. Dialectal leveling as a result of the quick spread of a given language over a newly-colonized territory is by no means confined to the New World. Aside from certain enclaves, the Sicilian dialect shows a higher degree of homogeneity than the dialects of Lombardy and Tuscany, because Italian was transplanted fairly late onto Sicilian soil, most of which, for a long period of time, had been under Greek or Arabic sway; the situation is entirely different in Sardinia. Though German spoken to the east of the Elbe falls into identifiable dialects (Pomeranian, Märkisch, Silesian, etc.), the cleavage is far less sharply pronounced in that zone than in the west and the south, because the east was wrested from the Slavs at a late date.


10. Of the three major German-language specialists in the lexicographic codification of overseas words Georg Friederici seems, far and away, the most competent, in view of his familiarity at first hand with most of the primary sources; see his Hilfswörterbuch für den Amerikanisten; Lehnwörter aus Indianersprachen . . . (Halle 1926) with full attention to German, Spanish, and English on the receiving end; and especially the revised and expanded Amerikanisches Wörterbuch (Hamburg 1947). Among his competitors, Enno Littmann was a first-rate student of the ancient Near East, but his supplement on “Amerikanische Wörter” appended to the revised ed. 2 of Morgenländische Wörter im Deutschen (Tübingen 1924) is unlikely to offer many original insights. Karl Lokotsch, a minor Orientalist, also allowed himself to be seduced into writing an Etymologisches Wörterbuch der amerikanischen (indianischen) Wörter im Deutschen (Heidelberg 1926) with side-glances at English, Spanish, and French; the book was severely reviewed by L. Bloomfield in Modern Philology 24 (1927) 489-491. Friedrich Kluge’s Etymologisches Wörterbuch der deutschen Sprache is, of course, a classic and has for decades exemplified the unique achievement of combining scholarly accuracy with easy accessibility to the layman; the 18th ed., brought up-to-date by W. Mitzka (Berlin 1960), maintains this standard. Excellent entries include some that deal with local substitutes for Indianisms (cf. s.v. Kartoffel: neither Incaic papa ‘potato,’ nor batata ‘sweet potato’ strikes root, but noteworthy replacements sprout in dialects: Erdapfel, Erdbirne, Grundbirne, finally Tartuffel and Cartoufle, recorded ca. 1600) and others that trace the itineraries of migratory words (= Vittorio Bertoldi’s “parole girovaghe”), such as tomahawk (the older New England form, tomahack, penetrates into German in 1617, just five years after its appearance in colonial English) and Tomate (which, except in small southern and central dialect
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various insular and circum-maritime pidgins and creoles; cf. Douglas Rae Taylor's article
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are concerned, but has precariously survived through a major offshoot transplanted by
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titled (Madrid 1942; several printings), and the essayistic condensations, ''Como hablaba
known project on the dating of the earliest appearance of neologisms to benefit from his
reviewed; cf. 
"La
lengua de Cristobal Colon," Bullettin hispanique 42 (1940) 5-28, included as the opening article in the miscellany so
titled (Madrid 1942; several printings), and the essayistic condensations, "Cómo hablaba
Colón," Revista cubana 14 (1940) 5-18 (reprinted in the Dominican Academy's bulletin), and
"La lengua de Cristóbal Colón," Correo erudito 1:3 (1940) 98-101 (with a critique of F. Streicher,
Die Kolumbusoriginale [Münster 1928] which elicited a reaction from C. A[lcazar],
Revista de Indias 1 (1940) 153-156.

In Menéndez Pidal's view one must distinguish between the languages Columbus used in speaking and those he resorted to in writing; on neither level did he ever have recourse to Tuscan. His native tongue was Genoese, restricted to colloquial use, and the language he spoke most fluently in adulthood was Portuguese; but already while he resided in Lisbon, as early as 1481, he resorted to an aportuguesado variety of Castilian for written communication; and after establishing himself in Spain (1485), he switched to Spanish, without, however, managing to rid himself of a heavy residue of
luisismos, phonetically and lexically (less so grammatically). He also knew how to use Latin as a medium of formal expression, starting with a local commercial variety ("latin ginovisco").

It is not widely known—despite Leo Spitzer's witty comments in Revista de filología española 18 (1931) 185-187—that Ernst G. Wahlgren's seemingly etymological article, "Français: surouest, suroit, esp[agnol] sur, port[ugais] sul," Studier i modernspraakvetskap 11 (1931) 103-145, contains, unannounced by its deliberately terse title, many perceptive remarks on the levels of style in the writings of Columbus.

14. The protracted coexistence of French, Spanish, and Portuguese is reflected in various insular and circum-maritime pidgins and creoles; cf. Douglas Rae Taylor's article "Lexical Borrowing in Island-Carib," Romance Philology 16 (1962-63) 143-152. The language at issue is now extinct, so far as the East Indies, specifically the Lesser Antilles, are concerned, but has precariously survived through a major offshoot transplanted by thousands of deportees to coastal villages and towns scattered around the Bay of Honduras. A companion piece also illustrative of the commingling of French with

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Spanish, Portuguese, African, and Amerindian lexemes is Taylor's "Remarks on the Lexicon of Dominican French Creole," *ibid.*, 402-411, with a running commentary (411-414) by Hans-Erich Keller, from the vantage of an expert in French dialectology. Note that the geographic qualifier refers to the Island of Dominica, not to the Dominican Republic. Has there occurred any linguistic oozing between the Republic of Haiti, geared to a creole of disputed parentage, and Santo Domingo, where a characteristic variety of ultramarine Spanish prevails?

15. Apart from having devoted book-length studies to place- (and, on a minor scale, personal-) names of Indian origin in Louisiana (1927), Florida (1934), and Alabama (1937), the great pioneer William A. Read—originally, a student of English Romantic poetry—offered an early synthesis, *Louisiana French* (Baton Rouge 1931), whose section on "The Foreign Elements" contains a chapter on "Spanish [and Portuguese] Words" (pp. 128-150). Most of the exotic items inventoried—of ultimately Indian parentage—were words absorbed by metropolitan French, then reexported into the colonies (e.g., *acajou* 'wood of the mahogany tree,' *ananas* 'pineapple,' *bacalao* 'codfish,' *banane* 'banana,' *cachimbo* 'smoking-pipe'), but one stumbles across bold local adjustments (say, *breme* 'eggplant,' from Sp. *berenjena,* of remote Arabic provenience) and, more relevant, across words like *bajo* 'man of little culture' (lit. 'shortie, stocky fellow'), which must have seeped through some local conduit. Read—whose active curiosity in such word biographies continued until 1954 (one of his last clusters of notes, "Some Words from French Louisiana," appeared in *Romance Philology* 7[1953-54]180-186)—hinted at a group of Spanish-speaking settlers from the Canary Islands. It remained for Raymond R. MacCurdy to investigate this special ramification of the problem of symbiosis; see his dissertation, *The Spanish Dialect in St. Bernard Parish, Louisiana* (Albuquerque 1950) and the appraisals to which it gave rise—by R. L. Predmore, in *Hispanic Review* 19 (1951) 364-367; by Read, in *Romance Philology* 5 (1951-52) 231-232; and by myself, in *Language* 27 (1951) 405-411. Add MacCurdy's note, "Louisiana-French Loan Words for 'Water-Fowl' in the Spanish of St. Bernard Parish . . . ." *Romance Studies Presented to W. M. Dey* (Chapel Hill 1950) 139-142.


Borrowing
Versus
Semantic Shift:
New World Nomenclature
in European Languages

by Edward F. Tuttle

Till now, New World nomenclature has by and large been surveyed either chronologically or culturally. Interested writers have arranged their material either according to the period of its first attestation or according to the geographic, political, or social sphere in which it first arose. Borrowing and semantic shift, instead, are purely linguistic processes. They offer two poles between which most of the new words and exchanges of words occasioned by the Discovery can be graded and arrayed on the basis of formal variables. This sort of arrangement makes it feasible to treat the processes cross-culturally, emphasizing formal and semantic parallelisms wherever they occur. At the same time, variations and differences can also be clearly contrasted. The development of the New World not only represented a significant unifying experience for the cultures of the Old, it also placed such erstwhile peripheral nations as England and Spain at center-stage. Therefore a linguistic analysis which specifically points up parallels and
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divergences in the ways this new pair of imperial languages assimilated their empires may prove useful to adjacent disciplines.

From the European point of view, there were several stages in taking possession of a new empire. The preliminary, possibly the most dramatic, was titular: planting the flag, charting the coasts, applying a first coat of place names; the ultimate consisted of gaining commercial and political control. However, a no less significant stage intervened (and, in an era of lost empires, promises to outlive the others). It involved imaginative or intellectual acquisitions, and these necessarily had linguistic correlates. For the European mind to take possession of a new, expanded reality required the development of substantial new sets of symbols. The unnamable and the inconceivable are not absolutely congruent, but they do overlap sufficiently for one to sense that words must follow things and thoughts with no very great lag, however remote from former experience they may be. Such a "New World of Words" implies a fair range of constituents. From the outset and at its simplest, it must have contained the modicum of terms needed to demand supplies while abroad and to describe samples once in the home port.

On the first voyage out, Columbus already absorbed such Arawak terms as: ajé 'starchy sweet potato' (21 Dec. 1492 as age); aji 'chili pepper, red pepper,' which he observed was the natives' "pimienta ... y toda la gente no come sin ella" (15 Jan. 1493); cacique 'chief, headman' (23 Dec. 1492, at the same time noting nitaino 'nobleman'); canoa 'dugout (boat)' (26 Oct. 1492); cazave 'cassava,' that is, yuca starch, also 'bread made from cassava' (26 Dec. 1492). Ominously, the native terms that most interested him were those for 'gold,' which he recorded (13 Jan. 1493) was nozay on San Salvador, but caona and tuob on Hispaniola (cf. Sauer 25 f, Friederici 129).

More extensive enterprises witnessed concomitant lexical expansion: terms designating the institutions of a colonial economy were soon coined as rulers, entrepreneurs, and administrators elaborated new modes of war and trade:

By 1503 a Casa de Contratación, established at Seville by Columbus' nemesis, Fonseca, was administering most of Spain's transatlantic exploitation by capitulaciones 'licenses or contracts for exploration.' Although these word forms are attested a few years earlier (contratación in 1492, capitulación in 1483: Alonso 921a, 1206b), they were redefined and diffused in a New World context. The same holds for adelantado 'captain general, district governor,' the title accorded Columbus' brother, Bartholomew, which, specified as adelantado de mar, came to designate the command of a maritime expedition with a guarantee of the subsequent governorship of the lands discovered or conquered. (Conquistador, the characteristic agentive for the American adventurers, appears in the late sixteenth century.) Already under Columbus' disastrous governorship of Hispaniola, repartimiento 'part, share' took on special administrative meanings: first, 'allot-
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ment of land,' then 'sovereignty over an Indian community.' Such communities or repartimientos were delimited by the jurisdiction and territory of a native cacique, indicated with a Spanish legal suffix as cacicazgo. Later, following the more complete eclipse of the native caciques, these fiefs were designated encomiendas 'charge, dignity receiving rent, tribute' (thus in Las Casas; see Sauer 101, Alonso 1693a).

Significantly, such administrative terms were for the most part forged within the ambit of European lexical resources. Thus they make a neat contrast already with the former group of more concrete borrowings (aje, canoa, cazave, etc.), and begin to suggest the formal axis along which I want now to classify the major types of New World nomenclature.

There is an inherent logic in starting to consider New World innovations with the category of semantic shifts. One intuits that the initial linguistic reaction to a strange environment is to adapt terms from one’s own language, adjusting them semantically to cover the new phenomena at hand, since, unlike borrowing, this does not require any knowledge of another language. For those Europeans in direct contact with it, naming the new reality was requisite to survival. It was urgent that they distinguish the lethal from the benign.

Recall how the English colonists compounded numerous plant names with the determiner poison-, for example, poison-ivy for the Rhus toxicodendron (this association is already implied in Captain John Smith’s Generall Historie of Virginia . . . 1624: ‘The poysoned weed is much in shape like our English Ivy’), poison-oak (1760, extended in western American usage to the Rhus diversiloba); for the Rhus venenata, poison-ash (1760), poison-dogwood, poison-elder, poison-sumach, or simply poison-tree, poisonwood; further, poison-berry ‘any plant of the genus Cestrum’ (1756); poison-root ‘Æsculus pavia’ (1712—used in the Carolinas to stupefy fish). 5

But, in addition to the physical imperative, there must have been a strong impulse to reconstruct in the forest primeval some semblance of a remembered, civilized landscape. The colonist, whose commitment to the new setting was most permanent, must have felt this subtler need especially and been drawn to reassemble through outward analogies a flora, fauna, and topography at least nominally familiar. 6 The actual analogies took varied forms. The most frequent involved simple physical likeness:

panizo ‘panic grass’ was applied by Columbus to ‘(Indian) corn,’ that is, maize (6 Dec. 1492), although Peter Martyr heard the samples brought back to Spain called ma(h)iz. By his third voyage, Columbus also had taken to maiz, commenting that ‘hay ya mucho en Castilla.’ Nevertheless panizo continued to compete as the designation for maiz in many parts of Spain. The original Academy Dictionary (“de Autoridades”) still equated it in 1737 with ‘trigo de Indias o maiz.’ (Analogously in Portuguese and Galician, milho [millo] ‘millet’ was extended to ‘corn, maize,’ cultivated around Douro
since the 1520’s and initially distinguished as milho marroco [1531]. It shortly
took over as the primary meaning of milho, requiring specification for
‘millet’ as milho miúdo. An identical extension of ‘millet’ also occurs spo­
radically in southern France and northwestern Italy.)
pavo ‘peacock’ has been extended to the American ‘turkey’ (Meleagris)
since Columbus’ party first encountered the bird in Panama (1502). As
the turkey became diffused in Spain, homonymy spurred distinguishing
the peacock as pavo real (latter half of the eighteenth century: DCELC III,
700b).
piña ‘pine cone’ is the primary term for ‘pineapple’ (by 1519, although
Columbus’ son, Ferdinand, recalls its use on the third voyage); later Indian
loans were used by Oviedo (1535) to specify subtypes of the more general
piña.
turma ‘truffle’ was early used to designate the ‘potato’ (beside more specific
borrowings from Arawak); in parts of Castile and Colombia it is still the
current term as is the diminutive torrita in Mexico (DCELC I, 941b; Mor­
níngo 651a). It provides a forerunner for G. Kartoffel, earlier Tartuffel (ca.
1600: Kluge q.v.), probably absorbed via a northern Italian, Suisse ro­
mande, or southern French prototype, where ‘truffe’, ‘trufelle’, etc. indicate
‘potato’ (see AIS VII, 1387). Compare further, Sp. criadilla ‘testicle,’ also
‘truffle’ and thence ‘potato’ (from 1555), the result of an equation with
turma in its secondary meaning ‘testicle.’

Similarities in function, in behavior, or even in odor or flavor could
also provide sufficient bases for association and shift:

barbasco ‘mullein,’ a plant used in Europe to stupefy fish, was extended
to any American plant with like use (Friederici 80b, Sauer 58). American
Spanish still preserves this older, more vernacular heir to verbascum,
reserving the peninsular Latinism verbasco for ‘mullein.’
carpintero ‘woodpecker’ (standard Sp. pico) was applied to various other
tree-pecking birds (from Oviedo, 1535; see Malaret 113 for numerous
AmSp. extensions).
ladino ‘Hispanized Moor’ (from late thirteenth century) was extended to
‘Spanish-speaking Indian or Negro’ (1565), subsequently becoming ‘mestizo’
in Central America (Kany 22 f).
canella ‘cinnamon’ became a West Indian tree due to the flavor of its
bark. “It passed into taxonomy as the genus Canella of the family Cane­
laceae” (Sauer 34).

Such semantic extensions met the naming crisis with maximum
economy since they required no formal innovation. Yet this advantage
was balanced by their potential for ambiguity: there was no contrast in
outward shape to mark the new designatum off from the old. Wherever
links between the old country and the new were not broken, or
wherever the new designata were imported into Europe, the potential
polysemy became real. The most immediate way of eliminating confu­
sion was by specifying the newcomer with a mark of provenience, for
example,
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for 'corn, maize,' Sp. trigo de las Indias (1580), echoed in other European languages during the seventeenth and eighteenth centuries: Cat. blat d'Indi ~ de les Indies; Fr. bled d'Inde (1609), ble de Guinée; It. grano d'India (obs., but in southern It. granadimmi); Eng. Indian corn (1621), Indian wheat (1578), Guinea wheat (1598); G. indisches Korn (1751), indianischer Weizen; for 'turkey' (Meleagris gallopavo), Sp. pavo(n) de las Indias (Oviedo); Cat. gall (polla) d'Indi (1659), Fr. coq (poule) d'Inde (1548 as 'turkey,' obs., but in many northern dialects 'codin'); It. gallo (gallina) d'India (1549, obs., but in southern It. 'gallodimina'); Eng. cock of Ind (1592—in Heywood, a calque from French), Indian cock (1638); G. indischer Hahn (1531), kalekutische huhn (1553: Kluge 796a, Palmer 51).

Inasmuch as India called up the East more than the West, it is not surprising that the folk were led to associate New World products, at least nominally, with the pre-existing Islamic sources of the exotic:

for 'corn, maize,' Ptg. milho marroco (1531: see above, pp. 597-598); Gal. millo mouro; Sp. grano de Turquia (1580 as an Italianism); Cat. blat de moro; It. gran(o)turco, frumento turchesco (sixteenth century), sorgoturco (1657); Fr. ble(d) de Turquie (1583), ble(d) sarrazin (1609), ble de Barbarie; Eng. Turkish corn (1578), Turkey corn (1597), Turkey wheat (1598); dialectal G. Türkencorn, türkisches Korn, türkischer Weizen;

for 'turkey,' the term turkeycock (1541), which seems to have originally designated the 'guinea cock' (i.e., the African Numida meleagris), was explicitly equated with the American Meleagris by Richard Eden in translating Peter Martyr's pavones (1555). It is with this meaning that the simple form turkey occurs in the same year. G. türkische Henne (1579) is an infrequent compound (Palmer 51) while It. gallo di Turquia (sixteenth century: Maccarrone 26) offers a lone Romance echo.

Yet for all their transparency, periphrases of this sort were also cumbersome. In current vernacular speech they were either reduced, for example,

for 'corn, maize,' Gasc. turquet (=Middle Fr. ble turquet in 1547), flanked by indoun in two localities; Fr. turquie (1793, non-standard but widespread in regional patois: see FEW XIX, 191 ff); southern It. turco, -ella, -isku and -nyanu, also -isiliano (Lazio) from an earlier gran ciciliano (i.e., siciliano); Eng. Indian (1664: see OED q.v., B, 3); southern G. Türk (Kluge 454b);

for 'turkey,' Ptg. peru (= galo de Peru, see above n. 9); Cat. indiot-a ("derivat pejoratiu de indi" [7], DCVB VI, 640a), also Valencian indiá(na); Fr. dinde (1600), masc. dindard, then dindon; regional It. dindio-a (Veneto), dindo (Piem.), indiano (South); Eng. turkey (1555)14; G. Kalecute (1720), Kalecutische (1776), cf. Eng. calicut, calico (-cloth);

or occasionally replaced by a trimmer term produced from European morphologic resources:
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for ‘corn, maize,’ Gal. millote; Gasc. milhôc; regional It. granone (Liguria), formentone (Veneto, Sicily);
for ‘turkey,’ Gasc. pouloy; northern It. pulín, southern It. gallinaccio.¹⁵

Therefore, as a means of creating new terminology, specifications by origin were distinctly limited.¹⁶ More pointed compounds could be assembled which often had a descriptive attraction to spur their initial coinage and diffusion and aid their ultimate acceptance. (Compare, for example, the flat, relatively uninspired Indian fig [1712] with prickly pear [1760], Indian turnip with dragon-root, Indian walnut with Candleberry[-tree], etc.) Purely in terms of numbers, the potential of compounds was infinite (as against the circumscribed multiples offered by suffixal derivation). Their inspiration or formative semantics are too varied to admit any sort of overall typology here. A few botanical terms must suffice to illustrate. Many are no more than an elaborate semantic shift, specified as to color, use, habit of growth, etc. For example,

redbud (1717 = Cercis canadensis); red cedar (1717 = Juniperus virginiana); black (~ American) larch (= Larix laricina), compare Fr. épinette rouge ‘id.’ (1664); whitewood (1683, for various American and West Indian trees, notably Liriodendron tulipfera, the tulip-tree [1705], and Tilia americana, basswood [1824]); gum-tree (1676, for several resinous American and West Indian trees, Eucalyptus, Nyssa; sweet gum(-tree) = Liquidambar); pitchpine (1754 = American Pinus rigida); sugar-maple (1753); dwarf- or choke-cherry (1796 = Prunus virginiana), cf. CFr. cerisier-a-grappe ‘id.’; ground hemlock (= Taxus canadensis, a species of yew), compare CFr. sapin trainard ‘id.’ (Massignon 164).

As the distance between the new species and the old increases, so does the imaginative projection involved in the compounds and, consequently, the degree of semantic innovation implied, until one reaches such innovations as:

candleberry (1753 = Myrica cerifera, earlier variant candle-tree, 1691, later wax-berry, 1835); checkerberry (1823 = Gualtheria procumbens, also extended [erroneously?] to partridge-berry, ground-holly [Mitchella repens]; the variants teaberry [1858] or mountain tea may be calques from CFr. thé-des-bois, petit-thé, thé rouge [alternating there with pomme-de-terre, patate being ‘potato’ in Canada]; Massignon 191); custard-apple (1657 = Anona reticulata, i.e., cherimoya), with variants sweet-sop (1696), sugar-apple (1738), sugar-sop (1847); peanut (1835 = Arachis), earlier as ground nut or ground-pea (both in 1769); in North America ground-nut first referred to ‘tuber of wild bean’ (1636 = Apios tuberosa, still so used by Thoreau in Walden); compare G. Erdnuss, Grundnuß ‘peanut’; Fr. “arachides . . . vulgairement nommées pistaches de terre,’” Littre (compare G. Erdpistazie).

In this way, European vocabulary was increased by entirely new linguistic signs, formed nonetheless from familiar elements. If one continues further along the scale of formal innovation, one reaches the
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most innovative process (formally now, as well as semantically): outright borrowing.

Viewed overall, early borrowing in the New World seems to obey a certain loose principle of economy or need, even if it is a principle often violated by apparently gratuitous borrowings (that is, borrowings for which an extant European word would appear to have easily met the demands of pure denotation). This is suggested by several aspects of the Europeans’ acceptance of Amerindianisms. In the first place, the initial years of contact proved the most productive of loanwords. Their simple chronologic distribution, therefore, implies that the great mass of New World borrowings proceeded from need, which was most acute when the onslaught of unnamed phenomena was greatest.17 The Arawaks, the first Amerindians encountered by the Europeans, have provided a store of loanwords out of all proportion to their long-term economic, cultural, or demographic impact—the large island populations (around 1500 there were better than a million inhabitants on Hispaniola, for example; see Sauer 65 ff) were destroyed by the second quarter of the sixteenth century (Idem 200 ff). Their lexical endowment to their conquerors (and thence to Renaissance Europe18) may well be the Arawaks’ greatest legacy.

Especially abundant are terms from the native American root culture, which must have lain substantially outside the compass of the Spaniards’ former experience,20 for example, aje (age 1492) ‘starchy sweet potato’; batata (1516) ‘sweet potato’21, guáyaga and guáyaró (1515) ‘roots used as substitutes for yuca’ (Zamia): Friederici 18522; llerén ~ lirén (1535) ‘Calathea allouia’ (of the arrowroot family); yahutía (1535) ‘Xanthosoma sagittifolium’ (an aroid); yuca (1495) ‘manioc.’ This staple root was converted to casave (cazavi in 1492) ‘starch from yuca,’ also ‘bread of yuca starch,’ by means of a guariquetén (before 1550) ‘grater’23 and a cibucán (1526) ‘basketry press,’ and was baked on a budare or burén (both 1535) ‘flat earthen griddle.’ All such root crops were grown in conucos ‘mounds of loose soil’ (1509; Ponce de León interpreted this as ‘small root patch’). Other plants are: aji (1493) ‘chili-, red-pepper’; anon(a) ‘cherimoya, custard-apple’; bejuco (1526) ‘liana, climbing palm’; bija (bixa 1535) ‘arnotta-tree’ (used for red body dye); caimito (1535) ‘star-apple-tree’; caöba (1535) ‘mahogany tree’; ceiba (ceyba in Las Casas) ‘kapok-tree’; cigua (1526) ‘Nectandra sanguinea’ (Friederici 191a); guanábano (1526) ‘soursop’; guayabo (1526) ‘guava tree’; guayacán (1526) ‘hollywood, lignum vitae’; jagua (1515) ‘genipap tree’; maíz (1493) ‘(Indian) corn’; maney (1535) ‘mammee-tree, mamey-tree’; maní (1535) ‘peanut’; papaya (1569); tuna (1526) ‘prickly pear.’

Some fauna are involved: guacamayo (1493) ‘long-tailed parrot’; guaicán (1510) ‘remora, suckerfish’; guanajo (1540) ‘turkey’; hutía (1510 uthia) ‘edible...
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rodent'; iguana (1510); jáiba (1526) for several crustaceans; manati (1515) 'manatee, sea-cow'; and several insects: cocuyo (1535) 'glow-worm'; conején (1535) 'termite, white ant'; and nigua (1526) 'chigger, tick.' The relative slightness of this category vis-à-vis the flora seems best explained as the result, simply, of the lack of richly varied animal life on the islands. There are a fair number of terms taken from native life, referring to distinctive artifacts: barbacoa (1518) 'framework for suspending something above ground' used for cooking or smoking meat, used as a bedstead, etc. (Friederici 78 ff); canoa (1492) 'dug-out boat'; duho (1535) 'ceremonial seat'; guanin (1493) 'gold alloy'; hamaca (1515) 'hammock'; hava (1526) 'palm-leaf basket'; henequén (1526) 'agave fibre cord'; hico (1526) 'string to support hammock'; jagüey (1518) 'hole to collect rain- or seep-water'; macana (1515) 'wooden club, hoe, sword' and 'hardwood from which such implements were made'; nagua (1519) 'skirt of Arawak women'; pita (1541 depita) 'agave' and 'string of agave fibre' (Friederici 512 f). A few terms relate to native society: cacique (1492) 'chief'; guatiao (1552) 'person of good will,' originally a 'brother by exchange of names'; nitaino (1492) 'noble'; naboria (1513) 'lowest servile class of Arawak society' then 'Indian servant.' Other words refer to distinctive house-forms: bohio (1516) 'round hut' made of palm fronds; caney (1526) 'great house of chief.' Lastly there are terms for the landscape and climate: arcabuco (1535) 'dense bush, forest'; cayo (1541) 'key, low island'; huracán (1510-15) 'hurricane'; savana (1515) 'grassy, treeless plain.' A century later in North America, the English and French began to assimilate a new environment linguistically. The English, for example, borrowed terms, primarily from Algonquian, the main Northeastern Indian stock, in almost exactly the same semantic areas as the Spanish had drawn from Arawak.

There are abundant terms for flora: chinquapin (recorded in 1607-09 by Capt. John Smith as chechinquamin) 'dwarf chestnut' (Castanea pumila); hickory (1675, if a reduced form of earlier po Hickery, 1634, or Capt. Smith's pawcohiscora, 1607-09) applied to several trees of the walnut family and their fruit (Chamberlain 244 f, Friederici 297 f); hobnits, hobbenis, hopnis(s) (1749) 'groundnut,' that is, tuber of wild bean; maracock, maypop (1607-09, Capt. Smith) 'fruit of passion flower' (Passiflora incarnata); maycock, macock (1608, Capt. Smith, as macoqupwer in 1588) 'type of squash'; persimmon (1607-09, Capt. Smith as putchamin); puccoon (1607-09, Capt. Smith) principally Lithospermum of the borage family, occasionally also extended to 'bloodroot,' that is, Sanguinaria canadensis (cf. Cfr. sang-de-dragon: Massignon 182); squash (1643), earlier squantersquash (1634); succotash (1778); tuckahoe (1607-09, Capt. Smith as tockwough) 'green arum,' or Peltandra virginica; wicopy (1610) 'leatherwood,' i.e., Dirca palustris. Most of the foodstuffs refer to corn culture: hominy (1629, as rockahominy) 'corn meal mush'; pone (1607-09, Capt. Smith) for several baked dishes, e.g., corn pone (~ Powhatan apôn); samp (1643) 'corn meal mush,' supawn (1780) 'id.' (cf. Cfr. soupane).
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Fauna are the best-represented category of loans: caribou (1605)\textsuperscript{28}; chipmunk (1841); menhaden (1643) 'herring-like fish used as fertilizer'; mo(o)nock (1666) 'groundhog, woodchuck'; moose (1605, James Rosier as moosurr); muskelunge (1796 as maskinungu) 'large pike,' that is, Esox nobilior of the Great Lakes; muskrat (1616 as musquash, 1607-09, Capt. Smith as musquascus, mussassus)\textsuperscript{29}; (o)possum (1607-09); porgy (1775, as porgos in Capt. Smith, 1614, if this word is not an adaptation of poor john, frequently 'halibut' or 'hake,' or of Ibero-Romance pargo 'bream'); quickhatch (1748) 'carcajou, wolverine'; raccoon (1606-09, Capt. Smith as aroughcun); skunk (1634); terrapin (1613) 'loggerhead, sea-turtle'\textsuperscript{30}; wapiti (1780-90) 'elk,' that is, Cervus canadensis; whiskey-jack, -John (1839) 'Canada jay' (-Cree-Montagnais wiskačān); woodchuck (1689), the earlier variant wejack more nearly reflecting the putative Algonquian source.\textsuperscript{31}

There are several terms relating to native artifacts: moccasin (1607-09); toboggan (1829); tomahawk (1634); but more relating to native society: cock-a-rouse (1624) 'elder, chief'; musgump (1832) 'great chief'; netop (1643) 'friend'; papoose (1634)\textsuperscript{32}; powwow (1624) originally 'Indian priest,' then 'Indian ceremony'; sachem and sagamore (1622, 1613) 'chief'; sannup 'adult brave, gentleman'; squaw (1634); totem (1760-76); wampum (1647); other terms for 'shell money' are peak, peag (1648), roanoak (1624), seawant (1627, via Dutch zewandt from a putative East Algonquian siwān: Friederici 675); wero-wance (1588) 'chief.' House forms are represented by wigwam (1628), and, to complete the parallel, there is a landscape term, pocoson (1650 as pecosan) 'swampy, miry ground.'\textsuperscript{33}

Of no less interest than semantic parallelism in the present context is the fact that the vast majority of all North American Indian loans to English remain these very same Algonquianisms. Thus there is a further parallel with Spanish in the importance of the initial period of contact for borrowing—a parallel which corroborates the view that need was the basic motivating principle.

Another aspect of New World borrowing also favors this conclusion: comparing loans from Arawak and Algonquian with those from other sources, one notes that there was remarkably little redundant borrowing. As the Spaniards moved on to further conquests in mainland Central and South America, they were already equipped with terms to describe many natural and cultural features. Even near-duplicate loan-words are rare, especially if the duplicate pair is taken from Arawak and Nahuatl (since most of the conquest of Mexico was staged from the islands).\textsuperscript{34} In fact, Spanish became the vehicle for diffusing many Arawak designations on the mainland, e.g., barbacoa, bohio, cabuya, cacique, caney, hamaca, henequén, maquey, nagua, pita, etc.\textsuperscript{35} The Anglo-American colonists, in their subsequent westward thrust, also carried with them the early Algonquianisms, extending them semantically. On the other hand, they seem to have availed themselves only sparingly of the other indigenous languages they met.\textsuperscript{36} While this sharp decline in
English borrowing confirms by inference that the bulk of Amerindianisms were absorbed in response to an immediate cognitive pressure, it ends the parallel between English and Spanish, since the Spanish continued to draw upon the new native languages with which they came in contact.

Once on the mainland, the Spanish were confronted by a natural setting and by cultures rather more complex than those of the islands. This meant that the nomenclatural pressures and necessities facing them were scarcely less urgent than before. They encountered two indigenous imperial languages of great prestige, the Aztecs' Nahuatl and the Incas' Quechua. In their respective spheres, both became the parallel main sources of loans to Spanish. Each was seized upon by local Spanish administrators and missionaries as a lingua franca for their complementary ends. (Ironically, both languages may have thereby acquired a wider currency than they enjoyed as Kultursprachen in their own right.) Nahuatl loans to Spanish, for example, are legion; but it is not merely a question of quantity or degree which sets them off from Anglo-American Algonquianisms. Semantically they penetrate into new areas. Besides numerous foods, many domestic utensils are involved:

- *chiquihuite* (1598) ‘basket, hamper’ ← čikáwitl; *comal* (1532) ‘pottery griddle, tortilla pan’ ← komálí; *guacal* (1571) ‘oblong hamper for carrying fruit’ ← wakálli; *jícara* (1535 xicalo) ‘gourd vessel,’ then ‘cup’ ← sicalli; *malacate* (1598) ‘spindle’ ← malákatl; *mecate* (1650) ‘cord, string’ ← mékatl; *metate* (1571) ‘mortar, grinding stone’ ← metlatl; *molcajete* (1598) ‘stone mortar’ ← múlkashítl; *petate* (1530) ‘bedroll, bag’ ← pēltatl; *tanate* (1532 as tenate) ‘leather or wicker container’ ← tānatlí; *tejolote* (1598) ‘stone pestle’ ← tehólotl; *tompeate, tompiate* (1571) ‘round basket’ ← tōmpiatlí, etc.;

and other familiar elements of daily life (most of which have remained regionalisms in Spanish), for example:

- *chichigua* (1571) ‘nursemaid’ ← chichihua; *chincual* ‘cradle cap’; *conete* ‘litle boy’ ← reduplicated hypocoristic of könetl ‘boy’; *cuate* (fem. -ta) ‘twin,’ also ‘buddy, girlfriend’ ← koatl; *jiote* ‘scab’ ← siotl; *macegual* (1532 maceoval) ‘farmhand’ ← masewalli ‘vassal’; *mitote* (1505 as ‘dance song’) ‘party, noisy festivity’; *pilmama* ‘wetnurse, nursemaid’; *sicote* ‘athlete’s foot’; *tameme* (1540) ‘porter’ ← tlamámé; *tencua* ‘harelip’ (cf. Wagner 75); *tocayo* (1726) ‘person with one’s same given name’ ← tocayotl (for semantics and symbolism, see Wagner 59).

By their obvious domestic referents, these loans imply a degree of contact more intimate and enduring than that of natives and Englishmen in North America. But their form is no less an index to a differing rapport than their content: the relative phonetic fidelity of Spanish to the
Nahuatl sources contrasts sharply with the extreme distortion of the Algonquianisms in English.\(^{41}\) Compare the Powhatan source \(\text{cìhčinkwēmin}\) with \(\text{chinquapin}\) (or \(\text{chicopine}\) in 1676); Delaware (= Lenâpé) \(\text{hópan}\), pl. \(\text{hópanak}\) with \(\text{hobbenis}, \text{hobnuls, hopnis(s)}\); Powhatan \(\text{passakwan}\) with \(\text{pocoson}\); Penobscot \(\text{nsâpan}\) with \(\text{supawn}\) and \(\text{samp}\), etc.

What determines fidelity in reproducing the forms of another language? Foremost is the proximity of the phonologies of the two languages; and Spanish undeniably held the advantage on this score.\(^{42}\) However, less mechanical factors should not be discounted: the attitudes of speakers and, above all, the level of their knowledge of the source language may be scarcely less influential. Where there is bilingualism, there will be less deformation, and folk-etymology, the most outré sort of distortion, will tend to be checked. Forms such as \(\text{chipmunk}\) (via an earlier CEng. \(\text{chitmunk}\) from Ojibwa \(\text{aCitamon(?)}\); \(\text{matchcoat}\) (1638) 'Indian mantle' from Powhatan \(\text{meskotē}\); \(\text{muskrat}\) (1649) from earlier \(\text{musquash}, \text{musquacus}\) (see above, n. 29); \(\text{quickhatch}\) from Montagnais \(\text{kwihkwahâcéw}\); \(\text{whiskey-jack, -John}\) from Cree-Montagnais \(\text{wiskučin}\); \(\text{woodchuck}\), earlier \(\text{wejack}\), from Ojibwa, Menomini \(\text{očik}\), etc; and others so altered as to thwart any attempt to pinpoint a single source for them (for example, \(\text{chickwit}\) 'weak-fish,' that is, \(\text{Labrus squeteague}\): see Chamberlain 243) are remarkably absent in Spanish America. Their presence in Anglo-America, on the other hand, bespeaks incomprehension and cultural distance between the languages in contact.\(^{43}\) Conviviality is the basis of bilingualism; its fruit is the \(\text{mestizo}\), the bilingual par excellence, whose status and numbers in the Americas would appear to have been determined, at least indirectly, by the presence or absence of European women. In addition, attitudes towards slavery, towards continence, and overall colonial ambitions determined the degree of native participation in the colonial societies. A new hybrid society fostered increased linguistic hybridization. Thus borrowing becomes a significant index to social integration: the number of loans, their phonologic shapes, and their semantic spheres of reference all bear witness to the contrasting levels of interaction between Amerindians and Europeans.

Juxtaposing borrowing and semantic shift, the two formal poles of lexical expansion, yields a scale of morphemic and semantic innovation along which all types of American terminology can be projected, regardless of the language from which they are drawn. Spanish and English, languages in the forefront of the westward thrust of European culture, are a likely pair for illustrating the manner in which the impact of the New World was accommodated linguistically; and, in pointing up the parallels and contrasts between them, a purely formal linguistic analysis can provide a useful correlate to the insights of other disciplines.
Abbreviations and sigla used in text and notes:
AGI: Archivio glottologico italiano.
Am: American
AR: Archivum Romanicum.
C: Canadian
DES: M. L. Wagner, Dizionario etimologico sardo (Heidelberg 1960-64).
FEW: W. von Wartburg, Französisches etymologisches Wörterbuch (Bon, Leipzig, and Basel 1928-).
Malaret: A. Malaret, Lexicon de fauna y flora (Bogotá 1961), supplemented by “Los americanismos a través de los siglos,” Universidad Católica Bolivariana (Medellin, Colombia) 4 (1940) 319-329; 11 (1945) 177-194 for sixteenth-century attestations.
Palmer: P. M. Palmer, Neuweltwörter im Deutschen (Heidelberg 1939).
RIL: Rendiconti del reale Istituto lombardo di scienze e lettere, Serie II.
RPh: Romance Philology.
Wagner: M. L. Wagner, Lingua e dialetti dell’America spagnola (Florence 1949).
ZRS: Zeitschrift für romanische Philologie.
ZVS: Zeitschrift für vergleichende Sprachforschung.

2. To echo the title of an early seventeenth-century bilingual dictionary—that of John Florio, the London-born Italianist, in its expanded version of 1611—which was no doubt playing upon a phrase (orbis novus, nouveau monde, etc.) by then widely current. ‘Novi
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"orbis" appears in Peter Martyr's letters by early November 1493 [letter 138] and was given ampler diffusion in the title, De orbe novo, of his Decades, published in 1525 and "Englished" 30 years later. Analogously, the posthumous Viennese rewrite of Vespucii's letters appeared in 1504 under the title Mundus novus; see Sauer, "Terra firma: Orbis novus," Festschrift Hermann von Wissmann, ed. A. Leidmair (Tübingen 1962) 269.

3. Of course, this estimate of necessities does not make any allowance for the yarns of the returning seamen, which, filled with novel experiences and contacts with strange peoples and phenomena, are not likely to have been free from some linguistic embellishment (along the lines of what the Swiss lexicologist E. Tappolet termed "emprunts de luxe").

4. Eng. captain-general 'commander-in-chief,' first as 'governor of a Spanish province' is itself a sixteenth-century Hispanism (as is Fr. capitaine-général).

5. Analogous compounds appear in nineteenth-century Australian English, for example, poison-plant (variant poison-pea) designating any of several legumes poisonous to cattle.

6. Even though they inevitably worked in tandem and one cannot separate them in practice, it is not illegitimate to distinguish a more volitional from a more circumstantially-determined component in folk-naming.

7. The very remoteness of certain early analogies may stand as an index to the cognitive pressure bearing on the voyagers and pioneers—cf. Oviedo's complaint that manzanilla [literally] 'little apple,' also 'variety of small olive,' was hardly an apt designation for the 'castor bean'; see Sauer 57. (H. L. Mencken discusses analogous malapropisms in The American Language [ed. 4 New York 1936] 122 ff and Supplement 1, 217 ff.) The most tangential extensions of terms arose from European imaginative conventions: see L. Olschki's interpretation of "L'usignuolo di Colombo" in Storia letteraria delle scoperte geografiche (Florence 1937) 15 ff. Also see Malkiel, in this collection, 2.589-590 and n. 18. The appellation Indias itself shows the influence of conventionalized expectations; Columbus assigned other names from the Eastern trade, for instance, almácigo 'mastic-tree, lentisk' and lináleo 'fragrant) aloes-trees,' to several American aromatic trees, which still bear the names in American Spanish: see Sauer 34.

8. More direct provenience may be indicated in blé d'Espagne (obsolete, but current in Gascon blaspagné) or blé d'Italie (obs.; northern Italy was a center of cultivation by the second half of the sixteenth century).

9. Mid-sixteenth-century Ptg. galinha do Peru, galo de Peru, the sources of standard Ptg. peru 'turkey' (since the seventeenth century), appear to indicate 'fowl from Spanish America'—at least it is in this manner that J. P. Machado interprets Peru, which, as a main Spanish establishment adjacent to Brazil, came to stand metonymically for Spanish America as a whole in the popular imagination of the epoch: Diccionário etimológico da língua portuguesa (Lisbon 1959) 1726 ff.

10. The compound had been coined by 1380 referring to 'guinea fowl' (Numida meleagris)—a bird wild in Abyssinia (that is, India Media).

11. Unspecified sorgo, although originally and officially 'millet,' has designated 'maize' in several of Italy's main corn-raising districts since the seventeenth century: for example, Ven. sorgo, Eml. soreg, Abr. šúřko. Etymologically, as a substantivized qualifier of exotic provenience (<SYRIACU 'Syrian,' already used alone by Pliny for an herb, SINO -ONIS, while SYRIACA designates a type of bean in Isidore [cf. further OSard. suriača 'nettletree': DESII, 450]), it anticipates the process discussed below, p. 599 and n. 14.


13. Standard It. tacchino is but one of several onomatopoeic Stimm- and Lockrufe.

14. For an earlier parallel, cf. fifteenth-century Eng. turkeys 'turquoise' ←OFr. turquoise (sc. pierre) in Marco Polo. For an inverse projection (of the name of a product to the country of its provenience), cf. Brazil, originally an East Indian dye-wood (in English from 1386). When an allied species was discovered in South America, the region was called terra do brasil (1510, Gil Vicente), abbreviated thereafter to Brasil (which in turn fostered a compound to distinguish the phytonym, Brasell tre in 1530, Brazilwood in 1559; in Portuguese, pao (do) Brasil in 1576).
15. Onomatopoeia provides another major group of alternate names for the 'turkey': Cat. titot, Prov. pioc, piot, dialectal It. bibin, biribin, pito(n), takkin(o), variant tokk-.

16. To illustrate with the Calabrian dialect, towns in the region of La Sila where ɾˈnyːjʌŋu means ‘turkey’ have often specialized ɾˈturkʲiːsku as ‘corn,’ while neighboring villages, where ɾˈnyːjʌnBu serves instead for ‘corn,’ have had to develop alternates for ‘turkey,’ for instance paparūna (a derivative of ‘goose’); compare AIS VI, 1147 and VII, 1463.

17. Changed social conditions, of course, could have changed this pattern; see the case of the Nahuatl loans discussed below.

18. The role of Spanish in diffusing the first Amerindianisms is too well known to require comment. Beyond G. Friederici’s monumental thesaurus, easy although cautious reference may be made to M. S. Serjeantson, A History of Foreign Words in English (London 1936) 250 ff; for French see K. König, Uberseefische Wörter im Französischen (16. und 18. Jahrhundert), Beihint 91 to ZRPh (Halle 1939), complemented by W. F. Schmidt, Die spanische Elemente im französischen Wortschatz (Halle 1913) [= Jena Diss.] for straight Hispanisms; see also R. García, Exotismos franceses originários da língua Tupi (Rio de Janeiro 1943); for German, see Palmer: this publication supersedes his Der Einfluss der Neuen Welt auf den deutschen Wortschatz, 1492-1800 (Heidelberg 1933), as well as K. Lokotsch, Etymologisches Wörterbuch der amerikanischen (indianischen) Wörter im Deutschen (Heidelberg 1926). Also see Malkiel, in this collection, 2.591 n. 10. For Italian, there is no separate compendium of Americanisms. One must distinguish between an original body of sixteenth-century terms, often absorbed directly from their Amerindian sources, or at least first hand from Spanish (for example, see D. Sanvisenti, “Il lessico del Pigafetta,” RIL II, 75 (1941-42) 469-504, and 76 (1942-43) 3-33, or G. L. Beccaria, Spagnolo e Spagnoli in Italia. Rilisi ispanici sulla lingua italiana del Cinque e del Seicento [Torino 1968],) and a second wave of eighteenth-century Gallicisms which either reinforced or replaced the evidently quiescent original Hispano-Amerindian loans; compare eighteenth-century canotto ← Fr. canot with sixteenth-century canoa, eighteenth-century piroga ← Fr. pirogue with sixteenth-century piragua, etc.: cf. B. Migliorini, Storia della lingua italiana (ed. 1 Florence 1960) 423 f, 580. Less has been said, however, about the large class of semantically-shifted Spanish words which were borrowed by the other European languages in an exclusively American extension. To cite a few examples from English: alligator (1577 as lagarto, 1594 as alagarto) ← (el) lagarto; armadillo (1577 as armadillo); balsa(wood) (1542); broma (1555) ‘shipworm’; calabash (1699); molasses (1582 as melasus) ← melaza; mulatto (1595 as mulatow); pickaninny (1657) ← piquinino for pequenino; pineapple (first in 1664 with the meaning 'ananas,' rather than its former meaning 'pinecone') for earlier pine (1661, as pina in 1577) ← pinya; sa(r)saparilla (1577); vat(y)nilla (1663) ← vainilla (obs., literally 'little sheath'). Although on a much reduced scale, English was also a mediator between the new environment and the old. Besides diffusing Algonquianisms (e.g., mocassin, tomahawk) and semantically-specialized terms (e.g., scalp), the English created the first terms for spirits to be distilled from by-products of the sugar cane. Rum appears in 1654; Fr. rhum in 1688 with reference to English establishments; Sp. ron is attested late and may depend upon the intermediary of French. Its earlier form, rumbullion (1651), occurs beside a more graphic synonym, kill-devil, also loaned to French as guillotine (1743), as well as to German (1676).

19. Note that the bulk of them are attested by the time of the first three major chroniclers of Spanish America: Peter Martyr of Anghiera, whose Decades run from 1493 to 1525; Gonzalo Fernández de Oviedo y Valdés, whose commentaries appeared partially in 1526, 1535, and 1547, and Bartolomé de Las Casas, who from 1520 to 1561 wrote the Historia de las Indias treating experiences up to 1520.

20. However, as a result of having been on the African coast, Columbus initially (4 Nov. 1492) transferred the analogous West African term niane (≈ mame) to several of the Arawaks’ roots: see Friederici 450 f, Sauer 53.

21. See Henríquez Ureña (n. 1 above) 20 ff for the history and the interplay of forms. A b-variant is the first attested in English (botata in 1555), but, soon after, that in p- becomes standard (Friederici 82). Since it has not been adequately discussed elsewhere, a comment on the final vowel of potato may not be out of place. This apparently arbitrary gender change (i.e., the English conversion of final -a to -o) was not completely haphazard: a good number of Hispanisms from this period fall into an identical pattern; for
example, Barbadoes ← (Islas) barbadadas; bastinado (1557) 'cudgel-blow, beating' ← bastonada; bravado (1599) 'boastful, ostentatious show of bravery' ← bravada; molasses(s) variant of molasses used by Hakluyt and his contemporaries ← melaza; olio (1643) 'spicy stew [made in an olla], later any 'hodge-podge'; pimento (1673) 'Cayenne pepper, allspice' ← pimienta; primero (1533) 'card-game' ← primera; ter- tornado 'violent tropical Atlantic thunderstorm,' then 'violent storm with whirlwinds' ← tronada. One might even speculate that a new marker for exotic Hispanisms arose, suggested by contemporaneous loans with original -o, e.g., bonito (1599) 'striped tuna,' mosquito (1583), palmito (1583, in eighteenth century shifted to an Italian form of suffix, -etto), and encouraged by the fact that -a was closer to a less explicit -o, thereby depriving the borrowing of some of the dash of its origin. Note that -o was extended to tomato (1753, replacing love-apple) ← tomatel, and even to the Gallicism courante (a dance) → coranto (1564). Such a marker would not be unparalleled in European folkspeech; see B. Migliorini, "5 pseudo-spagnola," Lingua nostra 7 (1946) 88 f.

22. Both are mentioned by Peter Martyr. By their shape, rather than distinct Arawak words, they could be variants of a single prototype, produced by a purely Spanish form of suffixal play or "modulation." This process, involving unstressed terminal sequences, has recently been illuminated by Y. Malkiel in "The Rise of the Nominal Augments in Romance," RPh 26 (1972-73) 306-334.

23. For a judicious, detailed reconstruction of the use of this and other related artifacts (as well as of the larger problem of West Indian food culture), see William C. Sturtevant, "History and Ethnography of Some West Indian Starches," in The Domestication and Exploitation of Plants and Animals, ed. Peter J. Ucko and G. W. Dimbleby (London 1969) 177 ff.

24. Canoa may have been loaned to Arawak by Carib, the same as was piragua 'large, elaborate dugout.' Note that piragua was not borrowed until later (Oviedo, 1535). In general, the linguistic effect of the contrast between the gentle Arawaks and the bellicose, aggressive Caribs was to retard and inhibit borrowing from the latter. The amount of Caribbean terminology traceable to the Caribs is slight in relation to that absorbed from the Arawaks: see Henriquez Ureña (n. 1 above) 106 f. Colibrí 'humming-bird,' one of the few other loans from Island Carib, is curiously absent from the early Spanish writers (see Friederici 200a) and appears first in French (1640). The earlier designations are uniformly Hispanic, pajaro mosca (pajaro mosquito in Oviedo, 1526), zumbaro. Thus colibrí is likely to have reached Spanish via standard French and not be part of these early lexical acquisitions at all: DCELC I, 852a. The origin of the other best-known Carib word, caimán 'alligator' (1535), has been questioned by no less an authority than Friederici (see 152 ff, and cf. DCELC I, 576b).

25. I am deeply grateful to Dr. Frank T. Siebert for providing a vast amount of useful information relating to these early Algonquianisms. I have not been sensible enough to accept all his criticisms and, therefore, I am responsible for any remaining errors.

26. Although given by Friederici 299a as 'floating arum,' Dr. Siebert in a personal communication, 26 Jan. 1975, corrects the designated plant, writing that "hopniss [was] used along the Delaware River in New Sweden . . . and [was] first given by the Swedish naturalist Peter Kalm. It may have entered English via colonial Swedish in the lower Delaware Valley. . . . It is Proto-Algonquian 'wexpenya' 'groundnut, tuber.' . . . The form cited is the diminutive . . . and does not refer to the arum, but to the groundnut, Apios tuberosa or Apios americana."

27. For the Algonquian prototype and the semantic evolution of ma(y)cock—as well as for pecan, persimmon, pone, etc.—see Frank T. Siebert, "Resurrecting Virginia Algonquian from the Dead; the Reconstituted and Historical Phonology of Powhatan," to appear in Studies in Southeastern Indian Languages, ed. James M. Crawford (Athens, Ga. 1975), which I have been unable to consult.

28. Dr. Siebert offers a fresh perspective on caribou, long taken unquestioningly as a Gallicism. He writes that it "is probably from Micmac, and may have entered English through Acadia French [where it is attested since 1609; see Massignon 244] . . . but it might just as well have been among the jargon terms used on the coast from Labrador to Cape Cod in the sixteenth century in which Basque, Breton, Spanish, French, Portuguese, and English fishermen all participated. [On this heterogeneous milieu, see the
same author's essay on "The Identity of the Tarantines, with an Etymology," *Studies in Linguistics* 23 (1973) 69-76.] It was recorded by James Rosier near Penobscot Bay in June 1605 (Waymouth Expedition), published in London, 1625, without Rosier's name, in the third volume of Purchas.” Dr. Siebert’s alternative to the standard assumption of a French intermediary is made attractive by two further dates: it was not until 1605 that the first Acadia settlement was founded by Champlain (three years before Québec) and not until 1609 that caribou is attested in French.

29. The current form, attested by 1649, appears to be the result of a folk-etymology—the seeds of which are already present in Smith’s characterization of the animal: “The mussassus is a beast of the forme and natur of our water rats, but many of them smell exceedingly strong of muske.” Cf. further, muskat in 1607: Friederici 439a.

30. As borrowed from Powhatan. Cognates were extended semantically in other eastern Algonquian languages (and thence also in AmEng.) to any large land turtle—here again, for further particulars, see Siebert (n. 27 above).

31. Some semantic displacement is required to complete the equation with Menomini, Ojibwa očik or Cree oček [PA *wečyékwa* ‘fisher,’ i.e., Martes Pennanti, a mammal of the marten family (again I am indebted to Dr. Siebert).

32. The term, as Dr. Siebert writes, “does not mean ‘baby’ in any Algonquian language, but is a diminutive verb form meaning ‘he plays in his little way’ . . . PA *pīpheliswa* . . . [or] PA *pāpsiwa* ‘he plays.’” Compare this misinterpretation with the other evidences of relative in comprehension cited below.

33. For this term, now a regionalism of the southeastern states, Dr. Siebert suggests a highly plausible Powhatan etymology, passakwan ‘mire, sticky mud.’ At a much later date, another term for terrain was absorbed (first by Canadian English), muskeg (1865) (peat) bog, swamp< Cree muskēk, Ojibwa maskik.

34. Such as occur, by and large, have only the status of regionalisms, implying independent development: for example, Mexican Sp. guajolote (1532) ‘turkey’ (←Nahuatl) in the face of Caribbean Sp. guanaño (1540) ‘id.’ (←Arawak); mani (1535) ‘peanut’ (←Arawak) used in Cuba and much of South America, versus Mexican and Peninsular Sp. caçahuete (cacahuate 1653) ‘id.’ (←Nahuatl); tuna and tunal (1526) ‘prickly pear’ [fruit and plant respectively] (←Arawak) versus nopal (1740 ← Nahuatl) limited to the plant alone; or else they tend to imply parallel acceptance with a sustained regional preference: e.g., yuca (1495 ← Arawak) versus mani(t)oca (1526 ← Tupi) ‘manioc’; savana (1515 ← Arawak) versusampa (1644 ← Quechua) ‘grassy, treeless plain.’


36. The few later loanwords have such culturally-specified referents (for example, house-forms, such as hogan, kiva, tepee) as almost to be no more than technical terms of ethnography.

37. Buesa Oliver (n. 35 above) 36 f, 52 f. Though not on a scale approaching that of Nahuatl or Quechua, Tupi-Guarani was used as a lingua geral by the Jesuits after the latter part of the sixteenth century to overcome the difficulties to proselytizing posed by the extreme linguistic fragmentation of the New World. Some of the holy fathers “blamed the language pattern on the Devil. Satan helped the Indians invent new languages, knowing . . . [it] would impede the efforts of Christian evangelists”; L. E. Huddleston, *Origins of the American Indians, European Concepts* (Austin 1967) 52 ff.

38. Flora and fauna abound; to cite but a few of the more commonplace: aguacate (1541) ‘avocado’ ← awákatl; cacao (1535) ← kakáwa; chayote (squash) (1571) ← sayúli; chile (1521) ← chili; coyote (1532) ← köyotl; jicama (1571) ← siikamātl; mezquite (1532) ← mizquiltl; ocote (1532) ← ocolotl; peyote (1580) ← peytōli; tomate (1532) ← tōmatl.

39. A purely quantitative difference might be laid to the greater complexity and refinement of Meso-American civilization and to nothing more.

40. For the Spanish variants, see Malkiel (n. 22 above) 2, and also L. B. Kiddle, *The Spanish Word Jicara* (New Orleans 1944).

41. Deviation from the source or distortion in Nahuatlisms is almost exclusively confined to minor phonetic accommodations, the most uniform being accent shifts and the aversion of Romance speakers to the ubiquitous cluster -tl(-). (Beyond the simple
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expedient of reducing this cluster to -t- or to -te word-finally, there are rare instances of other shifts, for example, cacle (1571) as a variant of cacte 'sandal' ← cacte; tapesco 'reed mat' ← tlapektli.)

42. Indians, as well as Europeans, may have had a share in some of the deformations. Much intercourse between the groups seems to have been carried out in frontier jargons—radically simplified amalgams never wholly true to any of the grammars upon which they are based. Thus netop 'friend' may reflect an English reproduction of a Lenape reproducing a European using a southern New England Indian term which had gained currency in the lingua franca. See Ives Goddard, "The Ethnohistorical Implications of Early Delaware Linguistic Materials," Man in the Northeast 1 (1971) 15 ff, and Siebert (n. 27 above).

43. To heighten the contrast between Spanish and English in the New World, it is worth noting that Nahuatl influence has even spilled over slightly from the lexicon to the grammar in the intermediate zone of suffixal derivation. The Nahuatl suffix of provenience -eca(tl), absorbed into Central American Spanish as -eco/-eca (e.g., azteco, guatemalteco, yucateco), came to be used in deriving adjectives for defects, for example, cacareco 'pock-marked,' maneco 'with a deformed hand,' patuleco 'bandy-legged.' The Hispanic suffix -elo was blended with it and, via alternates (maneto = maneco, patuleto = patuleco, etc.), spread to enjoy an extraordinary extension in Central America; see Wagner 76 ff. Compare also suffixoidal -la and -y of Quechua origin in Argentine hypocoristics as cited in DCELC IV, 755, as well as -umbo mentioned by Corominas 158. The instance nearest to a New World influence on English derivational resources seems to originate from other European, rather than indigenous, sources. For example, the peculiar semantic overtones of the formant -eer and its penchant for deriving racy, virile agentives may stem partly from the American experience. After 1600, extant Gallicisms in -ier acquired this shape (e.g., charioteer, engineer, both fourteenth-century borrowings); see Otto Jespersen, A Modern English Grammar (7 vols. Heidelberg and Copenhagen 1909-49; rpt. London and Copenhagen 1965) 6. 243 f. Various military designations, incidentally proper to the American theatre, e.g., bombardeer (1560), cannoneer (1562), muleteer (1590), pioneer (1523), volunteer (1600), may have supported the key leader word buccaneer (1611), a French Americanism, to stimulate formation of the hardy mountaineer (1610), the mutineer (1610), the daring privateer (1646), right up to the ruthless profiteer (1797) or racketeer (1928) or the presumably rugged Wagoner (ca. 1966), a Jeep vehicle. The suffixoidal -oon also has strong associations with the Spanish Main. It occurs as a late sixteenth-century rendering of the Romance suffix -on, which represented a conflation of Fr. -on (dragon ← Fr. dragon) and It. -one, the latter form often flanked by a parallel borrowing from French (for instance, macaroon ← maccaron, beside Fr. macaron; pantaloon ← pantalone, beside Fr. pantalon; poltroon ← poltrole, beside Fr. poltron). However, its peculiar New World flavor accrues from Hispánisms in -on, e.g., cimarron (1545) 'bale, package of exotic products' ← Sp. serón; doubloon (1622) ← Sp. dobón; mar(r)oon (1666), initially 'runaway slaves on Caribbean islands' with an earlier variant symeron (1626) ← Sp. cimarrón 'wild'; picaroon (1624), first used as 'pirate, sea-robber, corsair' ← Sp. picarón; quadroon with a variant quarteroon (1707) nearer the source ← Sp. cuarterón. The latter term, along with less frequent quinteroon (1797) ← Sp. quinterón, doubtless provided the model for octer-, octor-oon (also in this context, compare barracoon (1851) 'rude hut, slave quarters' ← Sp. barracón).
Part VIII

THE NEW GEOGRAPHY
New Geographical Horizons: Concepts
by Hildegard Binder Johnson

In histories of exploration the meaning of words like "concepts," "percepts," and "images" seems to be taken for granted as much as the meaning of the word "discovery." For example, among the "conceptions" held by Columbus were his "expectations" that winds and currents observed around the Canary Islands would carry his ships westward and his continued "belief" that he had reached Asia. On the other hand it was an "illusion" to think of Canada as a stepping stone to China. Sebastian Cabot sought a Northwest Passage to Cathay in 1508; Jean Alphonse reported that Cartier at the St. Lawrence River was only 400 leagues from Tartary; Nicholas Sanson believed that Greenland, as a part of Canada, was circumnavigable; still later, the Hudson Bay functioned as another replacement for earlier "illusions" about a Northwest Passage.

Explorers' ideas about unknown lands are better termed percepts, which include "errors" in geography. Only individuals have percepts, and "the surface of the earth is shaped for each person by refraction through cultural and personal lenses of customs and fancy."

Concepts are general notions. The theme of new geographical horizons implies an overview which must necessarily be selective. It can
be elucidated only by a few quotations from cosmographies, travel descriptions, and mathematical textbooks. Geography in the Renaissance was not a discipline separate from chronology, astrology, theology, mathematics, and astronomy. However, a disciplinary viewpoint can reveal new insights. Thus Herodotus is now recognized as "the father of history in modern times" because he used oral evidence, and as the father of geography because he was "systematic in the placing of his geographical and ethnological descriptions." Similarly, an anthropologist finds traces of a theory of cultural evolution in José de Acosta's works. On the other hand we cannot assume, for instance, that "the opening of distant continents must have affected the whole outlook of Europeans as space trips have affected ours." The discovery of America made an impact on European thought which was, indeed, "uncertain." For example, Atkinson, who scans the "new horizons" in France, finds that a French description of the world (which attained five editions between 1539 and 1560) does not mention America but adheres to the concept of a tripartite world: Asia, Europe, and Africa.

The theme "First Images of America" induces me to consider the "science" of eiconics and Kenneth Boulding's statement about man's relational image of the universe. New messages or information may not change man's image at all, or may lead to some reevaluation or produce a revolutionary change. Information about America reached people not only through the printed matter available to us, but also through sensory experiences: the smell of products from overseas, the sight of Indians and strange animals paraded through the streets, the tales heard from travelers and sailors. Even inland people, who never saw a ship, could learn about the new world by word of mouth from returnees, such as the few surviving miners under contract with the house of Welser who returned in the 1530's to Saxony from Santo Domingo. The ring of authority imparted by oral information is conveyed by the writer of the newsletter from Brazil:

The pilot, namely the ship's guide who sails with this ship, is a very good friend of mine. He is also the most famous in the service of the King of Portugal. He has made several journeys to India.

This modest newsletter written in 1514, which suggested the existence of a sea passage south of the American land barrier, engaged the attention of sixteenth-century scholars and of historians of geography from Alexander von Humboldt to the present. The Copia der Neuen Zeytung ausz Presilg Landt was used by the mathematician Johannes Schönner of Nuremberg in his Luculentissima quaedam terrae totius in 1515 and led to a reevaluation, not to a revolutionary change, of Schönner's concept of a geocentric universe (fig. 86).
The inception of a new concept is rarely exactly datable. The new heliocentric concept demonstrated in *De revolutionibus* (1543) is traceable to 1508-15 in Copernicus' writings (fig. 87). Luther learned of it in 1538 and rejected the concept on the grounds that Joshua ordered the sun to stand still; the Catholic Church ignored the book for some time but put it on the Index in 1616. The Copernican "revolution" spread slowly.\(^{14}\) "An old world view does not dissolve overnight,"\(^ {15}\) and the discovery of

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*Figure 86.*

*The geocentric image. Atlas carrying the universe. Johannes Schöner, Opusculum geographicum . . . (Nuremberg 1533).*
America was only one of many happenings competing for attention on conceptual horizons.

THE HORIZON OF GERMAN COSMOGRAPHERS

"The quality of geographical ideas in any age or region is determined by the human as well as the terrestrial environment." Interest in the "newly found islands" differed among countries directly involved in transatlantic voyages and Germany. Throughout Central Europe the Reformation, the wars between the rulers of emerging nation states, and the Turkish menace were the greatest concern of the people, including scholars.

News about America reached the university at Cracow by various sources prior to 1620. But Polish interest in Spain’s colonial expansion was political, not geographical. It was expressed as sympathy with
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another Catholic power and as approval of Spain’s treatment of the Indians. Compared to Russia, Tartary, and the Ottoman empire, the Indies were far away and exotic. Exotic news also came from Asia, and the books by Mandeville and Varthema (40 editions of the latter appeared in the sixteenth century) were widely available. The geographic interest of Central Europeans was trans-Eurasian rather than trans-Atlantic.

Some German cosmographers were widely travelled. Nuremberg’s City Council commissioned Martin Behaim, after he spent six years in Portugal, to make the globe of 1492 (fig. *110). The city’s foremost humanist, Willibald Pirckheimer, was a statesman who had also studied at the University of Padua. Nuremberg’s patricians insisted that their sons be taught geography as a new subject. But Konrad Celtes, the “arch humanist,” never accepted the invitation by an admirer to visit him at Antwerp.

At Basel, Sebastian Münster, called the “German Strabo,” solicited information through correspondence but lacked contacts for obtaining recent material about America. The map of the New World in Münster’s Solinus (1538) and Ptolemy (1540) reflect the knowledge available in the year 1524. His Cosmographia (1544) has been called the German “secular bible.” Forty-six editions are mentioned in the literature; verified are 20 editions in German (50,000 copies), six in French, five in Latin (10,000 copies), three in Italian, and one in Czech. Münster spent his life in southwestern Germany; once, his short travels took him as far as Geneva. In the edition of 1550, the last which Münster supervised personally, pages 764-773 tell of the “new islands”—how Columbus, whom the king of Spain renamed Admirans, the wondrous one, found the Canaries, Madeira, Santa Cruz Island with cannibals, Hispaniola, and Cuba; and that Albericus or Americus Vespucci travelled to the American Island and to Parias. Münster’s perception of America was that of one island among several located half-way between Europe and India (fig. 115). He used only the voyages of Columbus and Vespucci.

Simon Grynaeus, also a professor at the University of Basel, published Novus orbis in 1532; the German edition appeared two years later. Grynaeus introduced his travel collection by describing his “terrestrial environment”: “I must really confess that all my life I have not sailed the ocean for more than three hours.” In Sebastian Franck’s World Chronicle (1534) “America, the fourth book of this geography” included a voyage to West Africa. According to Franck, “Albericus Vespucci has discovered (erfunden) the fourth part of the world”; still “Christopher Columbus otherwise called ‘Dauber’ [Taub, pigeon cock] came to Spagnola and Zoanna (Juana) in 1492.” The chapter on America ends with an excerpt from Aristotle: the Phoenicians travelled for four days west of the Pillars of Hercules and the Carthaginians found
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an island in the Atlantic so that "Solomon remains forever true—nothing new under the sun." 22

A fortuitous contact, not their terrestrial environment, caused the geographers at St. Dié to change their world view. Duke René of Lorraine obtained Portuguese sea charts and accounts of Amerigo Vespucci's voyages. His secretary, Gauthier Lud, chaplain at St. Dié, made this material accessible to his friends Martin Waldseemüller and Matthias Ringmann. The latter was corrector for Johannes Grüninger, a book and map printer in Strasbourg. Grüninger engaged Lorenz Fries of Colmar, a physician, astrologer, and cosmographer, to edit the Waldseemüller legacy in the 1520's. The prominence of the Alsatian "school" was of short duration. Duke René died in 1508, Waldseemüller soon after 1516. In the 1520's Grüninger turned to Nuremberg for collaborators to edit a "new," richly illustrated Ptolemy. 23

The preoccupation with Ptolemy lessened the impact of the New World on Old World views, but it offered methodological training in "scientific" geography. Until the middle of the sixteenth century Ptolemy was "geography itself." 24 The first Latin translation, completed in 1406, was complemented by 27 maps in 1410. The comparison of new, additional manuscript maps prior to the first printing (Florence and Ulm 1482) was a formidable task. Many locations listed in Ptolemy were absurdly wrong. With better identification for the location of familiar places and increasing knowledge of places not known to Ptolemy, the task of editing an improved Latin Ptolemy became a test of geographic expertise (fig. 88). The edition of a Greek Ptolemy was the ambition of Willibald Pirckheimer; Erasmus of Rotterdam achieved it. Twenty-three of 44 Ptolemy editions between 1482 and 1624—the next appeared in 1698—were published in Germany and Basel, Switzerland; two of the editions in Venice were reprints of Pirckheimer's Ptolemy. 25 This obsession with Ptolemy represented a detour for geographers of the sixteenth century. However, it also presented an opportunity to train their skills in weighing conflicting evidence. We now accept that "the critical sifting of Ptolemaic theories was to prove especially fruitful in the field of accurate projection of the earth's surface." 26

THE CONCEPT OF IRREGULAR DISTRIBUTION

Historically, "Ptolemy's model of the earth was the weapon by which the real earth was conquered intellectually." 27 In fact, the awareness that Ptolemy could be corrected may have helped to prepare Copernicus to undertake the proof of the heliocentric concept. 28 A precision instrument, that is, a pair of compasses, became the symbolic tool of geographers ranging from a derogatory illustration in Sebastian Brandt's Ship of Fools (fig. 89) to a great painting of a dignified scholar of geography by Jan Vermeer of Delft. Another tool, the astrolabe,
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Figure 89.

Fool with compass. Sebastian Brant, Stultifera navis (Nuremberg 1497).

appears in illustrations and is held by a man on the title page of Bernhard Varenius’s *Geographia generalis* (1650) (fig. 90). An astrolabe is now the symbol of the geographic branch of the Department of Energy, Mines, and Resources of Canada in recognition of Samuel Champlain as “the forefather of Canadian geography.”

Accurate location of places, defined by coordinates and indicated by small circles or pictorial symbols, was difficult to achieve by Forrerenscher on woodcut maps, more so than by Italian engravers on copper plates. Greek philosophers who speculated about the earth were not geometers or surveyors. Renaissance geographers had technical expertise. Munster studied Hebrew at the University of Tübingen and learned mathematics from Johann Stoeffler. Munster’s first geographical publication was named the “Instrument of the Sun” (Oppenheim 1528); in it he explained astronomical measurements and the need for accurate determination of location. Johannes Schöner and Johannes Werner taught Peter Apian how to construct tables of longitude and latitude. Gemma Frisius, who was particularly concerned with methods of triangulation, constructed an improved astrolabe. Geographers became “scientific” by using mathematics and instruments. Length and direction of coastlines were facts to be ascertained by measurement and observation.

The concept of the unsystematic distribution of land and sea was basic to the progress of geography. Only after irregularities based on empirical reality were known could systems of regularity be developed. The why of terrestrial facts was still answered by references to classical scholars and God’s providence. The concept of irregularity is best
contrasted with T-O maps (fig. 91). Medieval scholars knew that the real world was not like these symbolic pictures which were not utilitarian maps of the earth. The geometry of a tripartite world was compared to T and O in 1422 by Leonardo Dati in his poem *Della sfera*. Men have always found it "easy to conceive of abstract geometrical space" (fig. 92) according to the psychologist James Gibson who, according to Charles Torrey, seems to be "groping toward a truly traceless theory of
Fig. 88.

Example of a Greek Ptolemy manuscript, end of twelfth century, from Victor Langlois, Geographie de Ptolémée (Paris 1867).
Figure 93.

The North Pole presented according to the quaternary principle. Gerardus Mercator, Septemtrionalium terrarum description (Duisburg 1595).
memory." Bernard Sylvester’s phrasing of the division of ether and air into two parts but of land into three parts sounds “almost as if a tripartite division of lands was in accord with a law of nature.” The ternary and the quaternary system are archetypes. They harmonize with geometry and providence, not with scientia.

In considering the two archetypes we recall a historian’s suggestion that the continent of America was “invented.” Germans used for “discovery”—Entdeckung in modern German—the word Erfindung which means “invention” two centuries later; the fourth part of the world was always erfunden, not entdeckt. A psychoanalyst has suggested that the geographers at St. Dié selected the name America because of its phonetically female connotations. Such Freudian explanation invites consideration of Carl Jung’s attention to the quaternary principle, frequently of a 3+1 structure which fits the assonance of Asia, Africa, and America plus Europe. But the text names the quadripartite earth as consisting of three continents and an island. Perhaps Waldseemüller revised the symbolism of a quadripartite world when he put America on the gore map to the Cosmographiae introductio of 1507 and Terra de Cuba Asie partis on the carta marina of 1516. Archetypical thinking and scientific revisionism are not mutually exclusive: the quaternary lingered in the mind of Mercator when he pictured the polar region on an inset in his world map of 1569. According to a fourteenth-century

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Figure 91.

report about four rivers with 19 channels, Mercator designed a circular mountain wall through which the rivers flow in four cardinal directions, apparently inspired by the quaternary principle (fig. 93). 39

Presentations of archetypal systems and modern scientific concepts frequently are in the form of geometric diagrams. For example, in von Thünen’s Der isolierte Staat (1826), the original central place theory was illustrated by circles. They represent results from a sophisticated analysis of real data. 40 Such regular systems explained the occurrence of geographic phenomena; they followed but could not precede the gathering of data. As yet mathematical geographers did not abandon biblical and ancient lore. Even Copernicus selected for his personal seal the figure of a Greek divinity, symbolic, in the words of Gemma Frisius, of “the new Earth, new stars, and the whole different world” (fig. 94). 41

THE INTERLINKING OCEANS

The concept that the world’s ocean is a link, not an obstacle to communication, was expressed by Basil of Caesarea in the fourth century. In the thirteenth century the ocean no longer deterred but began to invite inquiry. 42 In the fifteenth century the Portuguese crossed the torrid zone and found it habitable.
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The concept of an oceanic world was accepted more readily by many non-scholars than by cosmographers. Germany’s big merchants may have been hesitant at first to support exploratory voyages with large sums. Jacob Fugger gave only 100 florins to support a Portuguese expedition destined for China in 1493. In 1523 he raised 10,000 ducats for the Spanish fleet which vainly tried to reach China via the Strait of Magellan.43

Martin Behaim’s role in alerting German merchants should not be underestimated. On the occasion of a prolonged visit (1490-93) to his home town, Nuremberg’s City Council commissioned Behaim to make an Erdapfel. He wrote on the globe: “Let no one doubt the simple arrangement of the world, and that every part may be reached in ships as here is seen.” The “cosmographical dilettante” rejected the continental concept of Herodotus and Ptolemy with a globe where Africa no longer joins Asia enclosing an Indian Ocean. His world is 28 percent land and 72 percent water without America.44

The lower frame on Waldseemüller’s wall map of 1507 was interrupted so that the southern tip of Africa could be clearly seen as being surrounded by ocean, a device used ca. 1490 on a Genoese chart of the Atlantic.45 His carta marina of 1516 and its more widely distributed, reduced edition of 1525 by Lorenz Fries had maps showing large interconnected oceans (fig. 95). So did the globe gores of 1525 made by Johannes Schöner.

Global navigation did not diminish the interest in antipodes. The medieval illustration—four figures standing with their soles touching each other inside a circle—was replaced by four men standing opposite each other on the circumference of the earth (fig. 96). Comments on antipodes were less derisive. One publisher of Hans Staden’s tale of his life among the Tupinamba in Brazil suggested that Europeans consider themselves antipodes as people on the other side see them.46 The German harquebusier’s report is a good suspense story carried by his faith that God would send a ship, preferably French, not Portuguese, to carry him back to Europe.

Only European ships were expected to sail the Atlantic Ocean. When the European core region shifted from the Mediterranean to the coastal countries of the Channel, Flemish geographers took the lead in advancing knowledge of the world’s coastlines. The jurist Hugo Grotius defended the right of the Dutch to sail to the East Indies in an age “in which along with other sciences the geographical locations of seas and lands were better known every day.” He rejected the outdated argument of his dissenters with: “They are talking about the Mediterranean, we are talking about the Ocean; they speak of a gulf, we, of the boundless sea.”47 Transoceanic commerce was God’s will: in support of this state-
ment Grotius quoted Pliny as saying that what was produced anywhere was destined for all men.\textsuperscript{48} The concept of one interdependent world, served by ocean routes which emanated from western Europe, was geopolitical. Its marine tradition continued when another shift at the turn of the twentieth century included North America in the North Atlantic core region. Mathematical geographers who measured longitudes and latitudes, compass directions and equinoxes, served global geography, pictorialized by ships on every map of oceans. In contrast, the images for the geography of \textit{besondere Landschaften}—unique regions—were panoramic views from the towers of walled cities, from the belfries of a monastery or a village church or from a hill in the Old World.
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REGional Geography

Many definitions of the meaning of "region," its controversial division into natural, cultural, and functional regions, have made the concept "forever undefined" yet "the soul of geography." German humanists accepted fragmented kingdoms, haphazardly bounded principalities, city states, and Gaue (districts) as regions. Interest in Germany's geography was sparked by an open letter written by Aeneas Sylvius, later Pope Pius II, to the chancellor of the archbishopric at Mainz in 1458. The letter explained that Germans could afford to fulfill papal demands since their country was now flourishing in contrast to its uncivilized state in Roman times. German cosmographers liked to contrast the flourishing cities of Germany in the sixteenth century with the forests and swamps described by Tacitus, Caesar, and Strabo. Between 1500 and 1505 Konrad Celtes worked on a monumental project that was to equal Flavio Biondo's Italia illustrata. The Germaniae exegesis by Franciscus Irenicus (Hagenau 1518) comprised 12 volumes. Münster began to seek contributions for a Germania illustrata in 1528 and
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succeeded in obtaining information and illustrations for his *Cosmographia* from nearly 100 individuals—rulers, mayors, scholars, and private citizens. He reported regretfully that some could not spare the two *gulden* for a good plan of their city. After preliminary publications, notably the *Mappa Europae* (Frankfort 1536), 528 of 1128 pages in the *Cosmographia* of 1550 were devoted to Germany. Münster’s treatment of places was uneven. In spite of good geographic material available for Frankfort and Nuremberg, for instance, we learn more of their history than their geography. Other chapters, one about the Allgäu, for example, were “outright classics” in the “development and essence of regional concept.” In general Münster held that geography was more than a helpmate to history and that geography merely benefited from history. For all lands, notably Palestine, Münster emphasized the importance of change, that is, geography as process. He often mentioned ruins, “the footsteps of man’s work” which perishes while God’s work persists.

Münster wanted to show the *Gelegenheit* (situation), that is, the chorography of places. Cities, seen best from a hill or a tower, were pictured as oblique views in Münster’s book and influenced Merian’s panoramic views of cities. On his travels Münster measured distances between settlements and noted directions of rivers and roads; he sketched valleys, vineyards, and profiles of hills and observed the fertility of fields. The *pagi*—scattered settlements described in Tacitus—and open hamlets of Münster’s day were contrasted with the compactness of fortified cities. The rivers’ navigability, number of bridges, and fishing resources were described in detail, as was Charlemagne’s project of a canal between the Altmühl and the Regnitz to connect the Main and Danube systems. Trade routes and their importance for great cities received much less attention. Augsburg was great “due to several persons who have monopolized the great trade in all of Europe,” a veiled reference to the Fugger.

Theological discussions are absent; the Catholic Church found only a few reprehensible references, which were deleted. In the last sentences the cosmographer from Basel sounds like an anthropogeographer who describes the earth as the home of man:

God created everybody according to the geography of the land in which he lives. So the Moor can bear the heat and the Icelander and Norwegian the cold. Everybody can live from the food of his particular land; food which another finds tasteless or even dangerous. Who would like to drink horseblood in this country like the Tartars or eat dogmeat like some do in Africa or live on human flesh like the cannibals? How many peoples are there who do not know what wine is, who have no sweet water to drink but get along with the water they can get from the dew of the heavens! How many do not know grain but make bread from roots and herbs or
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from dried fish! And since they live in accordance with their land they live just as well as we live in accordance with our land.

Münster used Strabo and Pliny more than Ptolemy. He was hardly inspired by the discovery of a New World.

Regional geography led to the development of national schools—Landeskunde in Germany, pays in France; it also benefited from improved techniques of measurement. The desire to allot to foreign countries similar attention alerted advanced thinkers to the dualism between universal and regional, general and special geography. Throughout the sixteenth century theology, particularly Lutheran and Calvinistic theology, caused cosmographers to explain geography by divine providence. The classification of geographic phenomena and valid generalizations required a neutral position toward religion.

KECKERMANN AND VARENIUS

Discussions of the structure of science and its relation to subject matter, entertained at the University of Padua in the fifteenth century, began to surface in geography in the seventeenth century.

Bartholomew Keckermann was not the first to distinguish between general and special geography. Ptolemy divided (general) geography from chorology but only for the inhabitable world. Münster dealt with general geography and chorography coupled with topography. Keckermann’s Systema geographicum (Hanover 1616) devoted 163 pages to geographia generalis and 31 pages to geographia specialis, the sub-structure of which he treated briefly. Keckermann’s geography is a science dedicated to the measurement and organization of distinctive geographic phenomena. He divided geography into mathematics and history and was intent on classifying maps, from simple nautical charts to world maps on different projections. He was the first to carefully annotate references to earlier geographers. In addition to his general classes in the Danzig Gymnasium, he taught one class on the 24 climates. Keckermann the geographer emancipated geography from theology and sought explanations in natural causes rather than in divine providence.

Varenius, who was born near Hamburg in 1622 and died in Holland in 1650, is better known than Keckermann. His Geographia generalis (Amsterdam 1650) “ruled unchallenged as the standard textbook of pure geography for more than a century.” Its reputation was enhanced by Isaac Newton, who edited two Latin editions. Varenius was the first geographer who accepted without reservations the heliocentric universe of Copernicus and Kepler. His affirmation of the systematic/regional dualism, with lasting results for geographic methodology, has overshadowed his contribution to scientifically reasoned exposition of geography compared to mathematics, history, astrology, astronomy, and
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physics. His general geography is divided into (1) absolutes—form, dimension, position of the earth, (2) relative effects—resulting from latitudes and climatic zones, and (3) comparative observations of different parts of the earth. His special geography was to deal with celestial properties, terrestrial properties—boundaries, flora, fauna, mineral occurrences, and human properties—commerce, culture, language, religion. But he died at the age of 28 and never wrote it.

Adhering to Aristotelian logic, Varenius proceeded from cause to effect, from the whole to the part. He expected to explain the particular in special geography by observing general rules. Varenius incorporated fewer personal observations than Philip Cluverius, another German who came to Leyden and published a historical geography of Germany based on critical use of the best classics and wide travel. Instead, Varenius ordered what was in books under systematic “propositions.” For example, Proposition v, Chapter xxxii: “The distance of the antipodes is 2700 German miles or 180 degrees” is followed by a short explanation why they are reached by an infinite number of great circles. This was similar to Keckermann, by whom Varenius was much influenced. Proposition viii in Chapter xi asks to “Trace the ocean coasts which surround the four parts of the earth . . . .” America, surrounded by oceans, begins with Davis Strait, Hudson Bay, New England, etc., to Patagonia, the Strait of Magellan, Chile, Peru, New Spain, the gulf of California, and the “unknown coast of America doubtlessly terminating in the strait of Amian.” Methodologically a genius, Varenius was less penetrating as an empiricist. One of the most frequently mentioned of his explanations is the cause of the tradewinds—the lateral expansion of air heated over the equator, not an entirely innovative idea. The long chapter on “Rivers in General,” where Varenius reasoned that the oceans do not overflow because the rivers return to their source regions by subterranean channels, contains no distinct enunciation of the concept of the hydrological cycle or an indication of the concepts of drainage basins and divides. The origin of the concept of the watershed would be of interest because divides were used by French explorers in North America to delimitate territorial claims in the seventeenth century, and geographers in France seem to have groped toward the concept before Philip Buache defined it. The possibility that New World experiences led the Old World to understand a concept as potent for water and land management as the watershed deserves further study (fig. *97).

Horizons are not static; there are no old horizons. Their discussion invites the study of illustrations in books and on maps because they reached readers and viewers as simultaneous messages.
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NOTES

The author gratefully acknowledges much assistance from the James Ford Bell Library, University of Minnesota, and is indebted to Carol Urness, Assistant Curator, for photographing illustrations.

21. Simon Grynaeus, *Novus orbis regionum ac insularum veteribus incognitarum* (Basel 1532), and *Die Neu Welt der Landschaften und Insulen so bis die her allen Altweltbeschrybern*
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unbekant Jungst aber von den Portugalesern und Hispaniern im Nidergenglichen Meer herfunden (Strasbourg 1534). Preface: "Ich Muss je bekennen dass ich mein lebtag nit iiber drey stunden auf dem Meere gefahren bin."


29. Geographical Bulletin 8 (1966), cover. Champlain lost his astrolabe near the Ottawa River in 1613; it was found in 1867.


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44. E. G. Ravenstein, Martin Behaim, His Life and His Globe (London 1908) 71, 113.

45. Reproductions in Bagrow (n. 33 above) plates LIV and LXI. See also Bagrow’s footnote 37.

46. Preface by D. Dryander to Hans Staden, Warhaftige Historia . . . (Frankfort 1547) fol. B-Bij.

47. Hugo Grotius, The Freedom of the Seas, or the Right which belongs to the Dutch to take Part in the East India Trade, trans. by Ralph Van Deman Magoffin (New York 1916) 42.


52. Cosmographia (Basel 1546) 29-31.

53. Ibid., 525-526.

54. Ibid., 491.


57. J. N. L. Baker, “The Geography of Bernhard Varenius,” Institute of British Geographers, Transactions and Papers 21 (London 1955) 51-60, at 51. Latin editions of Varenius were published in Amsterdam in 1650, 1664, 1671, 1672. Two Latin editions appeared at Cambridge in 1672 and 1681. An edition of 1712 was translated into English, which was translated into French in 1755. One Latin edition was used at Harvard in the early eighteenth century.

58. I am indebted to Fred Lukermann for manuscript copies of two papers: “The Intimate Relation of Chronology, Geography, and Astrology According to Bernardus Varenius” and “The Divisio and Methodus of Bernhard Varenius”; abstracts in Annals of the Association of American Geographers, 53 (1963) 606; and 54 (1964) 429.


New Geographical Horizons: Literature

by David Beers Quinn

In relation to the New World, new geographical ideas were largely old ideas shifted westwards; genuine novelty emerged only very slowly. What I am concerned with is the image, the icon, in words and in visualization, of the New World. The changing map gives us its face; the concept gives us the framework in which it was set; the rest is a combination of visual and verbal images (I do not think the two can rightly be separated since they are two sides of the same perspective) which gradually altered to fit the facts of the new geographical milieu. Yet the earliest writings on the New World made up the essential materials for the descriptive geography which slowly emerged as the New World came to be accepted in its own right.¹

The first point, which must be both emphasized and illustrated, is that to a substantial degree and for a considerable time, the New World was seen and described in terms of the Old. The first viewers of America perceived it in terms of the literature of the myth and with the capacity for observation—the two often inextricably intermingled—which they had at their disposal. They saw the islands and mainland of the western ocean, therefore, largely through transference, through the exchange of
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verbal and visual images from an Old World context to a New. We should remember that the New World was strange before it was entirely new. Until the second decade of the sixteenth century, and residually after that, it was regarded as an extension of the Old World, as Asia or some land in close touch with Asia. Not till after the return of the Victoria in 1522 did America sail off into the seas of complete novelty. We find still in Verrazano in 1524 the wonder that America is so vast, so separate, so New. The passage in his letter of 8 July 1524 shows how slowly the image of a New World impressed itself on the mind of an exceptionally intelligent and well-educated Italian of the time. He says:

My intention on this voyage was to reach Cathay and the extreme eastern coast of Asia, but I did not expect to find such an obstacle of new land as I have found; and if for some reason I did expect to find it, I estimated there would be some strait to get through to the Eastern Ocean. This was the opinion of all the ancients, who certainly believed that our Western Ocean was joined to the Eastern Ocean of India without any land in between. Aristotle supports this theory by arguments of various analogies, but this opinion is quite contrary to that of the moderns, and has been proved false by experience. Nevertheless, land had been found by modern man which was unknown to the ancients, another world with respect to the one they knew, which appears to be larger than our Europe, than Africa, and almost larger than Asia, if we estimate its size correctly.2

The images of the Old World were still being only adapted: men saw in the New the Old, altered but not fundamentally changed. Just as the maps of the late fourteenth and fifteenth centuries often carried visual images of camels and caravans crossing a still largely unexplored Africa, or Tartar tents and horsemen on the Central Asian wastes, so too the words of Sir John Mandeville and of Marco Polo (which were often reinforced by poorly-remembered scraps of information from classical writers), both in manuscript and in the newer print, rode the atlas of the mind. The strange, the fantastic, and the unreal were familiar and to that extent real. New World sights should, it was felt, and therefore to some extent did, confirm the lore of the Old. And so they did in the earliest writings, illustrations, and maps. Where they did not, where novelty was total, it was conceived as an extension of the old rather than as novelty itself. Only gradually did consciousness and language extend to take in the objects and the names of objects in the New World. As they took on names so they took on reality and were convincingly new. The canoe, the petun, or tobacco, the maize, the manioc, the cacao, the cacique, the wiroans populated the literature of the New World with tangibles, with boats, with plants, with holders of office and the like that were new, and which could not by tricks of etymology (which were duly tried...
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with many of them) be drawn into the network of the known vocabularies and their associated Old World contexts.

A basic fact about the geographical literature of the New World is that until his death in 1506, the Discoverer, Christopher Columbus, remained firmly anchored in the Old World. Almost everything he said or wrote has this character, and it is especially evident in the small but significant contributions he made to the published literature of the subject, so much so that he was the major influence in preventing Europeans from regarding the new western discoveries as anything more than an extension of the Old World. On his cosmographical views I need do no more than mention that he believed in a small world, in which Asia could be found by a relatively brief voyage from Europe, and that he maintained this view for the rest of his life. In his day-to-day journals he could and did describe effectively the voyages which he made, so that he clearly had the capacity to add novelty to the geographical literature of Europe, though in what was published in his own lifetime he did not do himself justice. Yet he was constantly referring the New World to the Old—not to establish that what he saw was different from the Old World but to emphasize that it was, for all intents and purposes, the same.

In 1492 Columbus was equipped with a selection of written materials which appeared to him prophetic of the discoveries he expected to make, though we have only the books of prophecies he compiled later in his life. He may have carried with him printed and manuscript copies of Marco Polo and possibly of Mandeville and Prester John’s letter, as well as manuscript illustrations or prints which he showed to Amerindians to help gain information.³ If he gathered that in the new islands there were dog-faced men, he must have shown pictures to his Arawak informants, and the same would be true of the one-eyed men he was also convinced were there. The isle “entirely inhabited by women without men” he could have got from Polo, but what kind of illustration would he have shown them, except perhaps a drawing done on the spot by himself or by one of his men?⁴ Las Casas, as Morison points out, simply thought Columbus had misunderstood his Arawak informants. Yet the “Matinino” of his journal became the “Matrimonio” of his published Letter, and survives as the name for Martinique down to the present day. By the time the Letter was written the women had turned into classical Amazons, using the arts and arms of war.⁵ Indeed Fernando Colón makes this analogy when referring to Columbus’ contact with the island in 1496.⁶

The spices—cinnamon and other—which he claimed to have seen, as well as the rhubarb and aloe wood, were derived from the names and concepts of the earlier literature and not from the actual plant species of
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the New World: they were the product of wishful thinking. But the Letter’s claim is elaborated in the secondary literature derived from additional accounts of his voyage, notably in the second New World tract, Nicolò Scyllacio’s Ad sapientissimum Ludovicum Sforzam (1494 or 1495): “I should be justified in calling this island Hispaniola fertile whether it be an Arabian or an Indian isle.” He then attributes to the island all the products known to come from Asia (many of them enumerated by Polo)—“large quantities of cinnamon, which men of ancient times were not permitted to harvest except with a god’s permission. Ginger grows there as well as Indian spice. . . . It abounds in silk. . . . The place abounds in rhubarb, a useful remedy in all maladies,” and so forth.

In 1498 Columbus was still as infatuated as ever with his Old World authorities. He had just discovered the mainland of South America, “An Other World” (otro mundo, as he described it), but it was still the same Old World. His long list of products, of which he brought samples for Ferdinand and Isabella, included pepper, cinnamon, sandal-wood, aloes, ginger, myrobolans, and “reddish pearls, which Marco Polo says are worth more than the white.” Morison wryly comments, “Sad to relate, in all this list only the brasil (dye-wood), the pearls and the cotton were the genuine articles.” Was it merely that Columbus was no botanist? Surely there were men on board who were more critical than this? Does the self-deception indicate that for some of the discoverers, including the Discoverer himself, the New World could only be seen through the literature of the Old?

On the flesh-eating men he had heard about from the Arawaks on the first voyage, Columbus had read much in both Polo and Mandeville, while anthropophagi infested classical literature also. He took what he had read for granted, before he had made any contact whatever with people who ate men. He also, of course, took over the Arawak name, so that Caribes and Canibales came into Europe through him and were interchangeable at the outset. They were Canibales in the Journal as early as 23 November 1492, but the word did not appear in the printed Letter in 1493, even though we hear of an island “inhabited by a people who are regarded in all the islands as very ferocious and who eat human flesh.” Scyllacio picked up the word Camballi for Carib from sources close to Columbus a year or so later, and so Cannibal henceforth came to Europe as proof that indeed the mythical man-eaters had at last been discovered. This constitutes the simplest and clearest case in which classical and medieval tales reinforced what was seen or heard of in the New World. The idea was old, only the name was new: the new name became the thing. Even more striking, of course, was that the old name for the new thing stuck in the case of the Indies and the Indians.

It was perhaps a blessing for Columbus’ reputation even a little after his own time that his letter to the Catholic kings recounting his
Fig. 94.


Fig. 104.

third voyage discoveries did not reach print. His theory about the western hemisphere ascending into incredibly high altitudes and his view of the Earthly Paradise as a nipple on a pear-shaped continent which somehow lay off the shores of eastern Asia were too ludicrous to be permitted to emerge. His only other contemporary publication came out after the first appearance of both Vespucci’s Mundus novus and his Lettera. This was the so-called Lettera rarissima (Copia de la lettera per Columbo mandata a li serenissimi re e regina di Spagna: de le insule et luoghi per lui trovate), which appeared at Venice in 1505 and incorporated his letter of 7 July 1503 about his fourth voyage. Its passages of narrative and of weather-description have some geographical value, but he was still mainly concerned to reveal how closely his observations confirmed older views of the world: “The world is small. The dry land covers six-sevenths of it, and only one-seventh is covered with water.” In Central America he located Veragua only ten days’ journey from “the Ganges River”: in 1503 Cuba was still Marco Polo’s Mangi “which borders on the province of Cathay.”

So far as Europe’s knowledge of the new islands is concerned we must remember that the Letter of 1493 remained for several years the only source, even though the 17 or 18 editions in four years, and its appearance in the principal languages of Europe—Latin, Spanish, Italian—and at places as widely dispersed as Barcelona, Valladolid, Rome, Florence, Antwerp, Basel, Paris, and Strasbourg, point to the geographical interest it created. Until 1503 it remained virtually unchallenged and unsupplemented for most readers. As the Letter was permeated with Old World thinking, there is little doubt that the novelty of what Columbus had found was thoroughly obscured. The New World thus remained merely an extension of the image of the Old, the Indians of the papal bulls of 1493 were merely another group of Orientals. So far as the literature of discovery is concerned, Columbus did not discover the New World, even if he made vital geographical contributions to its discovery.

On the other hand, the contributions of Amerigo Vespucci to the geographical literature of the New World were of first-rate importance. His Mundus novus (1503), it must be realised, however diluted from Vespucci’s own text, was the first printed and published account of an authentic expedition (1501-02) to a continental landmass across the Atlantic. It was, moreover, concerned with a major landmass in latitudes which had, in the Ptolemaic world picture, no equivalent. Thus, though Vespucci appears to have had little doubt that his discoveries should be related to Asia and were not in a continent which could be sharply distinguished from the main block of Old World territory, his designation of it as a New World was appropriate from the first. It was not mere islands, like those which Columbus believed lay off the shores of
Asia, but a great new mainland, extending along thousands of miles from far north of the equator to far south, right through the same latitudes as those the Portuguese had penetrated in the 1480’s with the voyages of Cão and Dias along the African shore.

This is what brought the *Mundus novus* to all the main publishing centres of Europe (London almost alone excepted) in the years between 1503 and 1508: Florence, Venice, Paris, Basel, Antwerp, Augsburg, Leipzig, Cologne, Nuremberg, Magdeburg, Rostock, Strasbourg, and Pilsen in Latin, German, Dutch and Czech. The preponderance of Latin editions in the early years show that it was regarded as a learned work, unlike the Columbus letter which was brought out more frequently in the vernaculars, and the total of 37 editions was spectacular. The claim to have followed the landmass beyond the fiftieth parallel to the south was striking, and though the geographical data were meagre, the ethnography was strikingly vivid and effective. If Vespucci was a better publicist than Columbus, which he was, he also had more to offer the reader’s interest, once given the idea of western lands.

Vespucci’s second published work, *Lettera delle isole novamente trovate* (Florence 1505 or 1506), best known as the *Letter to Soderini*, was more significant for the growth of his geographical reputation and the New World’s. Its most prominent feature, the claim to have made a voyage in 1497-98 along continental shores around the Caribbean, and to have found mainland territories wherever he went, was invented by Vespucci to forestall the legitimate Columbus claim to have discovered a mainland on his 1498 voyage. So Vespucci installed himself as the first discoverer not of islands but of the *Mundus novus*. His claim was tricked out with detail acquired on the genuine voyage (as his second) and a further version of the 1501-1502 voyage (as his third): there was a brief account of a fourth voyage to the south in 1503-1504. Thus described, the four voyages built up Vespucci into a formidable figure and his discoveries into an epoch-making series of events. His skill in presenting himself as the principal in all his voyages (he was so in none of them), his paucity of detail on the actual routes, and the vividness and detail of his descriptions of the land and of the lives of the peoples he encountered, made his writings acceptable, even though the *Lettera* for a time fell flat and did not find an immediate market outside Italy.

Can we say that in his published writing Vespucci remained Old World-centered? To a limited degree. He takes over Columbus’ canni­bals as “Camballi” for the Carib man-eaters, but when he proceeds to describe the Guaraní of Brazil he gives us their man-eating habits in the context of their own society and not as horror-features drawn from travel-tales. Even in the diluted *Mundus novus* he describes a society in which eating human flesh is an ordinary matter of diet, though he indicates that he and his men tried to reason the Guaraní out of adherence to the custom. There is much more of the observer than the
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moralist about him and he does not propose, as Columbus did, that man-eaters be punished by death or slavery. In the Bartolozzi letter, unpublished at the time, he tells us:

The meat which they eat commonly is human flesh. . . . When they can have other flesh of animals and birds they eat that too but they do not hunt for it much because they have no dogs and their land is very full of woods which are filled with fierce wild beasts, so they do not ordinarily enter the woods unless with a crowd of people.

He went on to give details of the context in which they take prisoners and sacrifice them to feed both their appetites and, he thinks, their beliefs.

It is true, too, that Vespucci brings back a story of giants. He tells how on Curaçao during his voyage with Ojeda in 1499 they saw at first “only five women, two old ones and three girls, so lofty in stature that we gazed at them in astonishment . . . they were in stature taller than a tall man, . . . inasmuch as we were all of a mind to take away the three girls by force; and to carry them to Castile as a prodigy.” However, 36 men then appeared, “much bigger than the women: men so well built that it was a famous sight to see them: who put us in such uneasiness that we would much rather have been in our ships than in the company of such people.” The Europeans retreated and were stalked back to the boats by the islanders: “They went entirely naked like the others. I call that island the Isle of Giants, because of their great size.” Curaçao duly appeared as Gigantes on the maps for some time thereafter.

His Old World preconceptions, too, took hold when he saw the native people cooking the iguana and saw many specimens kept alive in the village for food. The creature resembled the dragon or serpent of European lore:

a serpent save that it had no wings and was in its appearance so foul that we marvelled at its loathsomeness . . . their feet are long and thick, and armed with big claws; they have a hard skin, and are of various colours; they have the muzzle and aspect of a serpent; and from their snouts there rises a crest like a saw which extends along the middle of the back as far as the tip of the tail: in fine we deemed them to be serpents and venomous, and [yet] they were used as food.

Here we combine good observation of a new lizard species, plus the domination of European preconceptions, and the admission that reality was not the same as myth: the dragon could be eaten and was neither dangerous nor poisonous.

On the whole, in viewing the letters which were not published at the time as well as those which were, we must regard Vespucci as a good geographical observer. He displayed a serious, even academic interest in
rivers and landforms and in ocean currents, latitude, and longitude. These, together with his skills as an ethnographer, made his contributions to the geography of the emerging New World, even from his published writings alone, of great significance. Unlike the materials on or by Columbus which were published during his lifetime, he brought the New World to life, and provided much of the data to render it at the same time acceptable and novel to educated European readers. This may be held to balance his defects in other respects, his exaltation of himself as leader of expeditions in which he was only a subordinate and, above all, the invention of the 1497-98 voyage, primarily an affair of intellectual pride, the determination of the educated Florentine to score over the self-taught Genoese.

The wide publicity which Vespucci received led his publishers and readers to think in more visual terms of the people of the new lands than Columbus did. Vespucci’s giants, for example, were such as had stalked the literature of the past, but they soon began to show what puny mortals were attempting to invade the new lands. The print which depicts his ships entering a river estuary, now in the James Ford Bell Collection, has them overtopped by gigantic men. Then too the word-pictures drawn by Vespucci fitted in with the Renaissance “Wild Man” carrying a club, a brutal yet misty figure who haunted the woods. It was this image which inspired, I am convinced, the woodcut of the Rostock edition of the Mundus novus (fig. 98), though the savage man there, bearded and long-haired, is waving arrows, not a club, at his naked, long-haired wife. Similar figures, the man, however, presenting his bow to the woman, appear in the Dutch edition, published at

Figure 98.

Wild man and his wife, Epistola Albericii, De novo mundo (Rostock ca. 1505).

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Antwerp about 1508 and now in the John Carter Brown Library (fig. 99). But these were all purely imaginary figures.

Possibly somewhat nearer to reality were Vespucci’s man-eaters, who appear to have had considerable popular appeal. The young man who was eaten by the Guaraní in 1501 achieved a degree of personal immortality (fig. 100) by appearing on the manuscript map of 1502 known as Kunstmann II, though this was not published at the time and the drawing probably bore no resemblance to the victim. More important and more famous is the so-called Munich woodcut of 1505 or 1506 (fig. 101). Though artistically not very advanced, it has a crude realism which might suggest that it was derived at several removes from a sketch made on a voyage. It shows a group of 11 people—men, women and children—engaged in domestic pursuits or carrying weapons, while human limbs are being eaten, or are drying in the smoke or hanging in the store. The people are using a crude poled shelter on the sea shore, with ships shown out to sea. The versions in Munich and in New York are different impressions, but each had a passage printed underneath derived from Vespucci: “They also eat one another, even those who are slain, and singe their flesh in the smoke.” The cannibals thus take shape visually. Derivatives of parts of this picture came into the hands of Jan van Doesborch at Antwerp (fig. 102), who used them in at least two publications, one a broadsheet in Latin, De nouo mundo (of which there is a copy in the Henry E. Huntington Library), and also in the first book in English with a reference to America (as “Armenica”), Of the Newe Landes. In each case he has combined them with versions of the famous Burgkmair woodcuts of African and Indian subjects from the Balthasar
Springer text of his East Indian travels, published at Augsburg in 1508 and reprinted at Nuremberg in 1509 and 1511. Different sources place these publications between about 1511 and sometime after 1520, though it is clear that the blocks were used much later still.  But the Brazilian Indians appear in a far more sophisticated form in Burgkmair’s ‘Triumph of Maximilian’ (fig. 3) (first published in 1526) and in company with the Springer figures, which might suggest that Burgkmair made earlier and more elegant engravings of the Brazilian Indians himself and that all the other crude cuts derive from them.  This concern with visual representations is not without significance in tracing the influence of geographical literature on the slowly-emerging image of the New World. Though they were by-products of the narrative and an accompaniment to it, these illustrations undoubtedly contributed to building up a picture of the New World and its inhabitants as these appeared to the explorers.

Vespucci’s cannibals did not fade quickly from the maps, at least from those of northern Europe. Sebastian Münster’s edition of Ptolemy in 1540 has on its South American map an engraving of their activities (with CANIBALI boldly captioned) (figs. 103 and 104), and they appear too in the map in the Cosmographia of Peter Apian in 1545, though with a somewhat less explicit engraving.  Yet these survivals from older
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Figure 101.
Brazilians at home, "Munich" woodcut, 1505 or 1506.

Figure 102.
Derivative Brazilians, J. Van Doesborch, De nouo mondo (Antwerp ca. 1520).
legend and new story began to fade out, as the cannibals themselves became domesticated. Members of the Tupinamba-Guarani tribes were brought to Europe from 1504 onwards by the French and in the 1530's by the English also, and did not attempt, it would appear, to eat their hosts. Some "cannibals" were fully incorporated into a European art-form in 1550 when Henry II saw a whole village reconstructed in Rouen as part of a pageant. The tribal group brought there behaved well enough, though the conflict staged between the Tupinamba and their "enemies" ("Tabagerres") was fought so vigorously as to create alarm in the onlookers. They were then shipped home but not before Montaigne had seen them, and Vespucci's contribution could not be better demonstrated than in Montaigne.

The long-term effects of Vespucci's writings on the world map were even more striking. In 1506 or early in 1507 Martin Waldseemüller and his friends obtained a manuscript version of the *Lettera*. The four voyages described in it excited their particular interest and led to the making of the map and globes which contained the two great assumptions: first, that the new discoveries made up a new pair of continents, and second, that it was appropriate to give the name of Amerigo Vespucci, in the form AMERICA, to the southern one. Moreover, to the
elementary treatise on cosmography that was to explain the map and globe was added a Latin edition of the *Lettera*. So, we have no less than nine printings of the Vespucci material all of which are linked in one way or another with the New World map (though the name "America" was not rigidly maintained on subsequent versions of the map). The constant reprinting of Vespucci's account of the four voyages kept him and his writings and his name in full view between 1507 and about 1519.

We can say therefore that for most readers of the literature on the New World between 1503 and about 1520, Vespucci's two small books constituted the most important geographical literature on the western discoveries, and that the early geographical image of America emerged principally from them.

By 1520 they had lost this hegemony. Peter Martyr had been writing letters about the discoveries of Columbus from May 1493 onwards (though the letters did not appear in print until 1530). From 1494

*Figure 105.*

**Castles in the New World, Paesi nouamente retro¬vati (Venice 1507).**
onwards also he had been compiling coherent narratives of successive expeditions, especially of those made by Columbus himself. The Libretto of 1504 tended to keep Columbus' fame alive through the period in which Vespucci dominated the literary scene, while it also presented coherently the early Caribbean voyages, as distinct from those to the southern mainland. In turn it led to the Paesi nouamente retrouati published in Venice in 1507 (fig. 105) and followed by ten further editions between that date and 1519. This significant travel collection was devoted to narratives of Portuguese voyages, including that of Cabral and those to the west. The Libretto material reappeared, reinforced both by an account of the Ojeda expedition of 1499-1500 (which did not appear to be the same as that which Vespucci claimed as his second voyage) and also by a version of the 1501-02 voyage of Vespucci from his Mundus novus. Thus provided with coherent accounts of the main
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overseas enterprises, the reader of geographical narratives could put together a general picture of the Discoveries and establish at least the main lines of development during the period from before 1460 to 1502 (figs. 106 and 107).

When Peter Martyr's first account ("Decade One") of the Columbus voyages appeared in his Opera (Seville 1511), a new period of fuller and more reliable narratives was beginning. The New World was being accepted as a fact of life. Through the first "Decade" and the successive publications which made up De orbe novo decades between 1511 and 1530, Columbus was rehabilitated. The revised and extended image of the New World, created by narrative and map alike, had room for Columbus. In this respect, Peter Martyr occupies a special place in the dissemination of information on the New World. He helped to form a climate of opinion in which acceptance of the distinctness of America

Figure 107.

Castles in Hispaniola, 1493,
C. Columbus, De insulis in mari Indico repertis
(Basel 1494).
Figure 108.

Tenochtitlan with castles, in Cortés, Praeclara (Nuremberg 1524).
became possible. Lacking first-hand experience, however, in his *Decades* he was better at telling a story than in building up a physical or topographical picture, even though the map included in the 1511 edition was a valuable adjunct to his text.

During the decade from 1510 onwards the New World was increasingly regarded as wholly separate from Asia. Its outlines, its peoples, its products emerged as unique, comparable with those of the Old World, but distinctive. Humanistic and traditional knowledge was still employed to explain America: not to link it into the older scheme of knowledge but rather to throw up contrasts. America slowly acquired a unique geographical personality.

Though maps made considerable progress in the period from 1507 to 1519, a verbal outline of the geographical relationship of the parts of the New World was still lacking. Martín Fernández de Enciso in his *Suma de geographia* (Seville 1519) finally provided it. Enciso had himself been in America and collected sailing directions for places he had not visited there. America therefore appeared along with the Old World for the first time in a brief general descriptive treatise, which still relied partly on Ptolemaic geography. It included useful information on the relationships of islands, mainland, rivers, and so on, and though there was not much detail or much imagination in its presentation, the *Geographia* did add an essential topographical dimension to the maps and narratives.

Peter Martyr's second and third *Decades* came out in 1516, carrying his story forward to the establishment of the Spaniards in Central America. But shortly after 1520 all this early material was overlaid by the excitement of the conquest of Mexico. The rapid publication of the fine detailed letters which Cortes sent from Mexico makes it evident that the events to the west were important news in Europe.

The second and third letters of Cortés, published respectively in 1522 and 1523, and the fourth in 1525 with a Latin translation of the third letter and a map of Tenochtitlan (fig. 108), produced in serial form a nearly contemporary series of accounts of the conquest of Mexico from the Conqueror himself. These took the reader into a geographical and historical context almost as closely as if he had been an actual spectator. The geographical detail was sufficient, though not a major feature of the narratives, but their immediacy and the exciting nature of their contents brought home to Europeans the most striking single episode in the story of the Conquest in a way that nothing, not even Columbus' original *Letter*, had done hitherto. A high standard had thus been set for narratives of the New World.

If one could take for granted that an educated man in 1525 could find the location of places in the New World on the map and thus follow the major extensions of knowledge and of Spanish power, there was still
no general guide as to what the New World was really like. It was left to Gonzalo Fernández de Oviedo⁴³ to provide this. An official in Central America since 1514, he played an active part under Pedrarias in not always reputable proceedings, but he was more a scholar than an administrator and he was horrified at the behaviour of some of his compatriots towards the peoples of the Americas. He began not only to compile a chronicle of what had occurred within his own knowledge (and before) in the Spanish-occupied lands but also to collect everything he could about the people, their way of life, the plants and animals of his new environment. Out of his expanding diaries and narratives Oviedo compiled a relatively brief report for Charles V in 1525. Printed in 1526 under the title *De la natural hystoria de las Indias*⁴⁴ but better known as the *Sumario*, it covered the islands and mainland as far as the borders of Mexico. It was marked by its knowledge, a great deal of which is still invaluable, its objectivity, its comprehensiveness, and above all by its author’s determination to take America on its own merits, as a series of lands to be described in a manner which would make its people as well as its fauna and flora intelligible to Europeans. It stands as a landmark in the geographical literature of America.

Oviedo was a great admirer of the Elder Pliny and used his *Natural History* extensively, even imitating its form in certain respects. But he was no slavish follower. He did not try to make Pliny conform to the New World or the New World conform to Pliny. The new independent attitude is well shown in his treatment of the jaguar, which he called for convenience a tiger⁴⁵:

In my opinion these animals are not tigers, nor are they panthers or any of the numerous known animals that have spotted skins, nor some new animal that has a spotted skin and has not been described. The many animals that exist in the Indies that I describe here, or at least most of them, could not have been learned about from the ancients, since they exist in a land which had not been discovered until our own time. There is no mention made of these lands in Ptolemy’s *Cosmography*, nor in any other work, nor were they known until Christopher Columbus showed them to us.

This is the spirit and language of the new geographical literature which takes the novelty of the New World for granted. And it is also a sign of the emergence of a New World geographical literature in its own right. The tentative gropings of Columbus, Vespucci, and Peter Martyr were being replaced by the bold narratives of the Cortés letters on the one hand, and by analytical discourses on American peoples and products such as that of Oviedo on the other. The *Sumario* was only a foretaste of the *Historia general y natural*⁴⁶ which began to appear in 1535; it progressed somewhat further in 1547 and 1557, but only the first 20
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books (of 50) were published during the sixteenth century. Yet whatever criticisms one can make of his digressions and his politique reticences, the combined narrative and analytical surveys were sufficient to make Oviedo's fame.

Not content with giving a story of events and a parallel treatment of the ethnographic, botanical, and zoological features of the New World, Oviedo had realised that the visual image was significant also to complete the geographical picture of what he had to describe. As a young man Oviedo had lived in Italy and had been at the centre of the High Renaissance culture of the time. Realising that words alone were inadequate to paint America, he regretted that Leonardo da Vinci and Andrea Mantegna—painters whom he had known in Italy—and Pedro Berruguete were not available in America to add colour and form to the words which he himself commanded.

Oviedo himself drew pictures to illustrate his Amerindians, his plants and animals. But he was not an able artist; he could only draw poorly, and his drawings were more nearly diagrams than pictures. A surviving manuscript of seven books of his Historia general y natural contains 24 illustrations, all apparently in his own hand. The printed Sumario of 1526 had a few outline engravings, the succeeding volumes in 1535 and 1557 a few more, but they did not convey very much though they had some value. He himself could thus only partially convey his visual impression of the New World.

Still, with Oviedo, Europeans had gained a broad and essentially complete geographical idea of the New World. Together with the maps and the cosmographic concepts behind them, the literature of the New World had all the elements, though it still lacked many of the details, needed to understand the New World's outstanding physical, natural, and human characteristics.

Looking back over the emergence of a geographical literature on the New World, we must reemphasize a number of points. In the first place there was very little available before 1507 to enable the reading public (supposing it could gain access to all that had appeared—a small handful of pamphlets) to make any balanced estimate of the nature or implications of the Discoveries. People learnt there were new islands and then new mainlands, gold and cannibals. But the literature and the maps which emerged in manuscript and were beginning to appear in print (for example, that of Contarini-Rosselli [1506] to which Norman Thrower refers) were Old World-centered; their essential feature was that the new discoveries were physically, humanly, and naturally an extension of the Old World, not something basically novel.

Only in 1507 with the appearance of Paesi novamente retrovati and the linking of Vespucci's Lettera and Mundus novus to a revolutionary
concept of two distinct continents, linked by name with Americus Vespuccius in the *Cosmographiae introductio*, did the discoveries in the west and east stand out in contrast: the Vespucci tracts offered the concept of a distinctive New World. Subsequent developments—the Peter Martyr narratives, the Enciso sailing directions, and the Oviedo *Natural History*—enabled scholars and educated men generally, if they read the appropriate languages (and a number of the essential pieces were in Spanish or Italian still, rather than in the learned *lingua franca* of Latin), to gain something of a balanced geographical concept of the Americas by 1530. In the next generation, with Oviedo continuing his history, with Gómara providing a further general survey, and with tracts becoming more numerous and detailed, the picture emerged, still slowly, in more refined detail. America became part of human experience; it was assimilated, even if imperfectly, into European concepts. Embellishments on the maps became less specific, more generalized, in line with decoration on maps generally. America can be seen to come of age in 1562\(^5\) when Gutiérrez showed a rococo Neptune and his Car riding across the seas westward from the old to the new Spanish empire: it symbolized America's incorporation in a revised and enlarged classical geographical tradition.

**APPENDIX**

*Some Old World Survivals in New World Geography*

Nomenclature, descriptions, and representations of the New World continued to be coloured by the Old. Cabral called the land he had touched in the west the Land of the Holy Cross (Terra de Sancta Cruz), but it was known first for the parrots, which he sent home in 1500 as evidence of the new riches, as Terra de Papagaios. They duly appeared in all their red and gold glory on the Cantino map of 1502.\(^5\) They symbolized that these lands were indeed the Indies. They are Aristotle's elephants in another guise: "those who imagine that the region around the Pillars of Hercules joins on to the regions of India . . . produce also in support of their contention the fact that elephants are a species found at the extremities of both lands."\(^5\) Aristotle was both history and prophecy to educated Europeans in 1500: if there were no elephants in the New Indies, parrots would have to symbolize the links between the new discoveries and Africa and Asia. Columbus, indeed, gave the name "Cabo de Elefante" to Haut Piton, Hispaniola, in 1492.\(^5\)

Writing in 1493-94, Peter Martyr confirms this approach (I quote from the English version of 1555):
Mountain crests serve as symbols to indicate divides between drainage basins. From the Mercator map of 1569, as drawn by Noël L. Diaz for the Announcement of the International Conference "First Images of America: The Impact of the New World on the Old."
Fig. 110.

Martin Behaim's Erdapfel; gores of the globe and polar caps, 1492.
Figure 115.

Print of the first map with the name America. A woodcut by Martin Waldseemüller (St. Dié 1507).
Fig. 120.

Engraved world map by Gerhardus Mercator, 1569, on the conformal projection which bears his name.
albeit the opinion of Christophorus Colonus (who afirmeth these lands to be parte of India) dothe not in all poyntes agree with the judgement of auncient wryters as touchyng the bignesse of the Sphere and compasse of the Globe as concernynge the nauigable portion of the same beynge vnder vs, yet the Popingiaies and many other thynges brought from thence, doo declare that these llandes fauoure somewhat of India, eyther beynge nere vnto it, or elles of the same nature: forasmuche as Aristotle also . . . and likewise Seneca, with diuerse other authours not ignorant in Cosmography, do affirme that India is no longe tracte by sea, distante from Spayne by the weste Ocean.

It is curious how early and how often the castle appears as a European construct in a New World setting. Two editions of the Columbus Letter illustrate this clearly. De insulis inuentis, the so-called "pictorial" edition, has a scene in Hispaniola which includes European-type castellated buildings. In the De insulis nouo repertis the islands first seen in 1492 and 1493 are named and tiny ships make their way through them, while prominent in view are large European castles. Similarly, the first edition of Paesi nouamente retrouati (Venice 1507) has on its title-page a globe with castellated buildings stretched across the newly-discovered lands, while the same motif was taken up in a German edition of Vespucci, Neve unsekanthe landte (Nuremberg 1508).

It was more than a quarter of a century after the first discovery that Europeans saw stone structures which could be regarded as castellated. Cortes indeed saw such in 1519. When in 1524 he sent home his plan of Tenochtitlan, which he had by then totally destroyed, great castles appeared in it, some perhaps modified in the engraver's hands to appear more European. Bernal Díaz saw them also and described them in a famous passage, as being "like the enchantments they tell of in the story of Amadis, on account of the great towers and cues and buildings rising from the water, and all built of masonry."

NOTES

1. The terms cosmography, geography, topography, and chorography shade into one another in this period. Geography cannot be considered as an integrated, space-oriented study in the fifteenth and early sixteenth centuries. François de Dainville, La géographie des humanistes (Paris 1940) 47-54, 67-68, indicates how the two geographies, the study of the earth in relation to the heavens and that concerned with describing in detail the layout and characteristics of lands, waters, regions, and peoples, began to fuse only towards the end of the sixteenth century. Ptolemy's Geography, however limited in its descriptive aspect, may be regarded as containing the elements of both.


3. See Journals and Other Documents on the Life and Voyages of Christopher Columbus, ed. S. E. Morrison (New York 1963) 84-89, 103. Columbus used Marco Polo (in the edition printed by Gerard de Leeu at Antwerp between 1485 and 1490) and annotated the text extensively: see Raccolta di documenti e studi pubblicati dalla Reale Commissione Colombiana pel
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quarto centenario dalla scoperta dell'America, Part 1, ed. Cesare de Lollis (3 vols. Rome 1892-94) 2. 471-472. There is no clear evidence that he had either Sir John Mandeville's Itinerarius or the Prester John letter (in the form De rite et moribus Indorum or another). So far as I have been able to determine, the editions of these three works published before 1492 are not illustrated.

4. Dog-faced men in Mandeville's Travels: Texts and Translations, ed. Malcolm Letts, Hakluyt Society, Ser. 2, 101-102 (2 vols. London 1953) 1. 138 and in The Book of Ser Marco Polo, the Venetian, Concerning the Kingdoms and Marvels of the East, ed. and trans. Sir Henry Yule, ed. 3 rev. by Henri Cordier (2 vols. London 1903; rpt. 1929) 2. 309-311. Cyclopean men were in Mandeville (p. 142) but not in Polo. Both, of course, were in Pliny, but Columbus did not make any notes on these references: see Raccolta (n. 3 above) ibid.

5. Journals (n. 3 above) 42, 146, 151-153, 155, 185, 249; Mandeville (n. 4 above) 1. 111; Polo (n. 4 above) 2. 404-406. Columbus, to judge by his glosses on "Ymago mundi" and, especially, Aeneas Sylvius, Historia rerum in Raccolta (n. 3 above) ibid., 360, 311-331, was somewhat obsessed by Amazons.

6. The Life of the Admiral Christopher Columbus by his Son Ferdinand, ed. Benjamin Keen (New Brunswick, N. J. 1959) 171.

7. Journals (n. 3 above) 42, 88, 90, 141, 144, 186.


10. Ibid., 100.

11. Ibid., 185.

12. Ibid., 237-238.


14. Raccolta (n. 3 above) Part 1, 2. 175-205; translated in Journals (n. 3 above) 372-385. Though Columbus' own published contributions to the geographical literature of the discoveries was so limited, it should not be forgotten that Peter Martyr and Angelo Trevisan between them gave his first three voyages a good showing, in straightforward narrative, in Libretto di tutta la navigazione de Re de Spagna de le isole et terreni nouamente trouati (Venice 1504), facs. ed. with intro. by Lawrence C. Wroth (Paris 1929). The account of the first voyage was Martyr's and that of the second and third voyages Trevisan's, while the voyages of Alonso Niño and Vicente Pinzón were also included (Columbus getting 23 pages out of 27).


17. Text and translations into Spanish and English in Roberto Levillier, Amerigo Vespucci. El Nuevo Mundo (Buenos Aires 1951). The statement about latitude is on pp. 144 (Ital.) and 289 (Engl.).


19. Lettera (n. 18 above) sig. B4r, C1v, The First Four Voyages (n. 18 above) 26, 36. In the letter of 18 July 1500 (Vaglienti Letter) Vespucci wrote: "Your Excellency may rest assured of this fact. They do not eat one another . . . they bring their prey from the neighbouring islands. . . . They never eat any women, unless they consider them
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outcasts. . . . Still they are a people of gentle disposition and beautiful stature. . . .
(n. 17 above) 276.
21. Lettera (n. 18 above) sig. B5v; The First Four Voyages (n. 18 above) 30-31.
22. Lettera (n. 18 above) sig. A6r; The First Four Voyages (n. 18 above) 15-16.
26. Mostra vespucciana (n. 16 above) no. 66 (pp. 43-44). Hirsch 28.
27. Mostra vespucciana (n. 16 above) no. 70, Plate 14 (a); Hirsch 64. The Wild Man was more usually shown without a female companion.
28. Formerly in Bavarian State Library, Munich. There is a coloured reproduction in A Collection of Maps and Documents Shown . . . in Florence on the Quincentenary of the Birth of Amerigo Vespucci, ed. Alberto Giraldi (Florence 1954-55), Plate 11.
30. The Rostock copy was reproduced and discussed in De novo mundo (Antwerp about 1520), ed. Maria E. Kronenberg (The Hague 1927).
31. S.T.C. 7677, British Library copy. Dates between 1511 and 1523 have been suggested for it: I favour earlier rather than later dates but cannot be dogmatic. Hirsch 93.
34. They are conveniently reproduced in R. A. Skelton, Decorative Printed Maps . . . (London 1952) Plates 7-8.
35. Margaret M. McGowan, "Form and Themes in Henry II's Entry at Rouen," Renaissance Drama, n.s. 1 (1968) 218-220, fig. 16, plate facing p. 248. As well as the series of plates of the fête there is a large separate engraving of the village. The materials are reproduced in Jean Ferdinand Denis, Une fête brésilienne célébrée à Rouen en 1550 (Paris 1850): see in this collection figure 78.
36. On "Tabagerres," Tobagara, see Alfred Metraux, La civilisation matérielle des tribus Tupi-Guarani (Paris 1928) 15-16.
37. The basic authority on the Waldseemüller map and text remains Joseph Fischer and Franz von Wieser, The Oldest Map with the Name America of the Year 1507 (Innsbruck 1903; rpt. Amsterdam 1968).
38. Mostra vespucciana (n. 16 above) nos. 81-89 (Hirsch 51-55, 66-70), the first eight issues and editions retaining the title Cosmographiae introductio.
39. Opera. Legatio babylonica. Occæni decas. Poëmata. Epigrammati (Seville 1511) printed the first decade only; De orbe novo decades (Alcalá 1516), the first three decades; De orbe novo decades octo (Alcalá 1530); Opus epistolarum (Alcalá 1530). As Petrus Martyr de Angleria, Opera, the complete series was published in facsimile (Graz 1966).
41. Mostra vespucciana (n. 16 above) nos. 71-79; Hirsch 55-56, 58-59, 72, 77-80, 82-83.
42. Enciso was reasonably generous in apportioning space to America, allocating to it 18½ pages (sig. G6v.-H7v.) though the part (sig. H7r.-H7v.) devoted to North America was very limited both in length and in content.
43. There is a valuable series of studies on Oviedo containing details of his life and of his ethnology, natural history and attitudes to the Indians in “Homenaje a Fernández de Oviedo,” Revista de Indias 17 (1957) 391-705. See also the introduction by Juan Pérez de Tudela Bueso to Gonzalo Fernández de Oviedo, Historia general y natural de las Indias, Biblioteca de Autores Españoles 117-121 (5 vols. Madrid 1959), which is basically a reprint of the edition by José Amador de los Ríos (4 vols. Madrid 1851-55).

44. Toledo 1526. Published in facsimile, University of North Carolina Studies in the Romance Languages and Literatures 85 (Chapel Hill 1969); English translation by Sterling A. Stoudemire, Natural History of the West Indies, University of North Carolina Studies in the Romance Languages and Literatures 32 (Chapel Hill 1959).

45. Natural History (n. 44 above) 47.

46. The Sumario drew its material from Books 5 to 15 of Part I of the Historia general y natural.

47. La historia general de las Indias (19 vols. Seville 1535) took the story down to the eve of the conquest of Mexico and drew its natural history and ethnographical materials from the islands and mainland where Oviedo had resided 1514-25. La hystoria general de las Indias agora nueuamente impressa corrigida y emendada (Salamanca 1547) contained Oviedo’s dedicatory epistle to Cardinal Loaysa, but did not carry the history further, though to some copies was added Francisco de Xerez, Verdadera relación de la conquista del Peru (ca. 1534, ed. 3 Salamanca 1547). Libro XX de la segunda parte de la general historia de las Indias (Valladolid 1557) added Oviedo’s account of Magellan’s and certain other Pacific voyages only. The history as a whole was not published until the middle of the nineteenth century.


49. Henry E. Huntington Library, MS HM 177, two volumes containing Books 4, 6, 7, 9, 11, 32, 37, of Part I.

50. The Contarini-Rosselli world map of 1506, engraved in Florence by Francesco Rosselli (British Library) was the first to show the new discoveries in print. North America was still regarded as an extension of Asia, the land to the west of the Caribbean islands as probably insular, while South America, as Terra Sancte Crucis siue mundus novus, was a great independent continent. It is conveniently reproduced in James Alexander Williamson, The Cabot Voyages . . . (Cambridge 1962) 304.

51. The northern portion of the important printed map of Diego Gutiérrez (British Library) is reproduced in R. A. Skelton, W. P. Cumming, and D. B. Quinn, The Discovery of North America (New York and London 1971) 142-143 (fig. 156).


55. The First Three English Books on America, ed. Edward Arber (Birmingham 1885) 67. This is from Decade One.

56. Sanz López (n. 15 above) no. 7. Facsimile also in The Letter of Columbus and the Discovery of America, ed. Wilberforce Eames (New York 1892).

57. Sanz López (n. 15 above) no. 8.

58. Mostra vespucciana (n. 16 above) no. 71, Plate 14 (b).


60. In his Preclara narratione . . . (Venice 1524).

New Geographical Horizons: Maps

by Norman J. W. Thrower

Maps, understandably, are sensitive indicators of man's changing perception of the earth. They are also mirrors of culture and civilization at a given time, because, to a greater extent than most of the works of man, the map is at once an artistic, scientific and technological creation.\(^1\) Thus Renaissance cartography reflects remarkable originality in symbolization, projection, and reproduction techniques while, at the same time, delineating those fundamental changes in knowledge of the earth which resulted, particularly, from the European discovery of the New World.\(^2\)

The two hundred years following the first venture of Prince Henry of Portugal to Ceuta, in 1415, and especially after he settled in the Algarve some years later, were unsurpassed in the discovery and exploration of the world's coastlands.\(^3\) This was matched by complementary progress in cartography developed largely in response to the new geographical knowledge and the need to record this information. As R. A. Skelton pointed out, a geographical discovery is not really made until it has been recorded with sufficient accuracy so that it can be visited again.\(^4\) Although other means exist of locating geographical phenomena, spatial relationships are best expressed on maps.\(^5\)

The enlarging geographical horizons resulting from the discovery of new lands overseas by Europeans came at the same time as the
invention of printing in Europe. The Ptolemaic manuscript corpus which reached Florence from Byzantium in the late fourteenth century, by 1410 had been translated into Latin and illustrated with maps. A Latin edition of Ptolemy’s Geographia printed in Bologna in 1477 contains a reconstruction of his mappamundi. This is not the earliest printed European map, but it was a landmark work soon to be followed by others such as the Ptolemaic world map published in Ulm in 1482 (fig. 109). The printing of maps made them cheaper and more available, and also made possible “the exactly repeatable pictorial statement.”

Whereas, previously, royal patrons (including Prince Henry, especially after his brother Pedro’s return from Italy in 1428) had access to manuscripts, they were only available to the few. A century later an important part of the cartographic, as well as the written record could be appreciated by a larger audience in printed form.

It is in this frame of reference that the Vinland map, even if genuine, which is increasingly in doubt, must be considered a rather unimportant work. As a manuscript it would most likely have had limited contemporary influence, but it is also unimportant in that it contains little information not available in earlier sources and is singularly lacking in cartographic breakthroughs in representation or projection.

In our concern with the cartography of the New World, or America, we should not overlook the fact that, through Marco Polo, particularly, the “gorgeous East” had already been opened up to the European view. Indeed the Portuguese thrust was originally in that direction and even when America was first reached it was thought to be the Indies and, later, an obstruction on the way to the Orient. Understandably, some of the most important maps of the Renaissance have to do with the sea route to eastern Asia by way of Africa.

In Renaissance cartography the Ptolemaic map was both the starting point and the model against which subsequent change could be measured. Thus the Martellus Map and Martin Behaim’s Erdapfel of the early 1490’s (though of course, lacking the delineation of the soon-to-be-made Columbian discoveries in the west) well illustrate the changing European knowledge of the globe, incident upon the reports of Marco Polo and the then recent Portuguese discoveries in Africa (fig. *110). Behaim was aware of the explorations of Bartholomeu Dias around the “stormy cape” which, a decade later, made possible Vasco da Gama’s discovery of the sea route to India. On Behaim’s globe the distance from West Africa to the east coast of China takes up less than 5/12ths of the earth whereas, in reality, it occupies over 7/12ths of the total longitude. It was this shorter conception of the earth which encouraged Columbus to venture westward in hope of finding the coast of Asia. Behaim’s globe also shows the Atlantic islands—the Canaries and Azores—re-
World Map from the Latin edition of Ptolemy’s Geographia (Ulm 1482).
discovered in the early years of the fifteenth century by the Spanish and Portuguese, respectively, and which were to prove useful stepping stones for later explorers, to and from the New World.18

Renaissance cartography has traditionally been viewed as the filling of a void between Eurafrica and eastern Asia with a new continent, beginning with Columbus' first voyage of 1492. Columbus was a chartmaker, but only one map known to be from his hand survives (fig. 111).19 It is of the coast of Hispaniola (1492-93) and may be taken as representative of explorers' maps, most of which have presumably perished or were incorporated into larger works, which had a better survival rate. Such a map is that by Alessandro Zorzi (fig. 112) on which the new discoveries in insular Central America and the northern coast of South America (Mondo novo) are shown in relation to the coasts of Eurafrica and eastern Asia.20

Between Columbus' first and third voyages, 1492-1502, John Cabot visited the coast of North America, Vespucci was navigator on a Spanish expedition to the Caribbean coast of South America, and Cabral had made a landfall in Brazil. These discoveries as well as those arising from Columbus' first three voyages are shown on the portolan chart drawn by Juan de la Cosa in 1500 (fig. 113).21 It is inferred that the extension of land to the west means that the new discoveries were still thought to be connected to Asia.

The maps of the New World discussed so far are manuscripts and of limited popular influence. Presumably the first printed map showing the New World is that of Giovanni Matteo Contarini, 1506 (fig. 114).22 It was engraved in Florence by Francesco Rosselli and is on a partial azimuthal projection, centered at the North Pole. The islands discovered by Columbus and the north coast of South America are shown, as well as Japan and the east coast of Asia, with names from Marco Polo's account.

In some ways the most influential early printed map of the New World is the woodcut of Martin Waldseemüller, 1507 (fig. 115).23 It is noteworthy as the first map to use the word 'America,' and to represent that continent as a separate entity—if of very limited longitudinal extent. It is cartographically interesting because the map framework is a prototype of a (truncated) cordiform or heart shaped projection.24 Cordiform projections are essentially equivalent (equal area), show true distance from a point (i.e. the North Pole), and have in the most useful, central part of the projection a greater longitudinal than latitudinal extent. This class of projection was used, with modifications, for mappamundi by Sylvanus 1511, Werner, who formalized the projection, 1514 (fig. 116), Apianus 1530, Finé 1534, and Mercator (double cordiform) 1538. It proved to be an eminently suitable device for showing the generalities of the enlarging world map. A woodcut map of the Caribbean accompanied Peter Martyr's First Decade (Oceani Decas), 1511 (fig. 117).
Figure 111.
Sketch map by Christopher Columbus of the coast of Hispaniola, 1493.
Manuscript map by Alessandro Zorzi, ca. 1500, showing insular Central America and the north coast of South America between Eurasia and Euroafrica.

Detail of the portolan chart by Juan de la Cosa, 1500: the east coast of America.
Only after Magellan’s entrance into the Pacific, and the circumnavigation by his ship Vitoria (1519-22), could a reasonable delineation of the west coast of South America begin. The considerable width of this continent is suggested by a beautiful map by Diogo Ribeiro, 1529 (fig. 118). Ribeiro, as chartmaker to the Spanish crown, had access to the Padrón Real or master map of discoveries in Seville of which his 1529 work is probably a copy. Ribeiro’s Pacific Ocean is too short by 25 degrees, but another later map (fig. 119), that of Battista Agnese, 1536, which shows the track of the Vitoria, is considerably less satisfactory in this regard, and illustrates retrogression in cartography.

In many respects the great summary map of the Renaissance is that of Mercator of 1569 (fig. *120). Mercator liberated cartography from dependence on Ptolemy. His delineation of the coasts of the New World was no better than the information available to him, but his projection was of the greatest potential utility to the navigator. Mercator’s projection of 1569 is the only arrangement of the earth grid on which any straight line is a line of constant compass direction (rhumb). Seamen were slow to adopt this new device, whose mathematics were explained in 1599 by Edward Wright the English mathematician; but eventually
Mercator’s projection was to play an important role in the navigation of the world’s oceans.

Much of the story of the mapping of the New World, up to the early modern period, is of a gradual improvement in the details of coastal delineation. Thus the northeastern coasts of North America discovered by John Cabot in the 1490’s were added to the world map by his son Sebastian, Pilot Major of Spain, as late as 1544. Captain John Smith, who set new standards of reliability in his 1612 map of Chesapeake Bay
Figure 117.

Map of the Caribbean from Peter Martyr's Occeani Decas, 1511.

Figure 118.

Detail of a manuscript chart showing the Americas, by Diogo Ribeiro, 1529.
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Figure 119.
Manuscript map by Battista Agnese showing the track of Magellan's Vitoria, 1536.

Figure 121.
Engraved map of Chesapeake Bay, 1612, resulting from the survey by Captain John Smith, 1608.
Engraved world map by Edmond Halley, 1702, showing isogones in the Atlantic and Indian Oceans and seventeenth-century discoveries; California appears as an island.
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(fig. 121), added that considerable feature, apparently missed by Ver­razano 80 years earlier.\textsuperscript{31} Mapping improvements in the St. Lawrence estuary resulted from the French explorations in that area. Similar progress was made by the Spanish in South America, but the detailed delineation of the Pacific coast of North America awaited the discoveries of Captains Cook and Vancouver in the late eighteenth century.\textsuperscript{32} For about 150 years, from 1625 to 1770, California had been represented as an island on the World Map (fig. 122).\textsuperscript{33} Reconnaissance mapping of the Arctic coasts of North America was only completed in the nineteenth century. The same century saw the opening up of the western parts of the continental interior, greatly facilitated by the development of topo­graphic and thematic mapping, which were delayed products of the Scientific Revolution of the seventeenth century.\textsuperscript{34} In this way, the cartographic image of the Americas gradually took shape in the minds of Europeans and others over a period of nearly 500 years.

NOTES

1. This idea is implicit in much of the rich literature of cartography summarized in such works as Leo Bagrow, \textit{Die Geschichte der Kartographie} (Berlin 1951) which was edited, revised and enlarged by Raleigh A. Skelton as \textit{Meister der Kartographie} (Berlin 1963) with an English edition, \textit{History of Cartography} (Cambridge, Mass. 1964). The present author attempted to make it more explicit in his \textit{Maps and Man; An Examination of Cartography in Relation to Culture and Civilization} (Englewood Cliffs, N.J. 1972). All serious students of the history of cartography in recent times have been indebted to the contributions in \textit{Imago Mundi; A Periodical Review of Early Cartography}, founded by Leo Bagrow in 1935 and published irregularly and in various cities since that date. In addition to articles, treatises on special topics, and summaries in general cartography texts, there are a few works dealing broadly with the history of cartography including, in addition to those listed above: Gerald R. Crone, \textit{Maps and Their Makers: An Introduction to the History of Cartography} (London 1966) and Lloyd A. Brown, \textit{The Story of Maps} (Boston 1949).

2. The “unrolling” of the world map has been a major theme in geographical and historical literature dealing with the European discovery of the earth. Recently there has been some reaction against claims of European geographical exploration on the part of descendants of those peoples occupying the land who were “discovered.” A great deal of the claim of European discovery has to do with understanding the relationships of particular explorations to a larger geographical framework, in which mapping played an essential role. The most readily available general work on the history of discoveries is John N. L. Baker, \textit{A History of Geographical Discovery and Exploration} (ed. 2 rev. New York 1967). Baker, like all students of this subject, utilized the publications of the Hakluyt Society, which have focused “on original narratives of important voyages, travels, expeditions and other geographical records.” Approximately 250 titles have been published since the founding of the Society in 1846; many contain facsimiles of original maps and charts, as well as specially designed track or route maps.

3. \textit{Gomes Eannes de Azurara: The Chronicle of the Discovery and Conquest of Guinea}, ed. and trans. Charles R. Beazley and Edgar Prestage, Hakluyt Society, 95, 100 (2 vols. London 1896-99) is a fundamental work on this subject. The title “The Navigator” (although he probably never sailed out of sight of land and traveled only from Portugal to northernmost Africa) was awarded to Prince Henry by Richard H. Major through his \textit{The
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Life of Prince Henry of Portugal, surnamed the Navigator, and its Results (London 1868). Since the publication of Major’s work there have been many articles and books, both scholarly and popular, in several languages on Prince Henry and his crucial role in European expansion. These were especially plentiful around 1960, the 500th anniversary of the death of Prince Henry (1394-1460). For the world-wide Henrician celebrations the author was commissioned to write an article, “Prince Henry the Navigator,” Navigation: Journal of the Institute of Navigation 7:2-3 (1960) 117-126, one of several such items which appeared at that time to honor Portugal’s greatest son.


5. Point locations can be satisfactorily recorded in tables, but relationships between considerable numbers of them cannot be appreciated except on a map. Linear, and especially areal geographical phenomena are almost impossible to comprehend except on maps. This may explain why almost all peoples, however primitive, have produced at least crude maps; see Thrower (n. 1 above) 1-8.

6. In this connection it is instructive to compare the dates of Prince Henry (1394-1460) with those of Johann Gutenberg (1400-68). Printing was invented in China long before it was developed, presumably independently, in Europe. Of course the Irish reached Iceland and the Norse, Iceland, Greenland and Vinland (North America) centuries before the time of Prince Henry. However, as James Thomson expressed it in The Seasons, it was the “Lusitanian Prince” who “in unbounded commerce mixed the world.” Commerce can be taken to mean initiation of a continuous tradition of discovery and exploration leading to colonization with sustained linkage with the homeland.


8. This distinction seems to belong to a simple woodcut of St. Isidore’s T-O map printed in Augsburg in 1472. Just as printing was invented in China, so the earliest Chinese printed map anticipated the first European printed map—by about 400 years. See Joseph Needham and Wang Ling, Science and Civilization in China (5 vols. Cambridge 1954-74) 3. 497-590, “Geography and Cartography.”

9. William M. Ivins, Jr., Prints and Visual Communication (Cambridge, Mass. 1953) 2, and quoted by Raleigh A. Skelton in Maps: A Historical Survey of Their Study and Collecting (Chicago 1972) 12. Of course, owing to variable pressure of the press, amount of ink used, nature of the paper, wear on the plate, etc. there can be considerable differences between prints. However, theoretically, one print from the same plate should be the same as another and the chance of substantial difference is certainly much less than with hand copies however carefully executed.

10. Dom Pedro returned to Portugal in 1428 from a journey which had occupied him for about three years and had taken him to England, Flanders, Germany, Hungary, Romania and Italy; Francis M. Rogers, The Travels of the Infante Dom Pedro of Portugal (Cambridge, Mass. 1961). The friendship between England and Portugal, which still endures, was confirmed by Pedro’s visit to England; this friendship was to be of inestimable value to England as she became interested in overseas discovery. In Italy (where he was received by the pope) Pedro obtained a copy of Marco Polo’s travels, and a world map. This is thought by some to be a copy of Marino Sanuto’s mappamundi ca. 1320. In addition to these works, Prince Henry presumably had access to Catalan geo-cartographical knowledge (including the Azores) through his employment of Jacome Cresques of Majorca.

11. We have little specific knowledge of the number of prints taken from a single plate and other details of early map printing and distribution. In many cases prints seem to have been run off as needed. Plates were re-cut, re-engraved or re-etched and often had a remarkably long life. Platemakers were ingenious in making corrections and updating printing plates, whether of wood or metal. In spite of this, in the case of some maps only a few copies (or even a single impression) survive. In many cases copies were still being produced from old plates long after their geographical information was outdated.
12. Enormous publicity was given to the official unveiling of the Vinland Map on Columbus Day, 1965. It was touted as “the most exciting cartographic discovery of the century.” Regrettably officials at Yale University, the owners of the Vinland Map, now report that it “may be a forgery,” Yale University Press Release, 26 January 1974. This judgment was based on small-particle analysis of the ink, but apparently all of the dating techniques which are available have not yet been employed on the map.

13. “The Map tells us very little we did not know before,” is the way R. M. Perkins puts it in his contribution, “Norse Implications,” Section V of “The Strange Case of the Vinland Map,” The Geographical Journal 140 (1974) 199. This is one of eight papers on various aspects of the Vinland Map discussed in a symposium on the subject held in London, February 1974. Some eight years earlier a similar symposium had been held in Washington, D.C. Its findings were published later as Proceedings of the Vinland Map Conference, Smithsonian Institution, 1966, ed. Wilcomb E. Washburn (Chicago 1971). The work which initiated much of this scholarship was Raleigh A. Skelton, Thomas E. Marston and George D. Painter, The Vinland Map and the Tartar Relation (New Haven 1965). Since the appearance of this work many hours have been spent and much ink has been used proving or disproving the authenticity of the Vinland Map. Some of this effort would have been better expended on important topics in the history of cartography including map production and reproduction, the rise of thematic mapping, or the development of map projections.


17. Samuel E. Morison, Admiral of the Ocean Sea: A Life of Christopher Columbus (2 vols. Boston 1942) and Morison’s other writings on this subject. Columbus could not have seen Behaim’s globe but he may have seen a prototype of it. Columbus appears to have been influenced in his estimate of the size of the earth by the Florentine physician Paolo Toscanelli. Toscanelli’s short measure of the earth was further shortened by Columbus, so that when he reached the Caribbean he thought he had arrived off the coast of Asia. The measure of the circumference of the earth had been speculated upon since the appreciation of the globular nature of the earth in Greece, among the Platonic philosophers.

18. T. Bentley Duncan, Atlantic Islands: Madeira, The Azores and the Cape Verdes in Seventeenth-Century Commerce and Navigation (Chicago 1972). Although the value of these islands at a later period is emphasized in this monograph (from the series sponsored by the Society for the History of Discoveries) their earlier discovery and significance is not overlooked. Not only the Portuguese but the sailors of many nations utilized these islands as ports of call or way stations.

19. This simple sketch map of Hispaniola has often been reproduced; see Bagrow-Skelton (n. 1 above) 147, and Morison (n. 17 above). It locates Cape S. Nicholas, Tortuga Island, Monte Christo Point, and the settlement of Navidad. This last was the name Columbus gave to the fort which was constructed from the timbers of the Santa Maria which stuck fast on a coral reef offshore. The Admiral cruised along this coast December 1492 to January 1493.

20. Skelton (n. 15 above) 56, 71. This chart was based on information supplied by
Bartholomew Columbus who, like his brother Christopher, was a chartmaker. *Mondo novo* (New World) suggests that Columbus believed that he had discovered a new land mass, but not a new continent. This latter idea is contained in a letter from Amerigo Vespucci concerning his voyage to South America (1501-02), and was the basis for the naming of the new continent after him—by Waldseemüller (1507).

21. A number of the most important maps (beginning with this one) showing the developing concept of America are reproduced in Ernst and Johanna Lehner, *How They Saw the New World*, ed. Gerard L. Alexander (New York 1966). This popular book of illustrations also contains portraits of the great European explorers and early views of the New World from their sketches or derived from reports. Juan de la Cosa was a pilot on Columbus’ second voyage, 1493-94.

22. Skelton (n. 15 above) 60, 72 and Lehner and Lehner (n. 21 above) 32. Apparently only one impression of this map survives, at the British Museum. See also William F. Cumming, Raleigh A. Skelton and David B. Quinn, *The Discovery of North America* (London 1971) for many excellent illustrations and very informative text material on North American exploration.

23. Hildegard B. Johnson, *Carta marina—World Geography in Strassburg, 1525* (Minneapolis 1963) deals with the intellectual climate in the Upper Rhineland in the early sixteenth century and its contribution to European overseas discoveries. In later maps—that of the New World by Stobnicza (1512), which is derived from Waldseemüller, and that by Waldseemüller himself (1513) the word America (for South America) is abandoned in favor of *Terra Incognita*. The appellation America was revived by Schöner (1513) and others and has, of course, persisted. Its use is not as unfair to Columbus as some have suggested, for Vespucci, later Pilot Major in Spain and whose own explorations were very considerable, seems to have understood the nature of these discoveries in a manner which escaped Columbus.

24. George Kish, “The Cosmographic Heart: Cordiform Maps of the 16th Century,” *Imago Mundi* 19 (1965) 13-21. Several cases of three major types of cordiform maps are discussed and illustrated in this article. The cordiform concept was reintroduced in the projection of Rigobert Bonne (1779) which was used for the French topographic surveys in the nineteenth century.


27. The suggestion has been made that the shorter longitudinal measure on these maps may have been to place the Moluccas on the Spanish or eastern side of the papal line of demarcation. Skelton (n. 15 above) 46.

28. F. Van Ortroy, “Bibliographie sommaire de l’oeuvre mercatorienne,” *Revue des bibliothèques* 24 (1914) 113-148. Mercator’s projection, a most valuable device for navigation, has often been used for quite inappropriate purposes such as distributions better shown on an equal area than a conformal map. This illustrates the negative effect that a commanding figure can have on a discipline. Mercator’s projection is a typical product of the Renaissance where more scientific rendering, including perspective, was fundamental to progress in several fields, e.g.: Leonardo da Vinci in mechanics and painting; Michelangelo in architecture and sculpture; Dürer and Holbein in the graphic arts; Vesalius in medicine, etc. Mercator also popularized Italic lettering in Northern Europe; see Alfred S. Osley, *Mercator: A Monograph on the Lettering on Maps, etc. in the 16th Century Netherlands* (London 1969). A re-drawing of part of Mercator’s map of 1569, by Noël Diaz, was used as a theme for the symposium, “First Images of America: The Impact of the New World on the Old,” which gave rise to these essays.

29. Edward Wright, *Certaine Errors in Navigation* (London 1599). Wright is presumed to be the author of a world map on the Mercator projection which was bound with Richard Hakluyt’s *Voyages*. Wright’s map, which shows the results of Drake’s circumnavigation and other travels, is referred to by Shakespeare in *Twelfth Night* (Act III, Scene 2): “He [Malvolio] does smile his face into more lynes, then is in the new Mappe, with the augmentation of the Indies.” See Helen Wallis, “Edward Wright and the 1599 World Map,” in
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30. Skelton (n. 15 above) 79, 92 and 95.

31. Lawrence C. Wroth, _The Voyages of Giovanni da Verrazzano, 1524-1528_ (New Haven 1970). On his map of Chesapeake Bay, which he explored in 1608, Smith marked the limits of his travels by a series of crosses beyond which he indicates that his information is only “by relation.”


33. Ronald V. Tooley, _California as an Island; A Geographical Misconception Illustrated by 100 Examples from 1625 to 1770_, Map Collectors’ Circle (London 1964). Halley’s World Map of 1702 (along with his Atlantic Chart of 1701) is the first isogonic map extant. Although of great scientific interest, this map helped perpetuate the myth of California as an island.

34. Accurate mapping of large areas, in contrast to linear coastal surveys, could only be accomplished after systematic topographic mapping, including triangulation, was developed. This began in France in the seventeenth century and was modestly applied to other areas in the eighteenth century. Topographic surveys in the nineteenth century played an important role in the opening up and exploitation of all of the continental interiors (except Antarctica which was largely a twentieth-century development). In the present century topographic surveying has been greatly improved and enriched by aerial photography and, recently, by satellite imagery. Paralleling this was the rise of thematic mapping, greatly aided by modern census reports. See Norman J. W. Thrower, “Edmond Halley and Thematic Geo-Cartography,” in _The Terraqueous Globe_ (Los Angeles 1969) 3-43, and Thrower (n. 1 above), especially 61-160, for a consideration of the development of modern scientific cartography. For the beginnings of topographic mapping see particularly, Brown (n. 1 above) 241-279, and Sir Herbert George Fordham, _Some Notable Surveyors and Map-Makers of the Sixteenth, Seventeenth, and Eighteenth Centuries and Their Work: A Study in the History of Cartography_ (Cambridge 1929). An invention which greatly facilitated the printing of maps was lithography, originated by Aloys Senefelder in the last years of the eighteenth century and applied to cartography in the early nineteenth century.
Cosmographers worked in Europe before the great Discoveries, but they were in greatest demand when the New World was new, and they were called upon literally to take its measure, fix its image, and to comprehend and explain its nature. Their numbers were always small. When eventually institutionalized, their disciplines were astronomy, mathematics, applied physics, the technology of shipbuilding, naval armament and war, cartography and textual description. The art of navigation as practiced by them in Seville concerned all aspects of ships and their use which are subject to rule based upon observation and deliberate response to it.¹

What one can say about the cosmographers collectively is that they were a mobile group of experts often found working outside their country of origin, and that they were remarkably versatile. Their origin could be humble, but their ranks included nobles both as practitioners and as pupils. In a time of growing nationalism the cosmographers were an international group, able to change loyalties and to command favors.
and pay raises from their patrons when their work was needed. The remarkable leveling of social differences, unusual during the early sixteenth century, is shown in the ad hoc councils of experts assembled in the cosmographic juntas by the Spanish crown. As a social group the cosmographers were closest to Renaissance artists, and were granted a degree of social mobility which was not found in other professions.

The stages upon which their new experience and ideas confronted old methods and notions were institutions of public life, mainly of government. How these acted as filters through which intelligence of the New World reached the Old has been the subject of a sequence of inquiries. The best way to explain what I mean is to review very briefly what I have found so far. Ample records left by the cosmographers illustrate that sixteenth-century Spain was a litigious country, increasingly administered by lawyers. The true and false of anything was equated with the just and unjust and in case of conflict recourse was had to the law. A phenomenon of the social climate, this interchange of terminology had an important effect upon the development of science, upon the understanding of scientific information, projection, and experiment, and upon investment policy in technology. A court of law is the wrong forum for the advancement of science; this experience was first recorded in a modern context with reference to nautical science in Spain in the sixteenth century, and it is a subject newly become relevant.

Another trace left by the cosmographers was at the center of power: the Spanish court. There, under imperial and later royal sponsorship, cosmographic work was patronized throughout the sixteenth century. A high point of the patronage was reached by the offer of a prize for the best solution of the problem of longitude. Rewards went to the socially well-connected, the articulate compromisers with fact, or favorites ahead of the cautious, realistic, and busy practitioners of the cosmographic profession. The royal court was a limited forum for the advancement of nautical science, and royal patronage distorted the choice of scientific priorities which would have been made by the experts.

A further brief study concerning the Spanish cosmographic juntas of the sixteenth century might have been called “Science by Consultation.” The critical conflict in the advance of scientific ideas and practices was the struggle between leadership and consensus—leadership based upon authority, trust, power, force, or argument, necessarily restrained by the consensus exacted from a variety of experts. The cosmographic juntas represent the social mechanism of Spain’s conciliar government with respect to science. Decisions by the crown concerning the New World should not be judged without referring to the juntas and the use or neglect of their resolutions. How joint deliberation works has been a problem throughout history, and the cosmographers of Spain left
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a record worth exploring, especially today in an era of scientific decision.⁷

I now propose to look at the cosmographic offices and their holders.
I have chosen three institutions which were intimately concerned with the carrera de las Indias, or convoy routes across the Atlantic:⁸ the Casa de Contratación in Seville, the Consejo Real y Supremo de las Indias, and the Royal Academy of Mathematics in Madrid.

In this narrative there is no “first” and no “last”; for convenience the appointment in 1508 of the first Pilot Major of the Casa de Contratación in Seville, Amerigo Vespucci, may serve as a beginning⁹ and the folding of the Madrid Academy in 1624 as an end.¹⁰ The Pilot Major was responsible for the entire technical control of navigation of the Casa. He served as teacher and examiner for pilots, and for instruments and charts. He was also in charge of the Padron Real or master map, begun by Juan de la Cosa and elaborated by Fernando Colón. The first Cosmographer Major in charge of instruments was Diogo Ribeiro (1523), and in 1528 Alonso de Chaves was appointed to teach and examine pilots and to test instruments and charts—which had to correspond to the Padron Real. In 1552 a cátedra of nautical science was added, and Chaves’ son Hieronymo was put in charge. The examination of pilots was for specific routes, Tierra Firme, Nueva España, and the derrota to Honduras.¹¹ Pilots studied nautical science and the use of charts, regiments, and instruments. The Pilot Major, cosmographers, and expert pilots gave the examinations; and instruments were tested and licensed at stated times and regular intervals by the Pilot Major and cosmographers and, upon approval, sealed for each voyage. The Casa was also the only official deposit of the ships’ measure and its code. Every book tells us and the record shows that the charts and instruments were made, the pilots were examined, the revisions of the Padron and modifications of routes and regiments were debated and instituted—but frequently not in the way the provisions stated.

While the categories of work were being defined, actually more people worked on the problems of the carrera than three posts could take care of. An original group of experts had been drawn to the Casa and obtained royal titles as cosmographers with the rights to examine pilots and to act in other capacities in the preparation of fleets or in going out with ships for reconnaissance. First, there were four Portuguese appointees—the two Reinels, father and son, and the two brothers Faleiro, Francisco serving until late in the 1560’s. Pilot Major Sebastian Cabot, of Venetian origin, was a knowledgeable cosmographer active in Seville to 1547. Then there were the two Chaves and the family Gutiérrez, of whom three held official appointments: Diego the elder and his son
Diego el moço and Sancho, while Luis Gutiérrez worked under their supervision. Also licensed royal cosmographers were Pedro de Medina, Pedro Mexia, and the famous Alonso de Santa Cruz. This embarrassment of talent led to mutual interference and the notorious lawsuits and complaints to the Consejo de las Indias, but in the mid-1560’s death began to take care of the problem. With the appointment of Domingo de Villarroel as cosmographer in charge of instruments, this phase ended.

Alongside the pressure on the rules of the Casa to accommodate royal cosmographers with their special commissions, the abuses of holding multiple offices and of nepotism developed. The Chaves and Gutiérrez families monopolized the business in the late 1550’s, and Rodrigo Zamorano united all three scientific appointments of the Casa in his person despite repeated legislation forbidding this. He was catedrático of cosmography from 1575 to 1613, cosmographer in charge of instruments and charts from 1579 (without pay), and Pilot Major from 1586 to 1596 and again from 1598 to his death in 1620.12 Zamorano also placed a son in the catedra de cosmografía; moreover, he lectured at the same time on mathematics and nautical science at the University of Salamanca.

The same men served in various capacities and offices of the scientific branch of the Casa de Contratación, sometimes alongside members of their families. They were indispensable to the lifeline of the empire, and their varied skills reflect those expected from the men aboard ships, whose versatility for improvising in any situation marks the age of reconnaissance.

If the cosmographers’ scientific work under various office titles was often interchangeable, their role in the Casa had been intended to prevent what actually happened—as in the case of Zamorano: as Pilot Major he could determine a route for the Padrón, of which he had charge as Cosmographer Major, to be followed by every pilot whom he had taught and examined as catedrático. He was a Pooh Bah as regards his powers to approve and disapprove the work of others. He exercised considerable power over Seville’s chart and instrument market and a certain control over the oficios de mar de la carrera de las Indias. The possibility of abuses occurred practically simultaneously with the creation of the offices: it was to some extent unavoidable. The ambiguity inherent in the state of the nautical sciences required multiple skills from its cosmographers but restricted them to single and separate applications. Rules of the office also limited their activities in the open market.13

Multiple office holding and privileges sought for family connections created an institutional problem of restricted input which was aggravated by tightening the prohibition against foreigners. This so drastically diminished the chances of careers or advancement for cosmographers that after 1596 Seville no longer held an attraction for them.14
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The fate of the cátedra de cosmografía, introduced at the height of scientific activity and reconnaissance under the auspices of the Casa, reflects this course of events. Hierónymo de Chaves, himself the cátedra's first incumbent, requested a reduction in the required curriculum from one year to three months in 1555, after holding his position for two years. In 1565 it was reduced to two months and in 1568 these were to include feast days so as not to cost too many working days. More dramatic was the reduction of requirements for the examination. The glory of Spain's scientific literature, its vernacular textbooks on navigation by which "Europe learned to sail," were wasted on its own pilots. No more could be expected from them than that they could read the regiments or nautical tables, mark their charts and sign their names. Meantime the requirement for practical experience remained six years, though a concession was made for a year spent without going on a voyage if no opportunity was available.

There is repeated proof of the lack of examined pilots. Ship owners petitioned for permits to put unexamined seamen in charge of their vessels. Within an entire convoy from Mexico in 1584 it was difficult to find one examined pilot for the flagship let alone two for each ship, or a pilot and a master, as required by law. The 1580's and 1590's were the years of greatest scarcity of pilots in sixteenth-century Seville, and apparently the cosmographers also looked elsewhere for opportunity and reward.

This brief survey has led me to the following conclusions: 1) The definition of function for the various cosmographic offices or cargos does not reflect the way cosmographers actually worked. 2) The intent of the definition was to get the maximum benefit from scientific work directed toward specific goals such as safer and faster traffic, larger capacity of the fleets, and the use of less manpower. 3) The extent of the discrepancy between the definition of the job and the work actually done indicates a measure of health in the system's ability to solicit and to take advantage of scientific contributions for the solution of nautical problems. Repeated attempts to give procedure a better theoretical fit had specific reasons for failure, and the result was corrosion and corruption in the institution. The separation of intent from implementation in the Pilot Major's office became a major cause for the decay of Iberian cosmography.

The statutes of the Consejo Real y Supremo de las Indias (1524) provided two posts for cosmographers which were, however, not immediately filled. The Consejo was, of course, vitally interested in the problems of the carrera which was in the care of the scientific staff of the Casa, but apparently supervision was left to individuals, commissioned intermittently
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for specific tasks, who were to maintain liaison with the experts and judges in Seville.

Until the visita to the Consejo by Juan de Ovando (1567-71), the Consejo supervised the cosmographic activities of the Casa in Seville via periodic visitas and liaison between scientists and experts called to Madrid. In the mid-1590’s complaints about the Pilot Major’s office in Seville to the Consejo’s cosmographer, Ambrosio de Ondériz, were getting so bad that he was appointed to check on the Casa. He died before he could finish the work, and was succeeded in this mission by Juan García de Céspedes and Luis Jorge de Barbuda, royal cosmographers. Céspedes—staying on as Pilot Major—made a new Padrón and six special charts. He wrote new regiments and a text on chart-making and sent out printed questionnaires to pilots about their opinions regarding charts and instruments. He designed globes, tested instruments, and made models of them. After two years of whirlwind activity at the Casa de Contratación he returned to Madrid, leaving the scientific office in Seville breathless, relieved, and in the charge of Zamorano, who was reappointed Pilot Major by the judges. These gentlemen opted for continuing business as usual, considering their new charts and Céspedes’ instruments sufficient for their purposes. The glorious days of the Casa as a center for scientific excitement were over as the Consejo reduced contact with the day-to-day work in Seville. Although the Consejo continued to call ad hoc juntas of cosmographers, including Seville’s experts, especially about the problem of longitude, there was no longer an important group of cosmographers working together who could draw the attention of the Consejo to nautical problems.

The appointment which most distinguished the cosmographic work of the Consejo Real y Supremo de las Indias was that of the cosmógrafo-cronista. The format of the crónica mayor of the Indies, the official chronicle, was introduced by Juan de Ovando during his visita, since the Consejo lacked systematic and complete information concerning the dominions it was appointed to administer. He obtained for the cosmographer Juan López de Velasco the title cosmógrafo-cronista of the Consejo and had him gather all information obtained over a span of the preceding 20 years. Velasco’s great Geografía y descripción universal de las Indias, finished in 1574, became the first statistical portrait of the New World. It contained information concerning harbors and other matters useful for the carrera, which was among the reasons why its contents was regarded as privileged and the work was not licensed for publication. The crónica of Velasco is a mirror of the New World envisioned by Juan de Ovando when he fashioned his famous instructions for the relaciones geográficas. To the textual description and quantitative assessments in the relaciones were to be added cartographic representations according to rules which accompanied them. Though several people
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played a part in the evolution of the relaciones, Ovando introduced the technique of the periodic questionnaire to the Consejo de las Indias, and Velasco, its cosmographer, was the first to put it to use. In the contemporary practice of European colonial government, the relaciones geográficas represent a first appearance of a systematically constructed and periodically amended factual base, an indispensable aid to policy makers. Quantitative analysis had thus far been reserved to bankers, military men, and the Church. The purpose of this information was to give the Consejo an alternative base for decisions which heretofore had to depend upon rival claims by its colonial administrators. The relaciones represent an innovation compared to preceding and contemporary censuses with respect to three associated elements which must be taken together—their scope, their evolution, and their institutionalization—which were the reasons for their lasting into the nineteenth century. The first true heirs of the relaciones were to be the U.S. Coast and Geodetic Service together with the U.S. census.

This view of the relaciones as a comprehensive model of the New World is in harmony with the geniuses of the builders of the Escorial. It was equalled by the simultaneous commission given to Velasco to collect and order all legislation then in existence concerning the Indies.²² The problems of enumeration, depiction, and explanation, so much with us in our multimedia world, were foreshadowed in the literature of the cosmographers of the Indies. Progress in cartography and the quantitative assessment of natural and social phenomena can be described as two impacts the New World had on the Old, and the cosmographers of the Consejo de las Indias were the people who registered them in their work.²³

The Philippine Academy of Mathematics, opening its doors to students on 1 January 1584, presents yet another setting for nautical science in Spain in the sixteenth century.²⁴ When Philip stayed in Lisbon as the new king of Portugal from 1581 to 1583, he was greatly impressed with the scientific talent he found there and he raided both Lisbon’s and Coimbra’s scientific establishments. His architect, Juan de Herrera, had advised him that the best nautical scientist, who would be able to reconcile the discrepancies between the Castilian and Portuguese charts with respect to the Line of Demarcation, was Joao Bautista Labanha.²⁵ So Philip named him to the first chair of his new academy. He was joined by Ondériz, Luis Jorge de Barbuda, Julián Ferrufino, Juan Cedillo Diaz, Pedro Rodrigues Muñoz, and other luminaries of the epoch. They decided to render classical scientific texts into the vernacular and then to produce their own texts. Thus a whole library of works on mathematics, cosmography, and military and nautical science in all its branches issued from the cátedras. While the work of translation centered on the classics,
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the Copernican theory was freely debated, and Cristóbal de Rojas wrote the first treaty in Spanish on artillery and fortification. Among the students were many nobles and men at court who cultivated the sciences: el Conde de Puñorrostro D. Francisco Arias de Bobadilla, el Marqués de Moya D. Francisco Pacheco, D. Ginés de Rocamora, Antonio de León Pinelo, and D. Bernardino de Mendoza, lately ambassador to France and England. D. Ginés de Rocamora y Torrano was a representative for the city of Burgos in the Cortes of Castile who attended classes in Madrid and then upon request of his friends set himself up as a teacher of mathematics and of "the sphere." D. Ginés de Rocamora y Torrano was a representative for the city of Burgos in the Cortes of Castile who attended classes in Madrid and then upon request of his friends set himself up as a teacher of mathematics and of "the sphere."  

Nautical problems of the carrera de las Indias and of the Manila Galleon had meantime been taken up in the New World. A famous and popular text on the art of navigation, the Instrucción nautica, was published in Mexico by the Oidor, Diego García de Palacio, in 1587, and the viceroy of New Spain and of Peru sponsored voyages of reconnaissance duly staffed with knowledgeable pilots and cosmographers. The metropolitan orientation of the personnel of the Madrid academy also explains why the institution soon favored the study of artillery and the requisite mathematics and physics over its cosmographic concerns. Ondériz was dead, and Labanha left Spain for Flanders on a genealogical commission. The military nature of research for securing the naval link with the empire ranked increasingly above either reconnaissance or experimentation in the later Habsburg regime and in 1624 all that was left of the academy was absorbed by the Colegio Imperial, a Jesuit institution.

The history of the academy has not yet been written. Its contributions appear under the proper rubric in the history of science, mathematics, physics, astronomy, and mechanics—or wherever its scientists added to the intellectual ferment which produced the scientific revolution. Insofar as their excellence made them notable, the cosmographers of the academy were absorbed into the non-Spanish story, and the rest has been forgotten. The paradox is that the scientific work, most advanced in content and sophistication and precursor of later European academies and scientific societies, responding to the cosmographic problems raised by Spain's vast dominions, has been totally neglected because it had no sequel. The direct contributions of the academy were inspired by the new source of speculation and experiment: the nautical link and the delimitation of the Spanish empire which it was the intent of the crown to define, maintain or improve. The failure of the academy, its lack of sequel, is in part due to the divorce from its source of inspiration: the nautical sciences and the New World. The cosmographic concerns of the academy were scattered instead in "safe" mathematical speculations. Information from Seville, such as the extraordinary Itinerario of Juan de Escalante, a gathering of experience in Atlantic navigation
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of the carrera over many years, was not allowed to be published. Moreover, the limitation of foreign contacts under the later Philips tore the net of international correspondence. The cosmographers were thus cut off not only from their source of problems, but also from the stimulation they received in the exchange of experience and ideas with their foreign colleagues. The link with Seville which was the origin of the academy has been completely ignored by those who lament the institution's passing, ascribing it exclusively to the Jesuits. They did indeed deal the final blow, but I believe that the collapse of the link to Seville ranks as an important cause for the barrier to Spanish advance in science.

CONCLUSIONS

In response to demands for improving the nautical link with the New World, the first public lay institution in Europe for science and technology came into being in Seville. Its success made a routine of adventure. This was the achievement of the cosmographers who staffed the scientific offices of the Casa de Contratación and who advised the Consejo and the crown. Their accomplishments have so far been assessed with respect to the individual contributions to various scientific disciplines which constitute a most obvious "blunted impact" on European scientific thought by the naval link of the Iberian empires.

But if one looks to history for the answers "which the past gives to successive futures," in Leonard Krieger's words, then one is struck by the role which social experience played in this story. It influenced the choice of problems raised by the Discoveries and Conquests as well as the conditions for their solution. As Michael Baxandall in a recent book has called attention to the social experience of painters in fifteenth-century Italy to explain its bearing upon style and therefore a vital aspect of art, so can the nature and role of successive forums for science, created in response to the demands of the maritime link with the New World, shed light on two problems which are newly with us: the role of social restraint in shaping the physical sciences, and in evolving the scientific professions.

NOTES

1. The current state of research on the subject is best reflected in the following publications: Boletim internacional de bibliografia luso-brasileira, Fundação Calouste Gulbenkian (Lisbon), "Bibliographie des grandes routes maritimes," which from vol. 9:2 (1968) to vol. 14:1 (1973) covers the nautical literatures of Germany, Denmark, France, Poland, USA, Spain, Greece, Great Britain; Recueils de la Société Jean Bodin pour l'histoire comparative des institutions (23 vols. Brussels 1972); Publications of the Agrupamento de estudos de cartografia, Junta de investigações do Ultramar (Lisbon: Série separata, irregularly since 1961, over 80 articles by now; Série memórias, since 1963; Armando Cortesão, Cartografia e cartógrafos portugueses dos séculos XV e XVI (2 vols. Lisbon 1935); Armando


7. For instance, John D. Bernal showed “how a conclusive result could be obtained from a number of individually inconclusive observations.” See J. C. Crowther, “John Desmond Bernal, An Appreciation,” *New Scientist* 51:770 (1971) 666, quoting Sir Lawrence Bragg about the “peculiar genius of Bernal in the strategy of science.” Such possibilities were apparently visualized in the Spanish juntas.


11. Eventually examinations were sought in the Canary Islands (Archivo General de las Indias, Patronato 261, Ramo 10) by the Piloto Mayor del Juzgado de las Indias, Isla de las Palmas; and finally the Buenos Aires route was added as examination subject for the carrera.

12. Pulido Rubio (n. 8 above) 670, 679, 681, 682, Ch. iii.

13. *Recopilación de leyes de los reynos de las Indias* (4 vols. Madrid 1681) Ley III, Titulo XXIII, Libro LX strictly prohibits the sale of instruments and charts by the Pilot Major and cosmographers of the Casa. Since the aim of the legislation was, however, to promote creative work and not to stifle it, they were allowed to make globes, charts and instruments for sale outside of Seville, always barring the use of derrotas and other information reserved to the carrera, a nearly fatal restriction; Archivo General de Indias, Indiferente General, 1957, Libro IV fol. 241V, 4 Dec. 1591.

14. Domingo de Villaroel was the last of the foreign cosmographers at the Casa. He settled down to live with a Florentine colleague in Bordeaux where he did a thriving business in the sale of instruments and charts which he designed. Pulido Rubio (n. 8 above) 693-694. The problem of the contribution of foreigners to the work of the Casa is a major topic which I am still working out. Considering the feelings of mutual dislike, an instruction by the Spanish king that Portuguese pilots teach Spaniards in 1612 shows the desperate situation in Spain. I find a number of foreign cosmographers working throughout the Habsburg regime, usually on royal commissions, but no longer named to the offices in either the Casa or the Consejo. José Frazão de Vasconcelos, *Subsidios para a história da carreira da Índia no tempo dos Filipes* (Lisbon 1960) 9.


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17. José Veitia Linaje, Norte de la contratación de las Indias occidentales (Seville 1672; Buenos Aires 1945) Lib. ii, Cap. xii, 9.
20. He also furnished the room of the Cátedra in the Alcázar with three large tables, one small one, and three benches. Arch. Gen. Indias, Patronato, 262, Ramo 2, Céspedes, contains the whole list of his expenses and activities.
23. One aspect of special interest to me which this paper gives me no chance to explore is the relationship between the method of description and representation of intent. In the arts and philosophy this problem is of current interest. With respect to geography see H. C. Darby, “The Problem of Geographical Description,” The Institute of British Geographers, Transactions and Papers 30 (1962) 1-14. M. Salmon, “Representation and Intention in Art,” paper read to the Philosophical Society of Philadelphia (Oct. 1974), to be published in the Philosophical Quarterly, discusses Nelson Goodman’s Languages of Art (Indianapolis 1968) and his critic Paul Ziff in Philosophical Review 80 (1971) 509-515; see also Ernst H. Gombrich, Meditations on a Hobby Horse (London 1963), especially “Expression and Communication,” 56-70.
24. The scattered information concerning the academy is still being assembled. I have not found any modern work on it. Interest in the academies of the sixteenth century has concentrated on Italy, France, and England, while Spain would bear out points made by these investigations and would strengthen the argument of the need for liaison between the artisan-artist engineers and the courtiers. See Joseph Ben-David, “The Scientific Role: The Conditions of its Establishment in Europe,” Minerva 4 (1965) 15-54, bibliographical note 52.
For the institution see: José Augusto Sánchez Pérez, Las matemáticas en la Biblioteca del Escorial (Madrid 1929). Most important for the nautical aspects of the story: Navarrete, Obras (n. 10 above) 3.355-388; José Fernández Montaña, Felipe II el Prudente, rey de España, en relación con artes y artistas, con ciencias y sabios (Madrid 1912) 341, gives a cedula of 31 January 1584 addressed to Diego Corzana, paymaster of the Alcázar of Madrid, to pay 22,500 maravedis to the “rectora y Beatas de Santa Catalina de Sera” for the rent of a house “which has been taken for us, located in la Puerta de Balnado where mathematics are taught.” In the following pages appear documents concerning individual mathematicians and cosmographers.
25. George Kubler, Portuguese Plain Architecture: Between Spices and Diamonds, 1521-1706 (Middletown, Conn. 1972). See also Cortesão, Cartografia (n. 1 above) 294-356, and Francisco Marques de Sousa Viterbo, Trabalhos náuticos dos portugueses nos séculos XVI e XVII (2 vols. Lisbon 1898-1900); Picatoste and Navarrete also have short biographies.
who became cronista mayor de las Indias in 1658, was a student of Juan Cedillo Diaz when he made the “new Nautical and Geographic plan for the use of navigation.” León Pinelo himself wrote on the problem of longitude and compiled writings he referred to as “Oceano Universal,” among other titles. These manuscripts have not been published nor have they survived intact. Antonio León Pinelo, El gran cancler de las Indias, ed. Guillermo Lohmann Villena (Seville 1953) Ch. v, especially cxxxviii-cxxxix.

27. Agustín González de Amezúa, Andanzas y meditaciones de un procurador castellano en las Cortes de Madrid de 1592-1598 (Madrid 1945) 143. Ginés de Rocamora y Torrano, Sphera del Universo (Madrid 1599) is marked “Vendese en el Palacio.” It contains a dedicative sonnet to the author by Lope de Vega.


30. The Itinerario of Escalante survives in various manuscripts. The Museo Naval has the maps which were drawn for it. Admiral Julio Guillén had planned to publish an edition of this great work which has been printed from an uncorrected copy by Fernández Duro in Disquisiciones Náuticas 5 (Madrid 1880) 415-515.

The policy of secrecy could be absurdly counterproductive as when the biography of a religious who worked in the Philippines contained a “roteiro” of her voyage. The book, Perfecta religiosa . . . la vida de la Madre Gerónima de la Asunción . . . , was printed in Puebla, Mexico in 1662. The Council of the Indies ordered that the roteiro and description of Manila be deleted from the copies remaining for sale. The result was that the printed pages were sold as a separate booklet and without the burden of the life of the “perfecta religiosa.” Ursula Lamb, “Some Books Relating to Colonial Latin America,” The Yale University Library Gazette 42 (1967) 19.

31. The continued interest of data from the carrera for scientists and cosmographers is proven by the work of Pedro Porter, who wrote extensively on problems of longitude, stellar observations and instruments. He sailed as admiral of the Indies fleet. He and Ruesta found their audience in Madrid and not in Seville. For documentation, Museo Naval, MS 119; Navarrete (n. 10 above) 3.3; Pedro Porter y Casanate, Reparo a errores da la navegación española, ed. W. Michael Mathes (Madrid 1970). For an admirable summary see Ricardo del Arco, “El Almirante Pedro Porter y Casanate, explorador del Golfo de California,” Revista de Indias 8 (1947) 783-844.


33. Michael Baxandall, Painting and Experience in Fifteenth Century Italy (Oxford 1972).

34. For a general orientation to this topic in the literature about the rise of modern science, I refer the reader to Ben-David (n. 24 above). I am aware of the controversy over the importance, or lack of it, of nautical science in this respect.
Celestial Navigation: From Local Systems to a Global Conception

by Francis M. Rogers

At the dawn of the age of maritime discovery, Europe’s high-seas navigators possessed a complicated and often confusing view of the heavens and a decidedly restricted knowledge of the earth. The heavens, for late medieval man, consisted of a series of concentric spheres enveloping an inner sphere of earth. Writers eventually settled on 11 outer spheres and recognized that the ninth accounted for the precession of the equinoxes.¹ The earth was tripartite and T-shaped, consisting of Europa, Asia, and Africa enclosing the Mediterranean Sea and surrounded by Ocean.²

The late medieval Europeans who navigated out of sight of land worked within local systems. One was the Norsemen’s track westward which took advantage of relatively close checkpoints. Another followed the length and breadth of the Mediterranean. The third and most recent was the southbound coasting of Portuguese pioneers along Africa followed by wide high-seas sweeps to westward, northward, and finally eastward for the return. These European systems were presumably independent of other systems, notably that of the Arabs in the Indian Ocean and that of the Polynesians in the Pacific.

In all three of the European situations navigators accumulated knowledge of local winds and currents, flotsam and jetsam, movement
of birds (including the famous three Scandinavian falcons) and marine
life, cloud formations, and all the other items of which a skilled piloto
instinctively takes cognizance. The one set of accumulations, however,
had little or no application in the other two situations, but a special
technique was necessarily common to all three, or at least to the two in
the Atlantic. This technique consisted of celestial observations for
knowledge of latitude, although scholars continue to disagree on the
interpretation of a mid-fifteenth century text concerning the application
of this technique in the Mediterranean.

Late in 1451 Princess Leonor of Portugal set sail from Lisbon on a
journey to Leghorn. In Siena she met her spouse, Holy Roman Emperor­
elect Frederick III. Pope Nicholas V crowned the pair emperor and
empress on 19 March 1452. A participant in the sea passage affirmed
that the ships of the fleet were in the charge of captains who were
experts in naval warfare, and masters, and helmsmen, and professional
astrologers who were well trained in the matter of courses determined
from stars and pole:

Nauibus vero omnibus pro comituia ordinatis, et singulis necessariis, bom­
bardis, buxidibus, fundis, basilistis. Pro usu et defensione aptis, etiam
capitaneis, armigeris in bellicis actibus et maxime in mari expertis, ac
patronis, gubernatoribus nauium, et magistris astrologis, iuxta stellas et
polum viarum bene doctis. . . .

Aside from the reminder that astrologers and astronomers were one and
the same breed (which came to include celestial navigators), the text
does contain the strong suggestion that Polaris sights were being used
for determination of latitude. Some Portuguese, however, prefer to
believe that the astrologers were either pinpointing the celestial North
Pole for use as a guide in maintaining course or else were using the
Guards of the Little Dipper in conjunction with Polaris in order to tell
time at night.

The pre-Columbian European’s direct knowledge of the heavens, of
course, was limited to the northern hemisphere plus that portion of the
southern which he would observe from his southernmost latitude. And
Dante’s “quattro stelle” (Purgatory I, 23) did not refer to the Southern
Cross, but are probably a symbol of the cardinal virtues.

Suddenly Portuguese and Spanish navigators began to open up the
etire earth to fellow Latin Christians, and also new skies. In the
presence of Pope Innocent VIII in 1485, Vasco Fernandes de Lucena said
that the Portuguese had already provided Europe with “new provinces,
new kingdoms, new islands, and, as it were, new and unknown
worlds.” In 1537 the proud Portuguese Cosmographer Major Pedro
Nunes could extend the description: "new islands, new lands, new seas, new peoples, and, what is more, a new sky, new stars." 6 Decades later Luís de Camôes in Os Lusiadas compressed the description into a single verse (V. iv. 3): "We saw the new isles and the climates new" (As nouas Ilhas vendo, e os nouos ares). 7

Before Columbus' return in 1493 Europeans guided their ships planely and afterwards spherically, just as now transcontinental airplanes are passing from plane to spherical navigation. For centuries prior to Columbus, however, architects of the Moslem world had already been "orienting" their mosques toward Mecca by the spherical trigonometry which the shipmen eventually employed. 8 Moreover, an occasional late medieval traveler did possess an all-encompassing terrestrial-celestial global view. Thus, the literary Sir John Mandeville could write glibly of having traveled to 62°10' N and to 33°16' S, a total of 95°26', "four score and fifteen degrees and near half a degree," which is "four score and four degrees and more than half a degree" short of having traversed the full 180° of earth's latitude. 9

Many participants in this conference who flew to Los Angeles were navigated by a chart crisscrossed by magnetic rhumb lines connecting radio waypoints called VOR's (Very high frequency OmniRanges). Figure 123 shows a portion of a U.S. Government flight information

Figure 123.
publication dated 29 April 1971. This air navigation chart bears striking resemblances to the portolan charts of old—to, for example, the Portuguese chart of 1492 by Jorge Aguiar now at Yale. Other participants from distant continental points, however, flew to California in a 747, or possibly in a specially equipped DC-10. Their planes were navigated by the Inertial Navigation System (INS).

The 1974 chart (fig. 124) differs from that of 1971 in having the geographical coordinates of VOR’s and checkpoints included along with the respective designations and frequencies. The difference in the charts can serve to illustrate a major difference between pre- and post-Columbian navigation. Or, to put the matter more accurately, INS represents the end-product of the impulse given by the revealing of the New World of the Americas to Europe.

After 1493, Europeans in general became more sphere-minded. King Manuel of Portugal adopted the armillary sphere as his symbol, and the sphere is still on his country’s flag. Old treatises on the sphere were translated into vernacular languages, new ones were written, and both old and new were often reprinted. A depiction of an armillary sphere was included on the title page of Martín Fernández de Enciso’s Suma de geographia (Seville 1519).
Europeans became conscious of latitude, and also of longitude with the associated problem of a prime meridian, and of latitude difference and departure. (Departure in Portuguese is known as *apartamento*, in Spanish as *apartamiento*.) Sooner or later they were bound to become concerned with the conversion of departure into longitude difference (DLo) and vice versa. Fairly rapidly they confronted the problem of depicting a sphere, or a portion thereof, on a flat surface. Mercator’s famous map of 1569, however grotesquely it distorted reality, represented a practical solution.

Along with the interest in spheres in general and the infinitely more complete view of the terrestrial sphere came a practical revision of the heavens. The terrestrial sphere was now considered to be enveloped by a single sphere alone, the celestial, with which it was interlocked. This conception of two interlocking spheres made the practice of celestial navigation possible on a global basis, for to the navigator all heavenly bodies, whether fixed stars, sun, planets, or moon, are of the same species. They are equidistant although of different magnitudes.¹²

Marine navigators eventually, and air navigators from the beginning, used a “navigational triangle” whose vertices were on earth as they were in heaven (either terrestrial or elevated pole, assumed position of observer down here, observed body up there), one, however, which they envisioned as either all on earth (pole, assumed position of observer, and geographical position of body) or all in heaven (elevated pole, observer’s zenith, and celestial body); see fig. 125.¹³
With his new conception revised in practice, man was freed of landbound shackles, free to wander over the entire globe. Still today, the navigator who is equipped only with that classic ensemble consisting of (1) hand-held or periscope sextant, (2) hand-wound chronometer or battery-powered watch, (3) nautical almanac, (4) chart and chart tools, and (5) sight reduction tables or Hewlett-Packard calculator can roam the seven seas and all the skies independent of the shore installations of national governments, even of the sources of radio time signals.  

After 1492, man was no longer the prisoner of a local navigational system. He could go anywhere, north or south latitude, east or west longitude (whatever the prime meridian he selected). In our post-1884 terms Columbus operated within the single quadrant of latitude N - longitude W, but Vasco da Gama in his daring journey from Santiago in the Cape Verde Islands to what came to be known as Saint Helena Bay in southwestern Africa covered LN - λW, LS - λW, and LS - λE. Gama went under the sun, across the Line, beyond the Tropic of Capricorn, and returned.

The matter of a suitable system of geographical coordinates immediately became cogent. Ptolemy had run his prime meridian through Ferro (or Hierro, the westernmost of the Canary Islands) and counted his longitude in an eastward direction only, across the Eurasian land mass. His system of meridians was obviously of no utility for Atlantic and Pacific navigation. In the absence of an appropriate papal bull, each nation naturally selected its own 0°. Not until 1884 was Greenwich generally adopted.

The navigators of Vasco da Gama’s fleet had available a remarkable tool, excerpts from which, combined with thorough knowledge of a precise routine, they presumably carried with them. The tool was the Latin edition printed in Leiria, Portugal, in 1496, of the perpetual almanac made by astrologer Abraham ben Samuel Zacut and based on the root year which extended from 1 March 1473 through 28 February 1474. Supplied with only three of Zacut’s tables and the precise routine, a piloto could determine, mechanically and routinely, the declination of the sun at high noon (presumably calculated for the moment of high noon in Iberia) for any day between 1473-74 and 1612-13. An astrologer could also use the almanac for the same purpose for 136 years prior to 1473-74. Such a declination, of course, is independent of the navigator’s latitude and also, in the pre-modern era of relatively imprecise shipboard celestial observations, independent of his longitude.

I have worked out the HP-45 program for the Zacut routine (see Appendix II); figures 126, 127, and 128 reproduce (by permission of the Harvard College Library) the only pages from the perpetual almanac required for the example given.
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Once again I wish to express my disagreement with those scholars, Portuguese and others, who claim that Zacut's almanac was too erudite for the ignorant pilotos. Navigators, as Professor Ursula Lamb's book makes abundantly clear, were not ignorant. They were able; and they were intellectually curious, as present-day marine navigators and airline pilots continue to be. The impulse to navigation given in 1492-93 led to a long evolution, which in turn led to the "Inertial Navigation System" and to outer space.

APPENDIX I

Another aspect of the post-Columbian impulse on navigation involved the teaching of the subject. It is precisely in an area of double teaching that I find Medina's Libro de cosmographía most interesting: in the treatise, a cosmographo fields imagined questions from two interlocutors, a university graduate referred to as a licenciado (in other words, the educated public of the day) and a practicing high-seas navigator called a piloto (that is, a graduate student). The book subdivides very neatly according to questioner:

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<td>Sections 8-18</td>
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<tr>
<td>Licenciado</td>
<td>Sections 19-24</td>
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<tr>
<td>Piloto II</td>
<td>Sections 25-27</td>
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<tr>
<td>Licenciado</td>
<td>Sections 28-53</td>
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<tr>
<td>Piloto III</td>
<td>Sections 54-56</td>
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<tr>
<td>Licenciado</td>
<td>Section 57-63</td>
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<tr>
<td>Piloto IV</td>
<td>Sections 64-68</td>
</tr>
<tr>
<td>Licenciado</td>
<td>Section 69-81</td>
</tr>
<tr>
<td>Piloto V</td>
<td>Section 82</td>
</tr>
</tbody>
</table>

It is significant that the navigator asks the last question and remarkable that ten of the work's 11 diagrams or figures illustrate answers to the navigator and not to the man-about-town.
The licenciado's questions are traditional and banal and receive corresponding replies. For example, his query about gravity (Section 71) elicits from Medina the hoary tale of the suspension in air among lode-stones of Mohammed's tomb in Arabia: "la tierra no se puede mouer ni arriba ni abaxo ni a ninguna parte a semejança de lo que se dize de la sepoltura de mahoma ques de hierro cercada de piedra yman y la virtud natural de las piedras sostienenla en el ayre." Ludovico de Varthema had laid that ghost to rest in 1510.20

The five sets of navigational questions, on the other hand, are of an entirely different nature, and so are the replies. This piloto already knows his profession: (1) how to tell time at night by the position of the Guards (Kochab and γ Ursae Minoris) with respect to Polaris (α Urs Min); (2) how to determine latitude by an observation of Polaris using the plus or minus correction provided by the position of the Guards; (3) how to determine latitude by a meridian altitude of the sun using declination provided by an almanac; (4) how to advance the ship's position on a chart by dead reckoning, that is, by determining latitude and longitude of point of arrival from course steered and distance made good, and vice versa; and (5) how to determine the state of the tide at a given port.

Nowhere does Medina explain the basics of these techniques, for the piloto already knew them and the licenciado had no interest in them. What the piloto was in search of was clarification—not really theory—concerning certain aspects of the techniques. His questions concern or impinge on the very topics which often confuse modern navigators:

- **Piloto I**: poles, Guards, time, Polaris correction; circles, horizon, equator, tropics, zodiac;
- **Piloto II**: shadows; interrelationship of declination, zenith distance (sombra), and latitude;
- **Piloto III**: wind and directions, length of a degree of longitude, departure and longitude difference;
- **Piloto IV**: tides, salinity, proof of curvature of the sea's surface; steering by azimuth of the sun in lieu of a compass;
- **Piloto V**: courses to be steered (derrotas) as determined from the rhumb lines (rumbos) drawn on charts.

Medina took familiarity with the techniques for granted. Take, for example, the matter of the Polaris correction. The piloto has been taught that, when the Guards are to the left (west) and on a level with Polaris—in the skyman's right arm—he should subtract 1°5 from the observed altitude of Polaris. He knows, also, that if the Guards are halfway between the right arm and the feet he should subtract 3°5. But, he wonders, what has all this to do with the direction which the north celestial pole bears from Polaris, or vice versa? He asks the cosmographo
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(Section 11): “Pues los polos no se veen Como se sabra el Runbo en ésta có el estrella del norte.” The teacher explains that in this circum-polar situation Polaris leads the Guards by 20 rhumb lines (“Pues mirando en los treynta y dos vientos de la nauegacion hallarsea que sienpre el estrella del norte va 20 [correction in the MS for tres] Runbos a delante del Runbo en élas guardas estouieren’’). Thus, if the Guards are to the NE, Polaris lies S by W (“sur quarta al sudueste”), counting both NE and S by W to obtain the 20.

Take the altitude of the north celestial pole above the back horizon, supposedly the same angle as the latitude as obtained by an observation of the sun made by facing the opposite horizon. By making a rough diagram one may render the explanation obvious: it involves counting twice the angle zenith—center of earth—north celestial pole. But the unfortunate piloto could not visualize the reason. He draws the cosmographo out concerning the two poles, the arctic and antarctic circles, and the tropics of Cancer and Capricorn. The teacher tries to explain that, if you are under the arctic circle and look north over the North Pole and down the back side of the earth to your celestial horizon—not sea horizon—the horizon will coincide with the tropic of Cancer. Conversely, if you turn around, face south, and look down over the tropic of Cancer and the celestial equator to your celestial horizon in that direction, the horizon will coincide with the tropic of Capricorn. Therefore, on the arctic circle you will see the sun during the full 24 hours of one day a year, the day of the summer solstice.
APPENDIX II

HP-45 Program for Declination from Zacut’s *Almanach perpetuum* (1496)

Example: 20 October 1497, Julian Calendar

Press:

ON

FIX 4

[year]

ENTER ↑

1472

–

4

÷

[whole number of x]

STO

1

–

4

X

See displayed:

0.00

0.0000

1497.0000

1472.0000

4.

6.2500

6.

6.0000

0.2500

4.

1.0000

Consult *Tabula prima, secunda, tertia, or quarta solis* as indicated, 0.0000 indicating *Tabula quarta.* (fig. 127)

[D.MS for day (Dies) from *Tabula prima, secunda, tertia, or quarta solis*] 6.1149

gold D.MS→

STO 6.1969

2 [number of sign of zodiac for day from same *Tabula, 0 for Aries, 1 for Taurus, 2 for Gemini, etc.*] 7.

STO 3

RCL 7.0000

1 6.0000
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|   | 20 | 20 | 30 | 20 | 50 | 50 | 40 | 40 | 30 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Z:abo(a pzima folio CUt9 rGdi,t eGnno I4 73 |

Figure 126.

Tabula prima solis.
Consult *Tabula equationis solis* for this number of *reuelutiones*. (fig. 128)

[D.MS for *reuo*]

```
+ 1036
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gold

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D.MS→
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RCL
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2
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+ 0.1767
```

```
STO
```

```
4
```

This is the *lugar do sol* or λ.

[whole number of x]

```
STO
```

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5
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1
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```
+ 6.0000
```

```
STO
```

```
6
```

```
RCL
```

```
3 7.0000
```

Consult *Tabula declinationis planetarum & solis ab equinotiali* under or above this number, which indicates sign of zodiac. (fig. 128)

```
RCL
```

```
5 6.0000
```

Consult *Tabula declinationis* . . . opposite this number of degrees (gdo).

[D.M from *Tabula declinationis* . . .]

```
+ 13.35
```

gold

```
D.MS→
```

```
STO
```

```
7
```

```
RCL
```

```
6 7.0000
```

Consult *Tabula declinationis* . . . opposite this number of degrees (gdo).

```
CLx
```

```
R↓ 0.0000
```

```
[D.M from *Tabula declinationis* . . .]
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```
+ 13.55
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gold

```
D.MS→
```

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RCL
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```
3 13.9167
```

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698
```

```
RCL
```

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3 7.0000
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Consult *Tabula declinationis* . . . opposite this number of degrees (gdo).
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### Residuum tabulæ prime Solis

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Figure 127.
Residuum tabulæ primæ solis.

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The example chosen to exemplify the above program, namely, 20 October (Julian) 1497, represents the day on which Gama reached his southernmost point (35° 00' S, 0° 00') and changed course from 104° true to 080° true, according to my reconstruction of the journey.

Two checks on Zacut’s celestial longitude (λ), namely, 6° 22' 25” into Scorpius or 216° 22' 25”, are available.

A rough check is given in Stahlman and Gingerich’s Solar and Planetary Longitudes,²¹ which gives λ with an accuracy of ±1° for every ten days. Its λ for the sun on 20 October 1497 is 216°.

An accurate check is provided by Bryant Tuckerman’s Planetary,
Figure 128.

Tabula declinationis. Tabula equationis.

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Lunar, and Solar Positions, which gives λ to two decimal places for every ten days. Its λ of the sun for the day in question is 216°50. As Zacut’s in decimal degrees amounts to 216°37°36, there is a discrepancy. This difference may be largely explained by the fact that Tuckerman’s positions were computed for 7 p.m. Babylon/Baghdad time. As such time is −3 in relation to GMT (or to Salamanca’s time), this time is 1600 GMT.

Two declinations may be calculated very quickly using a classic formula:

\[ \sin d = \varepsilon \sin \lambda. \]

in which \( \varepsilon \) is the obliquity of the ecliptic (23° 33’ for Zacut). They are as follows:

<table>
<thead>
<tr>
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<th>1600 GMT 216°50</th>
<th>d -13.75 or 13° 44’ 54” S,</th>
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</thead>
<tbody>
<tr>
<td>Tuckerman</td>
<td>1200 GMT 216°37</td>
<td>d -13.71 or 13° 42’ 20” S.</td>
</tr>
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</table>

According to this evidence, the sun’s declination (d) increased by 2°5 between 1200 and 1600 GMT. Between the same hours on the afternoon of 30 October (Gregorian) 1974, according to The Nautical Almanac, it increased by 3°3.

The discrepancy between Zacut’s d as produced by the classic formula (13° 42’ 20”) and that produced by the HP-45 (13° 42’ 28”) is due in part to the fact that the latter’s program uses a linear interpolation between the d’s for the two whole degrees of λ, in part to the fact that Zacut’s two d’s represent rounded quantities.

It is of interest to note that Sherman Rigby has recently published a program for sight reduction (to obtain Hc and Zn) by use of the less sophisticated HP-35.23

NOTES


2. For an example of the T, see John Parker, On the Circle of Lands, published for the Associates of the James Ford Bell Library (Minneapolis 1972). His reproduction is of “the earliest map of any kind to appear in a printed book,” the book being the first edition of Isidore of Seville’s Etymologiae ([Augsburg] 1472). See also Hildegar B. Johnson’s reproduction of a T-map with “Flumen Tanai” running across it from left to right, that is north to south (fig. 91).

3. Review of Oliveira Marques, Daily Life in Portugal in the Late Middle Ages, in Speculum 49 (1974) 130-135. In this review I hazarded the suggestion that the crowning may have been related to the crowning of the many queens at Pentecost among the Portuguese and their descendants in California.


5. The Obedience of a King of Portugal, trans. Francis M. Rogers (Minneapolis 1958) [29] and 45. The Latin reads: “nouas prouintias noua regna nouas insulas et quasi nouos et incognitos orbes.”
Celestial Navigation: From Local Systems to a Global Conception


The pilots of the VOR-navigated planes and pre-Columbian high-seas navigators were in general little concerned with sphericity. They were flat men, straight-line men. Indeed, in this limited sense it is probably correct to conclude that Columbus acted as if the earth were flat, although he knew better. The pilots of the transcontinental DC-8's, and the 707's and 727's as well, navigate as if the United States were flat: such navigation is nerve-racking for the pilots and costly for the owners, for it involves anything but the shortest track between terminals.

11. Essentially, INS, a dead-reckoning device par excellence, keeps track of the plane's position by measuring changes in aircraft acceleration with respect to inertial space. Knowing latitude and longitude of plane's present position, the cockpit computer, loaded with latitude and longitude of next waypoint along the route and knowing present true heading from the inertial system itself, quickly and constantly determines great-circle distance to the next waypoint, initial great-circle course, and a number of other data. The INS instructs the autopilot which heading to fly, and the autopilot keeps the plane on course.

12. The finest portrayal of the interlocking of the two spheres with which I am acquainted is the _Planisfero Urano-Geo-Grafico_ designed by Luigi Patella (Florence 1969).

13. H. O. Pub. No. 9, that is _American Practical Navigator: An Epitome of Navigation Originally by Nathaniel Bowditch, LL.D._ (Washington 1966) 393. Fig. 125 is H. O. 9's Figure 1433b.

14. I should like to lodge a formal protest with the U. S. Government. I have recently purchased H. O. Pub. No. 249, Vol. 1, _Sight Reduction Tables for Air Navigation (Selected Stars)_ , Epoch 1975.0. Prior to 10 July 1962, this and other official nautical publications were issued by what was known as the U. S. Navy's "Hydrographic Office," an accepted and inoffensive name. My editions of H. O. 249, Vol. 1, for Epochs 1965.0 and 1970.0, were issued by the "U. S. Naval Oceanographic Office," a less good name because more naval. I was disturbed to discover that the new edition is issued by the "Defense Mapping Agency Hydrographic Center," not only an awkward but a decidedly militaristic name which is bound to be offensive to the peace-loving and internationally-minded navigators of other nations.

15. The matter of an appropriate prime meridian was debated at length and with passion at a famous international conference held in Washington in 1884. I recommend reading the protocols of the proceedings, usually catalogued under International Meridian Conference, Washington, D. C. 1884. The volume, which merits a re-edition, is entitled _International Conference Held at Washington for the Purpose of Fixing a Prime Meridian and a Universal Day. October, 1884. Protocols of the Proceedings_ (Washington 1884).

16. For a reconstruction of Gama's leg from Santiago to Saint Helena Bay, see Francis M. Rogers, "The Skies of Vasco da Gama: Planetarium Script as Epic Commentary," _Garcia de Orta, Número especial comemorativo do 4.0 centenário da publicação de "Os Lusíadas"_ (1972) 439-480. Appendix II to the present paper is dependent upon this article.

17. The Alexandrian's arrangement is clearly depicted on the world map of the edition of his _Geographia_ printed in Ulm in 1482. A magnificent reproduction of the map is available at the Henry E. Huntington Library and Art Gallery in San Marino, Calif.

18. That Zacut, originally from Salamanca, was an astrologer the sixteenth-century
The New Geography


Part IX

THE MOVEMENT OF PEOPLE
The Mixing of Populations

by Woodrow Borah

The voyages of Columbus set in motion substantial migrations of people across the Atlantic to America—later the Pacific as well—and the mixing in the New World of the races of mankind. Both occurred on a scale never previously witnessed; both continue. We shall be concerned first with establishing briefly the dimensions of migration and ethnic mixture in America down to 1700, and second with exploring the reactions and policies of European governments and societies both toward emigration and toward the mixing of peoples.

First, migration to America. Even determining the number of inhabitants in each realm in the sixteenth and seventeenth centuries requires a complicated estimate based upon indirect and fragmentary evidence, subject always to difficulties in the piecing out of data and the application of corrective factors. Emigration was sometimes restricted, but often not, and the requirement of a license was easily avoided. Departure under contract would often be recorded, as in the Iberian peninsula and France, but often not, as in the British Isles. Entry into America was sometimes recorded, as in allocations of Virginia land, but sometimes not. Clearly the work of a historical demographer is not simple.¹

Migration to the New World was not merely a matter of transit and settlement. Crossing the Atlantic was a difficult, lengthy affair, attended
The Movement of People

with much hardship and considerable risk to one's life. Transportation and settlement could be equally costly in lives. The tropical lowlands quickly became havens for diseases, native to both the New World and the Old, which killed most of the immigrants before they could procreate the next generation. The Caribbean and the lowlands of Brazil were particularly lethal. Even the relatively healthful Anglo- and Franco-American mainland of North America proved highly destructive to life in the first decades of settlement. Accordingly, any estimate of migration must make allowance for heavy loss during transit and settlement. Perhaps less significant was the return movement of officials, businessmen, and either successful or disappointed emigrants and their children to the home country.

All of these caveats understood, we may survey the present state of knowledge and speculation on migration, free and forced, to the New World in the years 1492-1700. Thanks to the patience of Peter Boyd-Bowman, we have an estimate of European emigration to Spanish America during the years 1492-1600. He sets the total at 200,000, the overwhelming majority of them coming from Spain, but with a sprinkling of people from the rest of Western and Central Europe and even from the Levant.\(^2\) Apparently, however, he did not allow for losses during transit and settlement: we may therefore adjust his figures to 300,000. In the seventeenth century emigration from Spanish dominions continued and probably accelerated. We may follow Antonio Dominguez Ortiz in setting it at 450,000 for he century.\(^3\) A total of perhaps 750,000 thus emigrated in about 200 years, or approximately 3,750 a year—say, under 4,000—from a population that averaged eight million. For Portuguese America, we have almost no information. Roberto Simonsen estimated that in 1600 the population of Brazil, Indians excepted, was roughly 100,000, of whom 30,000 were Europeans and 70,000 Negroes and various mixtures. For 1700 he estimates an overall non-Indian population of 300,000.\(^4\) If the same proportions held true, there were approximately 200,000 people of predominantly Negro stock and 100,000 of Portuguese stock and mixtures adhering to Portuguese culture. Dutchmen, Jews, and an assortment of other peoples from Europe had come and gone, leaving relatively little demographic residue.\(^5\) To establish the 100,000 people of Portuguese stock and culture over the course of two centuries, even with a high rate of loss, 500 immigrants a year would have been sufficient. They came from a home population of from one to two millions.\(^6\)

Emigration from the other European countries is somewhat simpler to estimate since it occurred almost entirely in the seventeenth century. For the British Isles, Carl Bridenbaugh has estimated recently that in the years 1620-42 some 58,000 English went to America;\(^7\) he points also to the importance of the Irish in the settlement of the Caribbean.\(^8\) Thomas
Wertenbaker, on the basis of the land registers of Virginia, finds a steady migration of 1,500 to 2,000 a year to that colony alone from the 1630's to the end of the century, in the entire century a total of more than 100,000 persons, almost all English with slight admixture of Irish, Scots, French, and Germans. In 1700 the Anglo-American mainland colonies now incorporated in the United States are estimated to have had a population, excluding Indians, of approximately 250,000, of whom under 30,000 were Negroes. The English Caribbean at the same date is estimated to have had a population of roughly 200,000, of whom 50,000 at most were Europeans and 150,000 Negroes. Thus, Anglo-America in 1700 had perhaps 270,000 people of European stock. We may estimate a total migration, with allowance for a very heavy death toll in the Caribbean at all times and in the early years of other colonies, of perhaps 500,000 people, predominantly English, Welsh, and Irish but with some Scots and with a slight Dutch, German, French, and Scandinavian admixture. During these 70 years of substantial emigration, this comes to an average of roughly 7,000 a year from a population for the whole of the British Isles of approximately 7,000,000.

For the French our information is better since many departures, and almost all of the *engagés* or indentured servants, were recorded by notaries. Gabriel Debien has studied the records for La Rochelle, which drew emigrants primarily from the west-central area of France. For the period 1640-1715 he has found some 4,800 *engagés* bound for the French Antilles, 928 for Canada, and some hundreds for other areas, in all 6,200. Since emigration began before 1640 with some thousands of settlers, Debien’s estimates must be adjusted for those years. Though his period extends to 1715, we may ignore the war years 1701-13, which saw few departures. Debien finds that French emigration went approximately 80% to the Caribbean and 20% to Canada. A well-based estimate asserts that about 10,000 French migrated to Canada, of whom approximately half went before 1700. If we extend the proportions for La Rochelle to all of France and estimate that La Rochelle furnished 16% of total French emigration to America, we come to 37,200, which—with allowance for emigration before 1640 and for people not registered before notaries, such as the well-to-do, *forçats*, and others—would rise to perhaps 45,000. Spread over 75 years, that total yields an annual average of 600 from a realm of approximately 20 million people. From other countries in seventeenth-century Europe, we encounter numbers so negligible that we may ignore them.

Finally, we come to African migration, all of it forced under the condition of slavery. Philip Curtin puts the number of Negroes transported to Spanish America in the sixteenth century at 75,000; to Brazil at 50,000: a total of 125,000. For the seventeenth century, he estimates a total of 1,316,000, divided as follows: Spanish America, 292,500; Portu-
The Movement of People

guese America, 560,000; the British Caribbean, 263,700; the French Caribbean, 155,800; the Dutch Caribbean, 40,000; and the Danish Caribbean, 4,000.\textsuperscript{15} He has no estimate for the Anglo-American mainland, but we may add 5,000 to create the perhaps 27,000 Negroes estimated for the mainland colonies in 1700. In all, close to 1,500,000 Negroes were transported from Africa across the Atlantic in the years 1492-1700. Losses during the voyage and in the tropical lowlands were frightful. In the two centuries that concern us here, forced migration from Africa somewhat exceeded 50% of the total migration from the Old World to the New, whereas migration from Europe was slightly less than 50%, but survival and differential advantage in reproduction considerably changed the proportions in the longer-term populations.

These movements of people brought about genetic mixing and cultural adjustments of considerable complexity. The most easily resolved problem was the mingling of people from various provinces of the same realm, not merely in intermarriage but also in matters of linguistic, cultural, and technological adjustment.\textsuperscript{16} The research of George Foster describes the process of selection among competing traits, such as choices of pronunciation and linguistic usage, or the preference for one form of wooden plow over others. Succeeding immigrants apparently accepted these decisions without much question.\textsuperscript{17} Somewhat less limited forms of mixing involved subjects from differing realms of the same crown, that is, from the various Habsburg realms or the countries of the British Isles, and the acceptance for settlement and interbreeding of people from all countries of Europe.\textsuperscript{18} At its widest the mixing of peoples meant cultural interchange and interbreeding among the races that found themselves in America—the vast reservoir of American Indians, the incoming Europeans and Africans, and in those centuries, even a few Asians. The result was a bewildering series of mixtures within a number of generations. This development, in turn, led to complex legislation regulating the status of the primary groups and their mixtures. In general, all Europeans became assimilated to a single preferred group, with much upward social movement. The taint of slavery relegated Negroes to the bottom level, followed officially by the Indians, though in practice the order was sometimes reversed. The mixed groups took an intermediate position: officially the mixture of European with Negro shared the taint of his slave ancestors, and the mixture of European with Indian was officially more favored. The lowest was the mixture of Negro with Indian. Generally, the greater the admixture of European blood the more favorable the status. In short, the elaborate system of racial discrimination associated with so many American lands came into existence.\textsuperscript{19} Its development, at least in theory, for Spanish America by the later eighteenth century may be seen
The Mixing of Populations

in the sets of paintings of racial mixture in Madrid, Vienna, and Mexico City, with their intricate distinctions.20

The Renaissance viewed America as the land of great wealth or of fantasy and romance. Columbus' letter announcing his discovery to the Catholic monarchs (4 March 1493) already praised the wealth of the new-found "islands" in glowing terms.21 That letter spread through Europe in many editions. Columbus himself and later writers developed the theme in widely circulated reports and books. One need merely recall the names of Cortés, Oviedo, Zárate, Benzoni, and many other writers whose works in Latin and the vernaculars caught the public imagination.22 Despite reports of hardships and failure by would-be conquerors and immigrants, despite the appalling toll of the voyages and the tropical lowlands, America continued to be regarded as the New World of opportunity, of easily available land, and in some areas, of noble domains and revenues. The writers of the Siglo de Oro continually depicted America as the land in which Spaniards easily acquired riches, and the indiano returning to Spain, dripping gold and diamonds, became a stock character.23 In the non-Hispanic world, which knew less of America and thought more about its mystery, the New World was remote, unknown—the locale for fantasy or the occasion for depicting imaginary worlds.24 So Sir Thomas More’s Utopia (1516) was linked to the voyages of Vespucci. Tommaso Campanella’s Civitas solis (1623) was placed in a region near the equator; and Francis Bacon’s New Atlantis (1627) in an even vaguer locale in the Pacific Ocean although the inhabitants there knew Spanish. A genre of writing and thought arose, aptly classed as exotisme, which used America as a locale. The American Indian was transformed from Stone Age peasant, hunter, and warrior into the Noble Savage.

Concomitant with this play of European imagination and self-criticism (the latter a fundamental reason for the elaboration of the Noble Savage as theme),25 there existed more matter-of-fact discussions of pressures at home, of the costs involved in emigration, and of possible benefits. For governments, gentlemen-adventurers (to use the seventeenth-century English term), and huestes conquistadores, the lure of America lay in the possibility of conquests and new realms, of loot, and of ample lands. For other folk—that is, for the peasants, artisans, sailors, townsfolk, schismatics, conversos, marranos, Jews, and political dissidents—the lure lay in release from persecution and pressure for conformity in the home country or, far more important in most migration, the chance to leave a squalid existence of hard work, little food, wretched housing, inadequate fuel and clothing in the European winters for continents with land, housing, and ample supplies of wood, food, and clothing, accompanied by a rise in social status.26 More complex
The Movement of People

were the thoughts of governments, statesmen, and writers on public policy—the tratadistas of Spain, for example—concerning the movement of population overseas.

As we have seen, the outflow to the New World, whatever its highs, lows, and eddies, removed negligible percentages of national populations in any one year. In general, however, social disruption by emigration was greater than the minuscule numbers would suggest, for it removed young adults in their years of greatest vigor; and in some provinces, most notably in southern and western Castile during the seventeenth century, it did noticeably drain population. The perception of emigration, however, far outran the reality, especially in Castile. In 1626 Pedro Fernández Navarrete, one of the ablest writers on public affairs of the period, asserted that more than 40,000 able-bodied people left Spain each year, of whom very few returned and even fewer helped to procreate and rear the next generation (to be sure, he held losses in wars and foreign captivity responsible, as well as emigration to the colonies). In 1742 José del Campillo, another well-known writer on political economy, estimated that an average ten to fourteen thousand persons emigrated each year from Spain to America. However excessive these estimates, they had some backing in more specific data and in the general knowledge that there was widespread fraud at the ports. A real cédula of 1604 complained that more than 600 women had left in the last fleet for New Spain although the crown had not licensed even 50. In 1634 Manuel de Hinojosa of the Council of Finance, who had gone to Cádiz for the dispatch of the fleet to South America, reported on his return that 12,000 people had embarked, some with a license, many without. Barely a third returned to Spain.

Discussion in Spain tended to concentrate upon unlicensed emigration on the theory that it drew off more people than the Spanish realms could afford, especially during the misfortunes of the mid-seventeenth century. It was politically more difficult to consider restricting or forbidding licensed emigration to what were sister realms of Castile. Nevertheless, the cortes did raise the matter in various forms. In the sessions of 1597 Martín de Porras asked that the king be petitioned to forbid emigration, except for clergy engaged in religious administration and lay officials in civil, “taking great care that no others go since those realms cannot be peopled without depopulating this.” In 1623 the question was raised in somewhat different form. Throughout the century writers either pointed to the need for immigration into Spain or denounced emigration as a major cause of depopulation. Among the most prominent were the Jesuit Father Juan de Mariana, Sancho de Moncada (1619), Pedro Fernández Navarrete (1626), Pellicer de Ossau (1639), and Diego Saavedra Fajardo. As Antonio Domínguez Ortiz
The Mixing of Populations

comments, "It would be superfluous to multiply the citations, because they are all in agreement about this point." Nevertheless, despite unanimity, in the end the Spanish crown continued granting licenses for emigration as in the past and did little to tighten enforcement of its regulations. The debate continued into the eighteenth century: as late as 1742 Campillo opposed emigration because it weakened the mother country. It was left to one of the foremost Spanish writers on economics, Gerónimo de Uztáriz, in his Teórica, y práctica de comercio, y de marina (first published in 1724 but far better known from the widely circulated and translated second edition of 1742), to declare roundly that emigration had little to do with Spain's depopulation, nor had the men and treasure spent in conquering and administering America anything to do with Spain's poverty, since the provinces which furnished the bulk of the emigrants were, on the whole, the most densely populated and most prosperous of Spain. Furthermore, he pointed out, the expenditures in men and treasure by England, France, and Holland on their colonial empires had greatly increased their wealth and power.

In Portugal the debate differed somewhat, since Brazil received relatively few immigrants, and among them were many sentenced to exile (the degredados). The country was glad to see these depart, and thought that the emigration of others to Brazil did not harm the home realm. It was movement to Asia that drained people and led to anxiety over depopulation, anxiety made all the more intense by the fact that the gap was filled by an influx of Negroes from Africa. Again, as in Spain, no measures were taken.

During the years 1630-1700, British emigration came principally from England. In proportion to population England contributed the most to the outflow to America, more even than Spain in decay. It is hardly surprising, therefore, that the desirability of emigration was much discussed in England at that time—and before. In our own century historical inquiry tends to depict Tudor and early Stuart England as prosperous—but also as shaken by substantial economic dislocation, and by an increase in chronic deprivation, unemployment, and crime. Contemporaries observing these conditions thought that the country was overpopulated, and a number of writers urged widespread emigration to America. As early as 1516 Thomas More in the Utopia had advised emigration to colonies as a remedy for overpopulation. Among others foreshadowing Malthus were Holinshed, Walter Raleigh, Francis Bacon, and Hobbes. In 1688 Josiah Childe, while admitting that emigration had damaged other European countries, yet held that Great Britain could continue to people colonies since it sent its dregs, who at home would live in vice and poverty and die an early death through starvation, disease, or hanging.
The Movement of People

Advanced in our century by a distinguished group of historians, these views have recently been challenged. Some now point out that earlier historians have accepted the propaganda put forward by gentlemen-adventurers interested in promoting colonies. Such writing must be scrutinized with the same care that one would bring to present-day promotional literature for real-estate ventures. Furthermore, there can be no doubt that a substantial body of opinion maintained that the realm was, if anything, underpopulated and could easily support more people. Thomas Starkey’s Dialogue between Reginald Pole and Thomas Lupset set forth the opposing views fairly. Writers urging measures to increase the home population, and therefore hostile in lesser or greater measure to emigration, were Samuel Fortrey, William Temple, Charles Davenant, and William Petty. Clearly opinions were divided. Toward the end of the seventeenth century and in the early decades of the eighteenth, as inquiry into population movement showed that the number of inhabitants was slowly increasing, the anxiety that sometimes underlay the earlier discussion disappeared. As in Spain, there was little actual effort to restrict emigration, and the woes of the British Isles in the middle decades of the seventeenth century encouraged outflow.

French thinking on emigration showed basically the same dichotomy as English, but was far more in favor of effective state intervention. Bodin and Montchretien strongly supported the establishment of colonies as well as emigration to them, but also favored policies designed to increase the home population. Emigration was damaging to French interests, they held, only if it removed French subjects to the realms of other monarchs, whether in Europe or abroad. Lescarbot and Champlain ardently advocated emigration to French colonies. Perhaps the most original view was that of La Popelinière (1582), who urged the founding of colonies on the ground that France, like all countries, had adventurous, turbulent spirits who would be most useful in time of war but in time of peace would disturb the realm—unless they could be sent elsewhere. After the end of the Reconquista in Spain, he pointed out, the Indies had served to drain restless spirits who would only have created civil war at home. The French state itself, under Louis XIV and Colbert, permitted a selective emigration to America but kept down the number going; and in the 1670’s as wars forced increases in the size of the French army and state expenditures, the outflow declined to the barest trickle. Royal policy always favored the creation of a strong, densely populated France. At the same time that he encouraged foreign immigration into the home realm, Colbert in 1669 persuaded Louis XIV to sign an edict forbidding expatriation; but the revocation of the Edict of Nantes, which sent a large number of valuable subjects to neighboring countries, breached this policy. It remained for Montesquieu to turn a vacillating,
indecisive approach into an attitude firmly hostile toward emigration to the colonies:

The usual effect of colonization is to weaken the mother country without populating the new land. Men must remain where they are: there are diseases that come when good air is exchanged for foul. . . .

Discussion in other European countries was obviously less concerned with America, since they provided few migrants in the sixteenth and seventeenth centuries. In Italy a number of writers, although preaching the need for a dense home population, nevertheless also held that it could pass an optimum density so that emigration might become desirable: Patrizi, bishop of Gaeta; Machiavelli, who thought colonies both useful as an outlet for superfluous population and an aid to the prosperity of the home state; and Botero, who considerably influenced Western Europe by his favorable views of colonies and overseas emigration. In the Germanies, a number of writers at the beginning of the sixteenth century were favorable to emigration as a remedy for overpopulation. Among them the most prominent was perhaps Tel von Wörd. But a strong current of Lutheranism and the destruction of population in wars, especially the Thirty Years’ War, made virtually all German writers react strongly against any further loss of people badly needed at home.

In general one is left with these impressions: contemporaries noticed and commented upon the outward movement of people; favorable and unfavorable theories were spun about it; the departure of rogues and vagrants was thought useful but the loss of peasants and artisans harmful to the home economy; however, no effective governmental measures were taken—perhaps none really could be taken—to curtail the outward movement. The outflow was sufficiently small in any given year and even in aggregate relative to the home population that its effect was also small except in highly localized territories and in restricted parts of the emerging national economies, such as shipping.

Now, the last part of our theme: new attitudes were arising in Europe, both toward the return of American migrants and toward the settlement in Europe of persons of non-European race or mixture, whom Spanish America lumped contemptuously together as the castas. As one would expect from its long period of colonization and its territorial extent, Spain provides the most evidence. The material comes primarily from the literature of the Siglo de Oro, which expressed popularly held attitudes. The writers viewed society hierarchically: the well-born, from whom one expected courage, manners, and virtue (except in sexual behavior), and the low-born, from whom one expected cowardice, servility, boorishness, and little, if any, virtue. Nevertheless, as in Lope
de Vega's famous play Fuente Ovejuna, peasants of Old Christian stock might show all the traits of honor. The attitudes are not different from those in contemporary English and French drama. In the theater of the Siglo de Oro the indiano, the Spaniard back from America, is a stock character. He is typically depicted as a nouveau riche who returns to find a suitable bride, and seeks the robes of a military order to gain the visible sign of higher social status. The indiano is pompous, talkative, and good-hearted, while the indiana, beautiful and rich, is much sought as a bride. Writers occasionally object to the indianos' pretensions to greater standing than birth entitled them to.

Negroes and mulattoes are also depicted in the writing of the Siglo de Oro. Since the Iberian peninsula imported slaves in the Middle Ages, the discovery of America did not produce a new phenomenon. If anything, attention to blacks in lyric poetry lessened during the sixteenth century, perhaps through the prevalence of classical ideas of beauty, but returned in the seventeenth century. In the drama of the Siglo de Oro the Negro and mulatto are again stock characters, ranging from honest, hard-working people (especially women) to picaresque types who are the confidants and accomplices of their masters. The portrait is a double one, not differing in any essential respect from the standard view of the lower orders to which they belonged, whether slave or free.

The scene, although occurring in the New World, undoubtedly reflects an Old World attitude. In contrast, Lope de Vega in La Dragontea portrays the Negroes opposing Drake in Panama as brave men despite their color and class.

Of Indians in the Peninsula there is little notice. The Indian in the New World is, to some writers, like the Negro. In Lope de Vega the Indian becomes a warrior and romantic lover. Indian women are tender and loving. But these characterizations are placed in a lushly tropical environment, far from Spain. One is left with the impression that even though some Indians did reach Spain, too few lived there long enough for a popular attitude to form. In fact, the crown forbade their voyage except with specific permission. Similarly, the lack of reference to mestizos and any racial mixtures except mulattoes provides the same kind of negative evidence. Yet some mestizos came to Spain as students and a few to live. The Inca Garcilaso de la Vega is one celebrated
instance. The illegitimate son of an Inca princess and a Spanish conqueror, he was received by his father’s family and, despite the bar sinister, inherited the status of his well-born parents. In his case as in others, prevailing ideas of social order governed without any need for adjustment. People of noble birth and wealth, whatever their race, were upper class and mattered; people of the lower orders did not matter, so that considerations of race altered little. An inspection of royal legislation for the Spanish realms confirms the impression that few comers did not fit into existing categories, so few that there was no need for new legislation. During three centuries when much legislation and many rulings were applied to racial mixture and standing in America, none was promulgated for the realms in Spain. One has only to compare this lack of attention in the Peninsula with the amount of regulation concerned with the descendants of Jews and Moors, for Spaniards in Spain were deeply interested in limpieza de sangre.

Like Spain, Portugal developed in these centuries a complex system of racial discrimination in its dominions, not merely in America but also in Asia and Africa. Within Portugal itself, as in Spain, a stringent system developed to exclude pessoas de sangue infecta, a system which kept cristãos novos from honorable positions. Unlike Spain, Portugal did receive a proportionately more substantial immigration of Negroes from Africa as slaves. The effect of this addition to the home population was both literary notice and the beginning of discriminatory legislation. As in Spain, Negroes became stock characters in Portuguese dramatic writing. On the one hand, they were depicted as amorous or thievish fellows of the lower class; on the other, as romantic princely or noble figures from a lushly tropical land, resembling Lope de Vega’s depiction of Indians.

Legal discrimination came slowly. In 1621, at the petition of the goldsmiths’ guild, the crown issued an alvará forbidding any Negro, mulatto, Indian (but of which hemisphere?), “nem outros semelhantes,” even if a freedman—and regardless of quality—to be taught, to learn, or to practice the craft of goldsmith. Another law forbade Negroes, slave or free, to hold dances or assemblies in Lisbon. The law also forbade slaves to live apart from their masters. It may have been no more than a precautionary police measure; nevertheless, it was very much like legislation in Spanish America. These modest regulations, however, appear to have been the sum of Portuguese home legislation applicable to racial groups and mixtures like those in the overseas empire.

For other European countries we have scant information on attitudes toward non-European races and products of racial mixture who arrived on European soil, but what we do have suggests little familiarity or prejudice. In England or France during the sixteenth century and even as late as the early years of the seventeenth, Indian captives or guests were wonders who drew an audience from miles around.
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1628, at the initiative of Champlain, Cardinal Richelieu inserted a clause in the charter of the Compagnie de la Nouvelle France that

Those savages who may be brought to knowledge of the faith and who follow it shall be held to be native Frenchmen. As such they may come to live in France whenever they wish, and may acquire property, make wills, and inherit and accept gifts and bequests in the same way as subjects born in the realm and native Frenchmen.

But nothing came of this provision. Colbert adhered to a policy of encouraging Indians to live with the French in Canada, forming in the end a hybrid French population—evidence that the home government had no racial prejudice. With regard to Negroes and mixtures with Negro stock, both the French and English during the first years in the Caribbean found the custom of their home lands an insufficient guide in setting up slave systems. The problems concerned the nature and duration of servitude, its heritability, and the treatment of free people of color. Local statute and decision developed slavery into the system recorded in histories. Equally, local pressure and initiative developed the complicated systems of discrimination, based on racial categories of admixture, that finally prevailed. These did not exist in the custom and law of the home countries, nor did the initiative for their development come from the home governments. Louis XIV's Code noir distinguished only between slave and free. A free man, whatever his color, took the place to which wealth, education, and the position of his parents entitled him. The insistence of the colonial whites, especially the so-called petits blancs, brought about the discriminatory legislation that slowly tightened in the French Caribbean during the course of the eighteenth century.

To be sure, Europe in this period discriminated in other ways. Spain and Portugal had elaborate systems for establishing limpieza de sangre, excluding descendants of Jews and Moors from position and preferment. But racial discrimination based simply on skin color appears to have developed principally in America, to a lesser extent in Asia and Africa. It appeared later in Europe as an import from the regions opened up during the Renaissance and succeeding centuries of exploration.

NOTES

2. Peter Boyd-Bowman, Patterns of Spanish Emigration to the New World (1493-1580) (Buffalo, N.Y. 1973) 2.
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5. Simonsen (n. 4 above) 1. 183. Many of the non-Portuguese European colonists went to the Caribbean. See also René Gonnard, Essai sur l'histoire de l'émigration (Paris 1923) 104-106. The Portuguese conversos showed a more complex pattern in that many migrated to the Caribbean and others to the Spanish mainland colonies.

6. Onody (n. 4 above) 339-343. Vitorino Magalhães-Godinho, “L'émigration portugaise du XVe siècle à nos jours. Histoire d'une constante structurale;“ in Conjuncture économique: structures sociales. Hommage à Ernest Labrousse, École pratique des Hautes Études, Vie Section 47 (Paris and The Hague 1974) 253-255, has an interesting treatment of Portuguese emigration in our period. Unfortunately, he does not break down his estimates. He does emphasize the very substantial numbers who left Portugal, but by far the greater part of these went to the Far East, Africa, the Atlantic islands of Portugal, and to other realms of Europe. I am indebted for this reference to Professor Lauro Martines of the University of California, Los Angeles.


11. Bridenbaugh and Bridenbaugh (n. 8 above) 226-229.

12. Bridenbaugh (n. 7 above) 15.


15. Curtin (n. 1 above) 95-126, esp. 116 and 119.

16. Boyd-Bowman (n. 2 above) passim.


19. See, for example, Angel Rosenblat, La población indígena y el mestizaje en América (2 vols. Buenos Aires 1954) 2. passim; and Gonzalo Aguirre Beltrán, La población negra de México (ed. 2 Mexico 1972) 153-194; Magnus Mörner, Race Mixture in the History of Latin America (Boston 1967) passim.

20. Aguirre Beltrán (n. 19 above) 175-179; Henri Favre, Cambio y continuidad entre los mayas de México (Mexico 1973) 92, points to sets of such paintings in museums in Vienna and Madrid.

21. The letter has been published many times. A facsimile edition of the Latin text (Rome 1493) with Spanish translation was issued by the Universidad Nacional Autónoma de México, Instituto de Investigaciones Estéticas, Carta de Cristóbal Colón en que da cuenta del descubrimiento de América (Mexico 1939).


23. See below, p. 716.
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24. Chinard (n. 22 above) passim, and L’Amérique et le rêve exotique dans la littérature française au XVIIe et au XVIIIe siècles (Paris 1913) passim.


27. Domínguez Ortiz (n. 3 above) 1. 86.

28. Lo que hay de mas y de menos en España para que sea lo que debe ser y no lo que es, ed. with preliminary study by Antonio Elorza (Madrid 1969) 102-103. The text is ambiguous. It probably means that one careful estimate came to 10,000 a year, but that Campillo himself considered 14,000 nearer the mark.

29. Domínguez Ortiz (n. 3 above) 1. 88-89.

30. Ibid., 86-89.


32. Domínguez Ortiz (n. 3 above) 1. 87.

33. Ibid., 1. 89-91.

34. Facsimile ed., intro. by Gabriel Franco (Madrid 1968) Ch. xii, 21-23.

35. Gonnard (n. 31 above) 104-106.


Vemos no reino metter
Tantos cativos crescer,
E irem-se os naturaes,
Que, se assim for, serão mais
Elles que nós, a meu ver.

On the extent of the importation of Negroes, see also Magalhães-Godinho (n. 6 above) 255-256.


39. Gonnard (n. 31 above) 121-130 and 159-168.

40. Chinard (n. 22 above) 189-190, citing Seigneur de la Popelliniere, Les trois mondes (Paris 1582).


42. Lettres persanes, ed. Paul Vernière (Paris 1960) 254. In this edition the letter is numbered CXXII; in some editions it is CXXII.

43. Gonnard (n. 31 above) 157-158 and 175.

44. We are fortunate in having two fine scholarly works that mark clear trails through otherwise difficult thickets: Angel Franco, El tema de América en los autores españoles del Siglo de Oro (Madrid 1954) and Sylvanus Griswold Morley and Richard W. Tyler, Los nombres de personajes en las comedias de Lope de Vega (Estudio de onomotología) (2 vols. Valencia 1961). The latter has also been issued as University of California Publications in Modern Philology 55 (1961). One of the most useful parts is an index to characters by types.

45. Franco (n. 44 above) 17-19, 26-31, 131-140, and 457-460. José Durand, La transformación social del conquistador (2 vols. Mexico 1953) 2. 31-43, esp. 36-38. In the works of Lope de Vega, see La Dorotea in Comedias escogidas, Biblioteca de Autores Españoles 24, 34, 41, 52
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(4 vols. Madrid 1853-60) 2. 19a, 13c; La moza de cátaro, ibid., 1. 557c and 554c; Sembrar en buena tierra, in Obras, intro. Emilio Cotarelo y Mori (ed. 2, 13 vols. Madrid 1916-30) 9. 396b; La noche de San Juan, ibid. 8. 138a; De corsario a corsario, in Comedias escogidas 3. 488b and 485b; El premio del bien hablar, ibid., 1. 493a and 494a; La prisión sin culpa, in Obras 8. 625a; Querer mas y sufrir menos, ibid., 9. 47b-48a. These are but examples.


47. Franco (n. 44 above) 129-130 and 457-460; Luis Monguíó, “El negro en algunos poetas españoles y americanos anteriores a 1800,” in Estudios sobre literatura hispanoamericana y española (Mexico 1958) 43-57; Raymond S. Sayers, The Negro in Brazilian Literature (New York 1956) 25-31. For examples, see also in the plays of Lope de Vega, Servir a señor discreto, in Comedias escogidas (n. 45 above) 4. 70c, 72c, 73a, 73c, 78c, 90a, 91b-91c; El premio del bien hablar, ibid., 1. 496b and 496c; El acero de Madrid, ibid., 1. 383a, b and c; Amar, servir y esperar, in Obras (n. 45 above) 3. 225b. Another treatment is Francisco de Quevedo Villegas, La hora de todos, y la fortuna con seso, in Obras, Biblioteca de Autores Españoles 23, 48, 69 (3 vols. Madrid 1859-1920) 1. 410b and 411a, which both reflects current attitudes and foreshadows the eighteenth century.

48. Alonso de Ercilla, La araucana (Mexico 1968) Canto XXXIV, 473. See also Lope de Vega, El acero de Madrid, Comedias escogidas (n. 45 above) 1. 383b and c, with its reference to the especially degrading punishments for Negros.

49. Franco (n. 44 above) 129-130 and 170-171, quoting the relevant passages from La Dragontea.

50. Ibid., 394-400 and 440-441.

51. Charles V to the governor and royal officials in New Spain, 9 November 1526; Prince Philip to the audiencias in the Indies, Valladolid, 28 September 1543; Prince Philip to the royal officials of the Casa de Contratación in Seville, 25 November 1552; clause of the Ordenanza de las audiencias, 1563; and Philip II to the audiencia of Lima, Madrid, 10 December 1576, in Diego de Encinas, Cedulario indiano (facs. ed. 4 vols. Madrid 1945-46) 4. 282-287. The legislation passed into the Recopilación de leyes de los reynos de las Indias (4 vols. Madrid 1681) as laws xvi and xvii of Título i, Libro vi.

52. Lope de Vega wrote so much that one hesitates to affirm that no reference exists in his writing, but the only reference we have found to mixtures, other than mulattoes and a somewhat ecstatic reference to the mating of white and red in America, is in Servir a señor discreto, in Comedias escogidas (n. 45 above) 4. 90a:

Basta que vos lo queráis
Pero advierto que es guineo
Incroto en indio; que allá
Todas estas mezclas veo.

53. Philip II to the royal officials of the Casa de Contratación in Seville, 30 January 1559, in Encinas (n. 51 above) 4. 287.


55. See Hayard Keniston’s intro. to Libro de la vida y costumbres de Don Alonso Enríquez de Guzmán, Biblioteca de Autores Españoles 126 (Madrid 1960) ix.

56. For Spain, see Novisima recopilación de las leyes de España, dividida en XII libros; en que se reforma la Recopilación publicada por el señor don Felipe II en el año de 1567, reimpressa últimamente en el de 1775; y se incorporan las pragmáticas, cédulas, decretos, órdenes y resoluciones reales, y otras providencias no recopiladas, y expedidas hasta el de 1804, con un suplemento, que contiene las reales disposiciones, y otras providencias expedidas en los dos años de 805 y 806, y algunas de las anteriores no incorporadas en este código . . . (4 vols. Paris and Mexico 1831); Los códigos españoles concordados y anotados (ed. 2, 12 vols. Madrid 1872-73) Vol. II (laws of Nueva Recopilación de Castilla not incorporated in the Novisima Recopilación); Antonio Pérez y López, Teatro de la legislación universal de España e Indias, por orden cronológico de sus cuerpos, y decisiones no recopiladas (28 vols. Madrid 1791-92); for
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America, the Recopilación de leyes de los reynos de Indias (n. 51 above) and Colección de documentos para la historia de la formación social de Hispanoamérica, 1493-1810, ed. Richard Konetzke (3 vols. Madrid 1953-62), both passim.

57. See the extended treatment in Albert A. Sicroff, Les controverses des statuts de "Pureté de sang" en Espagne du XVe au XVIIe siècle (Paris 1960).


61. Ordenações e leys do reyno de Portugal, confirmadas e establecidas pelo senhor rey D. João IV (5 vols. Lisbon 1747) 5. 46 (Livro v, Titulo Lxx).

62. See, for example, the restrictive ordinances in Recopilación de algunos mandamientos y ordenanzas del gobierno de esta Nueva España, hechas por los Exmos. Señores Vireyes y Gobernadores de ella, formada . . . y dispuesta por el Dr. Don Juan Francisco de Montemayor y Cordova de Cuenca . . . 1677, in Recopilación sumaria de todos los autos acordados de la Real audiencia y sala del crimen de esta Nueva España, y providencias de su superior gobierno, comp. Eusebio Bentura Beleña (2 vols. Mexico 1787) 1. 2d section, 72-74, giving texts of ordinances of 17 June 1583, forbidding castes to carry pointed knives; of 2 April 1612, forbidding Negroes or mulattoes at any time or for any reason to meet in numbers greater than three and ordering that any in Mexico City have as masters known people; of 14 April 1612, forbidding more than four Negroes to be at the burial of a Negro or mulatto and forbidding Negroes or mulattoes to wear or carry gold or silver ornaments, pearls, clothing from Spain, silk cloaks, or embroidery of gold or silver; etc.

63. Bridenbaugh (n. 7 above) 198; Chinard (n. 22 above) 6-7; Chinard (n. 24 above) 22-24.

64. Gonnard (n. 31 above) 119.

65. See the statement in Richard Ligon, A True & Exact History of the Island of Barbadoes [1673] (ed. 2 in facsimile London 1970) 50 that Negroes were kept from conversion to Christianity because the people of Barbados were governed by the laws of England “and by those Lawes, we could not make a Christian a Slave.” See also Oscar Handlin, Race and Nationality in American Life (Boston 1957) 3-38. For the French Caribbean the argument is laid out at great length by Yvan Debbasch, Couleur et liberte, le jeu du critère ethnique dans un ordre juridique esclavagiste, Vol. 1. L'affranchi dans les possessions françaises de la Caraibe (1635-1833) (Paris 1967) passim but esp. 22-29.

66. Debbasch (n. 65 above) 30-33.

67. Ibid., passim.

68. I take the opportunity to record my very considerable indebtedness for advice and help in preparing this paper to my colleagues, Professors Lawrence A. Harper, Lawrence W. Levine, and most of all Luis Monguí. Searches in the complex system of libraries of the campus of the University of California, Berkeley, were eased through the service of Marcel Haitin as research assistant.
Since 1950 I have been studying patterns of early Spanish emigration to the New World with a view to exploring the historical relationships between the Spanish dialects of America and those of the Peninsula. I have gathered pertinent biographical data, always including the known or presumptive place of birth, on roughly 46,000 men, women, and children who first arrived in Spain’s New World colonies during the course of the sixteenth century. The results of these demographic studies, which prove rather clearly the dominant role played till 1580 by Andalusia (and most especially by Seville), are for the most part already well known. Entirely new, on the other hand, is the fifth and final volume in the series, which examines the passage to these same colonies of another 9,508 Spaniards and other Europeans of known birthplace who emigrated between 1580 and 1600. Now it happens that for the very end of the century (from 1595 through February of 1607, to be exact), the Archivo de Indias’ Registro de pasajeros a Indias (our principal but by no means only source of information) suffers another of its notorious lacunae, one however which I was fortunately able to remedy to a very large extent by using the cumbersome but considerably more detailed Informaciones de pasajeros (AGI, Contratación, legajos
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Nos. 5249-5260), where essential data about prospective emigrants is buried amidst lengthy and repetitious depositions by character witnesses from the emigrant’s home town. Whereas the Registro de pasajeros normally furnishes only name, birthplace (or vecindad), names of parents and accompanying household, broad destination in America, date of registration, name of ship’s captain, and occasional indications of rank, occupation or title, a careful perusal of the interrogatorios (parades of witnesses responding to a set of prepared questions) generally reveals further details such as ancestry, age (frequently only ‘poco más o menos’), and physical appearance, e.g., color of hair and eyes, height, build, complexion, apparent health, distinguishing scars or physical deformities. In addition there is evidence to be found relating to the emigrant’s legitimacy, marital status, good behavior, religious and political orthodoxy, occupation and presumptive means of support in the Indies (for example, a rich relative) and, of course, proof of permission to emigrate. However, persons born or domiciled in the Indies had merely to produce witnesses who could testify that they had known them in the Indies or had returned to Spain with them on a certain fleet. Royal officials such as governors, oidores and corregidores and their immediate families were also normally excused from having to present such testimony (as were bishops and other members of the clergy), but not accompanying servants. Unless otherwise indicated, royal and ecclesiastical officials and their household servants may safely be assumed to have had as their destination not merely the region (e.g., Peru) but also the actual city (e.g., Lima or Cuzco) where that particular governorship, Real audiencia, bishopric or corregiduria had its seat. We may also take it for granted that a person emigrating to join a relative or spouse in one of the colonies was heading for the latter’s precise place of residence, even when the documents fail to say so explicitly.

EMIGRATION 1595-98

I have chosen to examine the period 1595-98 in greater than usual depth precisely because indication of age and occupation are sufficiently abundant to warrant analysis. My original desire had been to focus on one single year, but since the chance passage of a new viceroy, such as that of Don Gaspar de Zúñiga to New Spain in 1595, could significantly affect the flow of emigration in certain years, it seemed dangerously arbitrary to select any single year as a sample for my study. Spreading the study over a four-year period not only lessens the impact of any single royal appointment but also gives us a larger, more reliable sample to work with, in this case 2,304 individual colonists.
Spanish Emigrants to the Indies, 1595-98: A Profile

When I last worked in the Archivo de Indias, lack of time precluded my recording data about emigrants' physical characteristics, but the information that is there could readily form the basis for a detailed anthropological study of the physical characteristics of a cross-section of Spain's sixteenth century population.

Emigration by regions: Andalusians, who between 1493 and 1580 accounted for 35.8% of all emigrants and in the last two decades of the sixteenth century averaged 42.2%, reached a record high of 47.5% during the four-year period in question. Adding in New Castile (15.2%), Extremadura (13.9%) and Murcia (1.0%), we find that the South of Spain contributed over three quarters (77.6%) of all who emigrated at this time, the North less than one in five (18.4%), while the remaining 4.0% consisted of foreigners, almost all of them Portuguese then living under Spanish rule. The breakdown by regions is as follows:

1. Andalusia ........ 1,094 (47.5%)
2. New Castile ...... 350 (15.2%)
3. Extremadura ...... 320 (13.9%)
4. Old Castile ...... 215 ( 9.5%)
5. Portugal (incl. Azores) . . . 85 ( 3.7%)
6. Basques .......... 73 ( 3.2%)
7. León ............. 51 ( 2.2%)
8. Galicia .......... 33 ( 1.4%)
9. Murcia .......... 23 ( 1.0%)
10. Navarre ........ 16 ( 0.7%)
11. Aragon ........ 14 ( 0.6%)
12. Asturias ....... 11 ( 0.5%)
13. Other foreigners (2 Greek, 1 Flemish, the rest Italian) . . . 8 ( 0.3%)
14. Canary Islands .. 5 ( 0.2%)
15. Valencia ....... 5 ( 0.2%)
16. Catalonia ...... 1 ( 0.0%)

Total 2,304 (100.1%)

Note how insignificant as usual were the contributions of Aragon, Catalonia, Valencia and the Balearic Islands (less than 1.0%), and that of the Canary Islands (0.2%). The combined impact of all of these on the formation and development of Spanish American society was for the entire first century totally without importance.

Emigration by provinces: Very uneven. Only nine provinces sent 50 or more colonists apiece. They were: (1) Seville 733, (2) Badajoz 189, (3) Toledo 153, (4) Cádiz 148, (5) Cáceres 128, (6) Madrid 100, (7) Huelva 83, (8) Valladolid 62, and (9) Burgos 61.

The province of Seville alone furnished 31.8% of all emigrants!

Emigration by cities: Of the mere 14 cities that sent 20 or more emigrants apiece, only two (Salamanca and Valladolid) were located in the North of Spain. The dominance of the city of Seville continues to be overwhelming:

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<th>Rank</th>
<th>Destination</th>
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</tr>
<tr>
<td>22</td>
<td>Guadalcanal (Seville)</td>
<td>20</td>
</tr>
<tr>
<td>23</td>
<td>Hyderabad (Seville)</td>
<td>20</td>
</tr>
<tr>
<td>24</td>
<td>Hyderabad (Seville)</td>
<td>20</td>
</tr>
<tr>
<td>25</td>
<td>Hyderabad (Seville)</td>
<td>20</td>
</tr>
</tbody>
</table>

**Destinations in America:** Few of the 39 different colonies or provinces named as destinations between 1595 and 1598 attracted more than a handful of emigrants each. Among the 2,283 emigrants with known destinations, over one third (801) said they were bound for Peru, making the latter once again the most desirable goal in all the Indies. New Spain, with 587, accounted for another quarter, while Cartagena was named 184 times and New Mexico 152. Next, at some distance, came the Philippines (via New Spain) 79, New Granada 72, Tierra Firme 71, Cuba 66, Santo Domingo 60, Quito 30, Guatemala 28, Chile only 26, Panama 16, Popayán 15, Charcas (Alto Peru or Chuquisaca) 14, Isla Margarita 14, Florida only 10, Venezuela 9, New Vizcaya 7, Nicaragua 6, Buenos Aires 4, Santa Marta 4, Tucumán 4, Espíritu Santo 3, Yucatán 3, Chiapas 2, Río de la Hacha 2, while the following destinations were each cited only once: Guayana, Guayaquil, Jamaica, Michoacán, New Leon, Paraguay, Río de la Plata, Trinidad, and Zacatecas. Costa Rica and New Galicia were not mentioned at all. Grouping these destinations by broader regions yields the following ranking:

1. **Peru** (including Charcas) 815 (35.7%)
2. **New Spain** (incl. Michoacán, Yucatán and Zacatecas) 592 (25.9%)
3. **Tierra Firme** (incl. Panama, Cartagena, Santa Marta and Río de la Hacha) 4278 (12.1%)
4. **New Mexico** (incl. New Vizcaya and New Leon) 160 (7.0%)
5. The **Antilles** (Cuba and Florida, Isla Margarita, Jamaica, Puerto Rico, Santo Domingo, and Trinidad) 157 (6.9%)
6. **New Granada** (incl. Popayán) 87 (3.8%)
7. **Philippines** 79 (3.5%)
8. **Central America** (Chiapas, Guatemala, Honduras, Nicaragua) 38 (1.7%)
9. **Quito** (incl. Guayaquil) 31 (1.4%)
10. **Chile** 26 (1.1%)
11. **Venezuela** (incl. Guayana) 10 (0.4%)
12. **Río de la Plata region** (incl. Buenos Aires, Paraguay and Tucumán) 10 (0.4%)
13. **Espíritu Santo** (location uncertain—Brazil?, New Spain?) 3 (0.1%)

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Spanish Emigrants to the Indies, 1595-98: A Profile

IMMIGRATION TO THE COLONIES 1595-98

Peru: A brief analysis of the flow of emigration to each of the principal New World destinations at this time reveals that of the 815 new immigrants to Peru, 479 (58.8%) were Andalusians (331 were in fact from Seville alone!), an astonishingly high proportion, but one exceeded, as we shall see presently, by that of Andalusians to Tierra Firme. Extremadura comes next with 122 (15.0%), then New Castile with 110 (13.5%), Old Castile with 48 (5.9%), the Basque country with 22 (2.7%), León with 11 (1.3%), Galicia with 7 (0.9%), Aragon with 5, Valencia with 4, and the rest of Spain with another four. There were only 3 foreigners, and no Canary Islanders at all.

New Spain (including Yucatán, Michoacán and Zacatecas): New Spain’s 592 new immigrants in the years 1595-98 were made up of 223 Andalusians (37.7%, over half of them from Seville alone), 115 New Castilians (19.4%, over half of them from the province of Toledo), 91 Old Castilians (15.4%, with a contingent of 40 from Valladolid), 67 Extremeños (11.3%), 37 Portuguese (a very high 6.2%, all in 1595 and especially 1596), 22 Basques (3.7%), 19 Leonese (3.2%), 13 Galicians (2.2%), 2 Asturians, 1 Navarrese, 1 Aragonese and 1 Valencian. Again, no Catalans and no Canary Islanders.

Tierra Firme (incl. Panama, Cartagena, Santa Marta, Río de la Hacha):

<table>
<thead>
<tr>
<th>Area</th>
<th>Andalusia</th>
<th>Extremadura</th>
<th>Murcia</th>
<th>New Castile</th>
<th>Old Castile</th>
<th>Basques</th>
<th>Foreigners</th>
<th>Aragon</th>
<th>León</th>
<th>Galicia</th>
<th>Navarre</th>
<th>Totals</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td>38</td>
<td>21</td>
<td>11</td>
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<td>3</td>
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<td>TF</td>
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<td>-</td>
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</tr>
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<tr>
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<td>-</td>
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<td>3</td>
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<tr>
<td>Totals</td>
<td>184</td>
<td>71</td>
<td>16</td>
<td>4</td>
<td>3</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>278</td>
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</tr>
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</table>

Andalusia’s contribution of 168 out of only 278 to this area represents a truly astonishing 60.6%, a percentage far higher than that of Andalusians overall. The continued concentration of Andalusians in the Caribbean ports, noted in this as in my earlier analyses, helps to explain the well-known present-day phonetic resemblance between the dialects
The Movement of People

of the Caribbean area and that of Andalusia. Murcia’s uniquely high contribution is caused by a one-shot flow of 21 Murcians to Cartagena in 1597. Alas, the pretty story about Cartagena de Indias receiving its name because it was founded by settlers from Cartagena in Spain (or even that such settlers arrived later) appears unsupported by the historical facts. Murcia’s contribution to the conquest and settlement of America was utterly insignificant, and even this sudden migration to Cartagena at the close of the century is of no help—all 21 of these Murcians were from the city of Murcia itself. Totally unrepresented: Asturias, Catalonia, Valencia, the Balearic Islands and, as usual, the Canaries.

New Mexico (plus New Vizcaya and New Leon): This was chiefly Oñate’s expedition of settlement of 1597–98. Andalusia’s relatively low contribution (only 30.6%) is offset by unusually high percentages of foreigners and of expeditionaries from the North of Spain. Among the 160 new settlers we counted 49 Andalusians (30.6%), 27 New Castilians (16.9%), 17 Extremeños (10.6%), 14 Old Castilians (8.7%), 11 Basques (6.9%), 7 Leonese (4.4%), 6 Galicians (3.7%), 5 Asturians (3.1%), 3 Canary Islanders (1.9%), 2 Aragonese (1.2%), 1 Navarrese and 1 Murcian (0.6% each).

Antilles (incl. Florida):

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</thead>
<tbody>
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<td>Andal.</td>
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<td>1</td>
<td>83</td>
</tr>
<tr>
<td>Extrem.</td>
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<td>–</td>
<td>11</td>
<td>–</td>
<td>18</td>
</tr>
<tr>
<td>N.Cast.</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>–</td>
<td>17</td>
</tr>
<tr>
<td>O.Cast.</td>
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<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>8</td>
<td>–</td>
<td>13</td>
</tr>
<tr>
<td>Portug.</td>
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<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>13</td>
</tr>
<tr>
<td>Basq.</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>1</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Ast.</td>
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<tr>
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<td>–</td>
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<td>1</td>
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<td>–</td>
<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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</tr>
<tr>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
</tbody>
</table>

From the above chart it is clear that only Cuba and Santo Domingo were attracting many settlers at the close of the sixteenth century, and even they far fewer than the mainland. Among other reasons the islands of the Antilles were of course just too vulnerable to attacks by pirates and enemy fleets.

New Kingdom of Granada (incl. Popayán): Our total of only 87 new arrivals between 1595 and 1598 does not warrant calculating percentages. I will
merely observe that this was the only colony which during this four-year period attracted more Extremenos (30) than Andalusians (22). Moreover, of these Extremenos no less than 25 were from the single province of Badajoz.

THE EMIGRANTS THEMSELVES

Of a core of 1,909 emigrants between 1595 and 1598 whom we have chosen to study in detail because their ages are known in addition to their birthplace and destination, just under two thirds (1,234) were male, of whom 69 (6.4%) bore the title of Don, a significantly higher percentage than the 4.2% and 4.1% noted for the periods 1520-39 and 1540-59 respectively, and one which perhaps reflects the mounting pressure of poverty (miseria) from which Spain was suffering at the end of the sixteenth century. The most remarkable fact about our 1,234 males is that well over half (58.2%) of them were emigrating as criados! Of these 718 criados and page-boys (pajes), roughly one in four was married. It was of course common practice at that time to accommodate a relative anxious to escape Spain’s dismal economic situation by including him among the number of accompanying household servants authorized by licencias issued by the crown. Numerous criados solteros were therefore “servants” in name only—indeed we often found, for example in the retinue of Viceroy Zúñiga and those of other high dignitaries, young men listed as criados who were themselves members of the nobility. As in the Middle Ages, the Spanish term criado could still confer social status depending on whose servant one happened to be. In our group, the oldest criado was 61 years of age, the youngest (a page-boy) barely eight. In addition to the ubiquitous servants, we counted 43 craftsmen, 27 merchants (all but four of them single), eight royal officials, four notaries (escribanos), two pharmacists (boticarios), one physician, and one bookseller (librero). As for academic degrees, our 1,234 males included at least eight bachilleres, ten licenciados and two doctores who used their titles—no mean proportion in an age when university education was limited to a privileged few. Twenty-three of our males examined were returning to the Indies, while for the rest it was their first trans-Atlantic voyage.

Women: We counted 675 out of 1,909, which is 35.3%, or just over one in three. An examination of 170 emigrant couples where the age of both partners was indicated reveals that in only 21 cases were wife and husband the same age. The majority (118) of the wives were, as we might expect, from one to 20 years younger than their husbands, while in 31 cases the wives were older, usually only slightly, though we found three women, evidently very well-endowed (one way or the
AGE DIFFERENCES BETWEEN SPOUSES EMIGRATING TO THE INDIES (1595–98)
other), with husbands from 14 to 18 years their juniors. The accompanying chart displays on the left side a curious preponderance of husbands older than their wives by multiples of two years, a preponderance which we are at a loss to explain at present. The ages of these wives ranged from 16 to 60, with two thirds of them spread rather evenly between the ages of 20 and 40. The fact that only three of these 170 wives were in their teens—16, 17, and 19—suggests that in late sixteenth-century Spain, economic conditions discouraged early marriage. Another 30 married women were crossing the Atlantic to join their husbands on the other side. These women were often accompanied by one or more children and escorted by a kinsman of either spouse. Most of our 675 women were from Andalusia (especially from Seville and Cádiz) or from Extremadura. The largest contingent of women (274) sailed for Peru, the second-largest (188) for Mexico, while 84 were headed for Cartagena, another 36 for Panama, and 19 others for Cuba. Very few women emigrated to the Philippines, Central America, Venezuela, Santo Domingo or Puerto Rico, and none at all to Florida or Chile, which at that time were considered very unsafe places to settle. Of the 48 widows only four were travelling unescorted, 30 were crossing the Atlantic in the company of kinsmen or grown sons, seven were servants, while another four had remarried. The youngest widow was 24, while the oldest was sailing at the advanced age of 70, a good five years older than the oldest of the men. In 1596 one widow from Cádiz named Juana García sailed for Mexico with six daughters! For obvious reasons very few single girls travelled alone. Letters from colonists of that period, both male and female, refer obsessively to the concept of family honor. Since it was unbearably humiliating that a woman’s good name be compromised even slightly, and since the soldiers and sailors on such voyages had fearsome reputations for seduction and slander, it was small wonder that so few women travelled unchaperoned. We counted only 14 unaccompanied single women and girls (including two small girls aged 13 and 10), and doubtless some of these had someone on board to look after them and protect them. Unless travelling with parents or husbands, the only socially acceptable way for women and girls to cross the ocean at that time was as maidservants (criadas), of whom we counted 109, including one black woman and four mulattoes. However, the proportion of unmarried criadas among the women (109 out of 675, or roughly one in six) is nowhere near as high as that of unmarried menservants among the men (516 out of 1,234, or roughly two out of every five). This is partly due to the fact that manservants who could lift and carry heavy baggage or provisions (matalotaje) were deemed more useful on a rugged trans-Atlantic voyage than were maidservants whose principal duties on board ship were to help look after the numerous children.
The Movement of People

Married couples: We examined 238 family units who emigrated as such during the four-year period under discussion and can report about them as follows:

Couples accompanied by:

<table>
<thead>
<tr>
<th>children</th>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>10</th>
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<td></td>
<td>53</td>
<td>49</td>
<td>45</td>
<td>33</td>
<td>31</td>
<td>14</td>
<td>8</td>
<td>1</td>
<td>2</td>
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</tr>
</tbody>
</table>

As we can see, while nearly a fourth of the 238 couples emigrated without children, quite a few others sailed to the Indies with what by any standards would be considered very large families indeed.

The number of accompanying children counted in this tabulation comes to 522, an average therefore of 2.2 children per family. Among the 472 children of known age travelling with their families, 69 (14.6%) were already in their twenties, 130 (27.5%) were in their teens, 156 (33.0%—the largest group) were aged 6-12, while the remaining 118 (24.9%) were children aged 5 or less. Among this group of very small children there were 26 infants under one (niños de pechos o de teta).

Thus 165 of these emigrant children were either a first or an only child, 122 had one older sibling, 83 had two older siblings, and so on.

Concluding remarks

Combining the most typical characteristics of our Spanish emigrants to the Indies near the end of the sixteenth century (but excluding children accompanying their parents), there emerges, roughly 100 years after Columbus’ epic discovery, the rather depressing composite picture of a poverty-stricken Andalusian male aged 27½, unmarried, unskilled and probably only semi-literate, driven by hunger to make his way to Peru in the employ of any man who would pay his passage and had secured the necessary permit.5

On the female side, once again discounting dependent children, the composite picture that appears is that of an Andalusian woman, already in her early thirties (32½ to be exact), travelling to Peru with her 36 year-old husband, two young children, a manservant, and a maid. Though not of noble birth, this young matron is nevertheless politely addressed as Doña (by now a courtesy paid to all women).6 There is a good possibility that her name is either María or Juana or Catalina or Francisca, that her husband’s name is either Juan or Pedro or Rodrigo or Alonso or Francisco, and that each of their children is named after one of their four grandparents.7

Needless to say, both of our typical emigrants, male and female,
Spanish Emigrants to the Indies, 1595-98: A Profile

Children of known ages accompanying parents to the Indies 1595-98

<table>
<thead>
<tr>
<th>Ages (under 1 yr.)</th>
<th>1st child</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>9th</th>
<th>10th</th>
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</thead>
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<tr>
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<tr>
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<td>8</td>
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<td>2</td>
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<td>1</td>
<td>26</td>
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were born and raised in the same city, the one that had dominated trade with the New World since the very beginning, the city where information about life and conditions in the Indies was more readily available, and passage to the Indies more easily procured, than anywhere else in Europe, the city whose phonologically innovative dialect was already becoming standardized in all the ports of the Caribbean, namely the Andalusian capital of Seville.
The Movement of People

NOTES


2. Records for the Antillean period (1493-1519) begin only in 1509 and even then are fragmentary in most years. In the next period (1520-39) the passenger lists for 1520-25 are missing and those for 1529-33 are fragmentary. The period 1540-59 is strangely lacking in passenger lists for virtually the entire period prior to 1554 (that is, for the important years corresponding to the civil wars in Peru).

See the three published volumes of the *Catálogo de pasajeros a Indias durante los siglos XVI, XVII y XVIII*: Vol. 1. 1509-1534; Vol. 2. 1535-1538; Vol. 3. 1539-1559 (Seville 1940-46).

3. At this time descendants of the Pizarros were expressly forbidden to emigrate to the New World.

4. That the term Tierra Firme could encompass all this territory is confirmed by references of the period such as “natural de la ciudad de Panamá, de la provincia de Tierra Firme . . .” or “va a Tierra Firme, para que desde la ciudad de Cartagena . . .,“ in the Registro de pasajeros a Indias.

5. As I remarked in my study on emigration between 1540 and 1559 in *Patterns* (n. 1 above) 47, by the second half of the sixteenth century that heroic spirit of conquest and adventure—the quest for Gold, Glory and the Gospel—was giving way to a humble search for economic security at any price.

6. A good example of Doña used as a title of courtesy to all women (while Don retains its distinction) is this 1592 entry in Seville’s passenger registry (fol. 67v bis): “Francisco Bello de Molina, natural desta ciudad [Sevilla], hijo de Francisco Spíndola y de Doña María Ramírez, con su muger Doña Juana de Baro y sus hijos solteros Alonso y Doña Francisca y Juan y Doña María y Doña Elvira y Antón y Francisco . . . al Perú. . . .”

7. A typical example of this custom is another entry taken from the same page as n. 6: “Juan de Paredes, natural de . . . Truxillo [Cáceres], hijo de Francisco Díaz y de Mayor García Monroy, con su muger Juana de Orellana natural de la dicha cibdad, hija del Doctor Juan de Orellana y de Catalina López Vázquez, al Perú [1592] con sus híjos lexitimos Francisco y Mayor y Juan y Catalina y Alonso y Antonio. . . .” in which the first four children are named after the four grandparents, first the two paternal ones. For a diachronic statistical study of changing fashions in Spanish given names, see my “Los nombres de pila en México desde 1540 hasta 1950,” *Nueva revista de filología hispánica* 19 (1970) 12-48, which is based on samplings taken at 20-year intervals from the birth registries of Mexico City Cathedral.

8. Evidence that Andaluso-Caribbean phonological features such as the aspiration or loss of syllable-final /s/, neutralization of syllable-final /l/ and /r/ (la muhere: la[u] muhère; er papé: lo[u] papé, etc.), velarization of syllable-final /n/ (en E[u]pañol, and merger into a weak pharyngeal /h/ of the Old Spanish phonemes /s/, /l/, and /h/ all took place much earlier than previously supposed, may be found in the same fascinating collection of private letters from New World colonists that we owe to the diligent work of Enrique
Spanish Emigrants to the Indies, 1595-98: A Profile

Otte: see, in this collection, Lockhart, 2.784-785 n. 3. This linguistic evidence is the subject of an article of mine entitled "A Sample of 16th Century Caribbean Phonology," due to be published by Georgetown University among the papers presented at the Colloquium on Hispanic Linguistics: Past, Present and Future, held at the University of Massachusetts in Amherst in August 1974.
Spanish Migration
to the New World prior to 1810: A Report on the State of Research

by Magnus Mörner

Overseas migrations were curiously late in attracting the attention of scholars, and interest arose first at the receiving, not the sending, end. The migrations to Spanish America from Spain were the first mass movements across the Atlantic. Despite some noteworthy research results with respect to early overseas migration, however, this continuous human stream has been studied very little; and the neglect is especially glaring in the case of seventeenth- and eighteenth-century Spanish migration. This movement has not been studied in its context with the demographic, economic, and social developments of the mother country. The aim of the present report is, therefore, to provide a survey of the existing state of research.

SPANISH OVERSEAS MIGRATION

LEGISLATION AND SOURCES

Almost from the beginning, emigration from Spain was governed by strict regulations imposed by the crown. Thanks to these rules an
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extensive documentation has come into existence. Nobody is more familiar with the two related aspects of our topic than Professor Richard Konetzke, formerly of the University of Cologne, who has shown the gradual growth of metropolitan legislation. After a “liberal” episode during the reign of Charles V when his foreign subjects were admitted to the Indies, 1526-38, non-Spaniards were forbidden on principle to settle in or even visit the Indies. But Konetzke also shows the legal channels which were still open: the process of naturalization took place in Spain prior to departure and, from the late sixteenth century onwards, there was also the composición or exemption from application through the payment of fixed fees in Spanish America. The latter procedure, which also emerged in other connections, was simply due to the financial straits of the crown during that era. Although legal theory is somewhat hazy on the issue, Konetzke makes it clear that subjects of the Aragonese crown enjoyed the same rights of emigrating to the Indies as those of Castile. Strictly forbidden to enter the New World were: converted Jews and Moors and their descendants, gypsies, and individuals convicted by the Holy Office. To enforce the norms a cumbersome bureaucratic system emerged, mainly entrusted to the Casa de Contratación, the crown agency for navigation and trade in Seville. Those wishing to leave first had to present testimony that they were entitled to go. From 1546 onwards this had to be done at the Council of the Indies in Madrid. Then they had to secure their sailing permit by registration at the Casa, which had to dispatch lists of departing passengers to the Council.

In Konetzke’s view the settlement of Spanish America was “no free migratory movement, not a spontaneous breaking up of individuals, families and groups to found a new Fatherland . . . , it was an example of a metropolitan policy of emigration and settlement based on law.” He shows how the crown at times saw fit to relax its own regulations in order to encourage emigration. But, at other times, especially during the seventeenth century, it conscientiously tried instead to reduce the outflow by strict enforcement. However, he presses his point too far. First, loopholes and fraud, as Konetzke himself seems to be aware, would render legislation largely ineffective. Second, letters (recently discovered) sent by early colonists to relatives at home clearly show the individual initiative and financing of a great number of migrations in the sixteenth century.

As an outgrowth of the legislation, various files of records came into existence, preserved, to a great extent, at the Archivo de Indias of Seville. The lists of departing passengers, Libros de asientos, 1509-1701, are the best known series; others are the numerous dossiers of information gathered at the Council, Informaciones y licencias de pasajeros, 1534-1790.
Spanish Migration prior to 1810

Both were used by the Archivo de Indias and the Institute “Gonzalo Fernández de Oviedo” when they initiated their ambitious enterprise, a Catálogo de pasajeros a Indias, in 1940. The three volumes published by 1946 were supposed to cover emigration from 1509 through 1559. But as Juan Friede pointed out and as Konetzke would analyse in detail, the two series suffered from many gaps whereas many other relevant series had been overlooked by the editors. In Appendix 1 below we reproduce the several important supplementary series mentioned by Konetzke. Unfortunately, his article was not used to improve the coverage of the Catálogo. No further volume has appeared as yet, and the many sources that he referred to do not appear to have been systematically explored. The important efforts of Peter Boyd-Bowman to supplement the Catálogo seem to have been based, primarily, as we shall see, on source material already in print. In one respect only has the documentation at the Archivo de Indias been used to highlight migrations in a substantial way: namely the letters which were sent from colonists in the New World to their relatives in Spain. They were included by the latter in their applications when they wanted to go to the Indies as well. So far Enrique Otte and Guadelupe Albi have found 668 of these fascinating letters in a series of licenses in the heterogeneous Indiferente Section. Some of them have already been published by Otte.

Outside the Archivo de Indias there are also other collections on migrations still less researched. Konetzke has stressed the importance, for example, of the Archivo Histórico de Protocolos of Seville where transactions such as the payment of passage fares would be recorded. The holdings of these Archives are partly available in print. How about other harbours than Seville from which navigation to the Indies took place? The most important of these was Cádiz, which replaced Seville in the eighteenth century. In 1948 Konetzke underscored the lack of records regarding the dispatch of passengers from Cádiz. With respect to the traffic from the harbours of northern Spain (1529-61 and from 1778 onwards) as well as from the Canaries, he also presumed the existence of sources but lacked proof. Surely, there would be many kinds of sources for emigration research in Spanish provincial archives. A recent survey shows, for example, that the Archivo Histórico Provincial of Bilbao holds a substantial series of dossiers proving the “purity of the blood” (limpieza de sangre) of people wishing to go to the Indies. But it should be kept in mind that these like many other sources in Spanish archives merely prove the intent, not the fact of migration.

Non-Spanish migrants should not be completely forgotten. As we shall see, foreigners constituted some percentages at least of sixteenth-century emigration. Their relative importance may very well have increased later on. Portuguese and Italians were particularly conspic-
The Movement of People

uous, and there was, as is well known, a German episode in the early history of Venezuela. Thus, the respective local archives might yield some information of interest. 18

Illegal migration of both Spaniards and non-Spaniards would *per se* be difficult to document. The phenomenon might be measured to some extent by the number of free passengers (*polizones*) apprehended by the authorities. Konetzke and Vigil de Quiñones refer to some sources of this kind at the Archivo de Indias. The former also gives eloquent examples of the desperate lamentations of the authorities at their own ineffectiveness. 19

How about the source materials on the arrival of migrants in the New World? They are strikingly scarce, despite royal orders in the mid-sixteenth century that registers should be kept of immigrants and passengers landing in the colonies. “Undoubtedly such registers were kept, but they have not yet been found,” Sherburne F. Cook and Woodrow Borah conclude, with reference to New Spain. 20 Any kind of return voyage would also require licenses from the authorities. These should be looked for in the Archivo de Indias as well as in Spanish American archives. Migrants from Spain who had left their wives behind were requested by the authorities either to send for them or to go back for good. Documentation on these cases can be found. 21 Otherwise, illegal migrants could easily purchase legalization, as a royal decree of 1688 clearly states. 22 Such entries of income should be looked for in the treasury accounts of the various Spanish American jurisdictions. The forced “**donatfons**” imposed on illegal foreign immigrants would, as Woodrow Borah has exemplified in the case of a group of Portuguese settlers in New Spain in the 1640’s, constitute another kind of documentary evidence. 23 As shown long ago by José Toribio Medina and later on by Boleslao Lewin and others, Spanish American Inquisition archives yield abundant information on a particular group of illegal migrants, Portuguese “**New Christians**” (converted Jews) and Protestant foreigners detected by the Holy Office. 24

A complete or almost complete **Padrón** or list of 1,172 European-born Spaniards in Mexico City in 1689 was reproduced by Ignacio Rubio Mañé some years ago. 25 Unfortunately it seems to be almost unique in its kind. Various types of general population counts in Spanish America can also be used to obtain an approximate measure of migration. That of cosmographer Juan López de Velasco in the 1570’s is sometimes used for this purpose. 26 But it becomes increasingly risky to use the category of “Spaniards,” as it covers more and more American-born Spaniards and mestizos as well. 27 A breakdown between Spanish-born and American-born whites is occasionally made. One such count, the Chilean **Censo** of 1813, suffers from an obvious absurdity in the reporting of Peninsular Spaniards, however. 28 The reconstruction of immigration from the
Spanish Migration prior to 1810

Spanish American end would be an extremely laborious undertaking. If such research were coordinated efficiently with that carried out in European deposits, however, one might expect good results, both in terms of life stories and sheer quantification. A data bank on migration would be basic here. 29

NUMBERS

As long as archival deposits have not been systematically explored, the volume of migration can only be surmised. It is even more hypothetical in the case of the seventeenth and eighteenth centuries than the sixteenth.

In 1917 Luis Rubio y Moreno published the first summary of the libros de asientos. Those like Earl J. Hamilton who assumed his summary figures to be “roughly accurate” have to accept that only 8,000 Spaniards emigrated legally to Spanish America, from 1492 to 1592. 30 A little later, the Director of the Archivo de Indias, Cristobal Bermúdez Plata, and his collaborators started a more ambitious undertaking, using the series Informaciones y licencias de pasajeros as well. The three published volumes of their Catálogo de pasajeros a Indias listed a total of 15,480 passengers for the period 1509 to 1559. It has been less observed that the total number of passengers listed on card index at the Archives in 1930 was reported to be about 150,000. 31 This would then constitute the absolute minimum for total Spanish migration to the Indies during the entire colonial era. However, as Juan Friede put it, “even a summary glance” 32 would reveal that documentation for entire years was lacking in the Catálogo, sometimes for years when other sources show great waves of emigration. To attain more realistic figures Friede calculated that the 2,550 ships registered for Atlantic traffic between 1504 and 1550 should have carried an average of 17-20 passengers each, that is, some 45,000 people. Furthermore, the number of return voyages was much lower. As shipwrecks were only responsible to a minor extent, Friede assumed that most of the crews, some 35,000 people, stayed in the Indies and should therefore be counted as emigrants. A total of 150,000 people at least moved from Spain to America prior to 1550, Friede declared.

In his cautious presentation of the economic and social history of Spanish America in the sixteenth century, Guillermo Céspedes del Castillo in 1957 found Friede’s calculation slightly inflated but in the right direction. 33 Trying a different approach from Friede’s, Richard Konetzke ventured a conjecture of 300,000 westward “crossings” for the entire sixteenth century. 34

And what about the seventeenth century? John Parry, who thought that some 100,000 people left Spain for America in the sixteenth century, suggests that in “the seventeenth century the rate of emigration may well have been higher.” He points to the deepening crisis in Spain as an
encouragement of emigration but admits that at the same time shipping space became increasingly scarce.\textsuperscript{35} Charles Verlinden unhesitatingly states that the seventeenth century witnessed "une forte immigration," but gives no proof.\textsuperscript{36} As far as I know, primary research so far has not touched seventeenth-century migration.

As far as the eighteenth century is concerned, Mario Hernández Sánchez-Barba in 1954 presented a calculation of 52,500 persons for the century. His method can be seriously questioned however. It was based on figures from the Contratación records for three years only, arbitrarily chosen, as it seems, plus 50\% for fraudulent emigration.\textsuperscript{37} No scholar has yet dared to present an estimate for the whole of the colonial period.

In 1964 Peter Boyd-Bowman's first volume of an \textit{Indice geobiográfico de cuarenta mil pobladores españoles de América en el siglo XVI} appeared. This third attempt to present sixteenth-century migration was inspired by the editor's linguistic aim to uncover the Peninsular roots of Spanish American dialects. Thus, regional percentages were deemed of much greater interest than absolute numbers. In any case, thanks to his diligent perusal of a vast number of sources, Boyd-Bowman has been able to increase the numbers yielded by the \textit{Catálogo} considerably. His figures for the period 1493-1559 total 28,019, that is almost double the \textit{Catálogo}.\textsuperscript{38} According to recent information, his material for the entire period until 1600 now comprises data on 55,000 colonists.\textsuperscript{39}

Boyd-Bowman never claimed that his \textit{Indice} was "exhaustive." If other students have done so it is not his fault.\textsuperscript{40} The two volumes published so far were obviously based mainly on published collections of documents, fortunately quite extensive as far as the sixteenth century is concerned. But he has also made use of unpublished sources. It is a pity that he has not provided much information on his source material. In his most recent survey he merely states that he has complemented passenger registers with "wills, genealogies, chronicles, probanzas, interrogatorios and so on," without specifying whether published or not, or, in the latter case, whether kept in Spanish or Spanish American archives.\textsuperscript{41} In his first volume (1964) Boyd-Bowman cautiouslly suggested that the 40,000 names he then believed his catalogue would comprise for the whole sixteenth century would represent approximately 20\% of total migration.\textsuperscript{42} We don't know whether his estimate has changed after finding another 15,000 names; but obviously he vastly improved our basis for calculation of sixteenth-century migration, and it is regrettable that volumes iii and iv have not yet appeared. The concluding fifth volume should be ready soon.

Meanwhile, in the late 1950's Pierre and Huguette Chaunu published their monumental work, \textit{Séville et l'Atlantique (1504-1650)},\textsuperscript{43} where they succeeded in avoiding practically any mention of the existence of
Spanish Migration prior to 1810

passengers. However, the data provided by the Chaunu ought to permit a more detailed application of the methodology used by Friede in 1951 to establish an optimum framework for overseas migration. Their data on the number of westward journeys and average tonnage and my own rough approximations of crews and passengers, lead me to assess some 250,000 overseas migrants as the maximum figure for the sixteenth century. The equivalent for the first part of the seventeenth century would be 200,000 (see Appendix 2).

As a further experiment I have also plotted a semi-logarithmic graph to show the possible co-variation between the Chaunu navigation data and overseas emigration as known to us through Boyd-Bowman’s data. The latter has prudently denied that his figures indicate quantitative developments in time. Yet my graph (Appendix 3) does show a certain co-variation between his figures and those of the Chaunu for the period 1508-39. Boyd-Bowman’s data on yearly emigration is not available after that latter date. For this reason I do not want to draw any general conclusion from my experiment.

For the eighteenth century, information on navigation is still far too fragmentary and dispersed to permit even the roughest of calculations. It should be mentioned, however, that the Brazilian historian Manoel Lelo Bellotto, in his recent work on the packet boat traffic between La Coruña and Montevideo, 1767-79, did count the passengers. They totalled 363 in the westward, and only 151 in the eastward direction. The frigates employed in this traffic were prohibited from admitting other passengers than office holders (civil, military, or ecclesiastic) and merchants with special permits. 44

One might think that information on the number of Spanish-born living in America on the eve of Independence would be rather easy to find and that it would help to estimate the late eighteenth-century situation. But unfortunately this is not so. The worthlessness here of the Chilean Censo of 1813 has already been referred to. As far as New Spain was concerned Alexander von Humboldt’s guess that some 70-80,000 of the whites in that viceroyalty were Peninsulares was surely inflated. He did not give more than 2,500 for Mexico City, which should have been a center. Another contemporary observer, Navarro y Noriega, did not think Peninsulares in New Spain exceeded 8,000. A modern student who has studied the matter makes the estimate of 15,000, half of whom were military and a tenth ecclesiastics. If Humboldt’s estimate for New Spain cannot be relied upon, even less can his global conjectures for European-born people in Spanish America in the early nineteenth century, which vacillate from 200 to 300,000. 45

To some extent, a non-quantitative approach will help us to understand the magnitude of Spanish migrations. How would the extreme speed of colonizaton in Spanish America or the founding of such an
extraordinary number of cities be explained without a sixteenth-century immigration of hundreds rather than tens of thousands of people? Also, would the early grievances about Spanish vagrancy and the founding of convents to absorb a superabundance of Spanish girls make sense if there had not been a very sizeable and, in fact, insufficiently controlled inflow of immigrants? Finally, nothing is to my mind more enlightening here than the persistence, throughout the entire colonial era, of rivalry, even hatred, between Peninsulares and Criollos in all spheres of Spanish American society, in every corner of the far-flung empire. The eighteenth-century travellers Juan and Ulloa observed that this opposition was even more striking in the centers of population of the isolated Andean Sierra than on the coast. The Criollo-Peninsular feud, per se, would have been renewed in each generation because the children usually joined the Criollo relatives of their mothers.

SEX AND AGE DISTRIBUTION

Prior to the publication of the Catálogo de pasajeros it had been taken for granted that early emigration to the Indies was almost exclusively male. The Catálogo showed that some 10% of all licenses conceded up to 1538 were to women, 1,076 of them to be exact. Circumstances surrounding this emigration were studied in particular by Konetzke, who suggested that due to the higher mortality of men overseas, the disproportion among settlers in the Indies would lessen. He also commented on the fact that no more than a third of the women leaving were married.

Interestingly enough, the larger number of passengers listed by Boyd-Bowman for the early sixteenth century (see p. 723 above) would barely affect the absolute number of women. Thus, their percentage for the period 1509-19 was given as only 5.6, for the years 1520-39 as 6.3. But then, with the growing normalization of colonial society a rather steep rise set in: 16.4% for the period 1540-59. During this third period, almost half would be married or widowed. In the following period, 1560-79, the rate continued to rise to as much as 28.5%, whereas the proportion of married to widowed women remained almost the same.

No data have been found for the later period. But the systematic transfer of family groups, particularly from the Canaries in the eighteenth century, should be noted. Also, from the later sixteenth century onwards there are many indications that within the white group in Spanish America, the sexes were becoming increasingly balanced.

The Catálogo and Boyd-Bowman's data do not provide any clues as to the distribution of ages. But voluntary migrants are usually rather young. Jorge Nadal Oller finds it "logical" if emigrants to the Indies were mainly composed of men between 16 and 25 years, an age group
Spanish Migration prior to 1810

comprising some 15% of all male inhabitants of Spain in the 1760's.\textsuperscript{50} The issue is of great importance, as we shall see, in evaluating the impact of emigration on the mother country. Of the small sample of Spanish \textit{conquistadores} in Peru in 1532, studied in detail by James Lockhart, about three-fourths were under 30.\textsuperscript{51} It should also be noted that half of them at that time had spent more than five years in the Indies. Obviously, the pattern of family migration would be very different. Out of a small sample of 44 Canarian families leaving for Florida in 1757, more than half of the individuals were under 16 years. Of the adults, only eight were above 40.\textsuperscript{52} However, such tiny samples provide no basis for generalizations. We have to admit that we do not know anything for sure about age distribution.

REGIONAL DISTRIBUTION

Even though Boyd-Bowman's data on early emigration to Spanish America cover nearly 40% more individuals than the \textit{Catálogo de pasajeros}, regional distribution (as shown in Appendix 4) is almost identical in the two series for the period until 1539: 34% of the emigrants would come from Andalusia, another 52 to 56% from Extremadura, the two Castiles and León. Even more significant, the few samples which we possess on the regional distribution within groups of early settlers in America reveal basically the same pattern. Out of 84 settlers in Panama in 1519, 29 were Andalusians, 18 Extremadurans, 17 Castilians. Out of 131 of Pizarro's men in Peru in 1532, there were 34 Andalusians, 32 Castilians and as many as 36 from Extremadura, home country of the Pizarro brothers themselves.

Obviously, as time went by, the pattern would suffer gradual and limited modifications. During the period 1540-59, according to Boyd-Bowman, 35% of the migrants came from Andalusia, and 45% from Extremadura and the two Castiles. In the Rio de la Plata, 1535-80, the Andalusian dominance was even greater: 45%. From 1689 a thousand Spanish inhabitants in Mexico provide a unique possibility for comparison: 30% were Andalusians, 28% Castilians, but only 2.9% Extremadurans. On the other hand, the share of Basques had considerably increased. They constituted 14.5%.\textsuperscript{53} Their strong presence in seventeenth-century Spanish America is also suggested by other sources. Between the 1620's and 40's a large-scale feud divided the Spanish population of the mining camps of Potosi in present-day Bolivia. One of the bands was composed of Basques who opposed all the rest, \textit{Peninsulares} and \textit{Criollos}.\textsuperscript{54}

The share of emigrants from the northern and eastern coast regions as well as from the Canaries ought to have increased in the course of the eighteenth century.\textsuperscript{55} Basques, Galicians, Catalans, Valencians, Canarians all become more frequently mentioned in the sources on Spanish
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America on the eve of Independence. Within well-defined schemes of colonization a total of at least 4,909 Canarians were brought to Santo Domingo, Texas, Florida, and some other peripheral parts between 1700 and 1764, that is, an average of 107 annually. However, available data are barely enough to validate any generalizations about regional distribution towards the end of the colonial period.\(^56\)

According to Boyd-Bowman's figures the Andalusian percentage in women was even higher than in men. During the period of 1493-1519 they constituted 66% and even in 1540-79 slightly more than 50% of all female overseas migrants. Boyd-Bowman believes that the gradually diminishing female rate for the more distant provinces was mainly a reflection of the hardships facing ladies travelling in sixteenth-century Spain.\(^57\) This seems very likely. As we shall see, the pattern of communications must also have exerted a strong influence on the pattern of regional distribution of all overseas migrants.

The categories of distribution into the historic regions of Spain are very rough and often clearly insufficient for advanced analysis. Lockhart makes a very enlightening breakdown into subregions for his sample of Peruvian conquistadores. His statement that "Spaniards' primary loyalties were to smaller units . . ." is supported by the intra-Extremaduran feuds that would take place in early Peru.\(^58\) Fortunately, Boyd-Bowman made a breakdown into provinces (the ones of modern Spain) which is very useful. This categorization reveals that eight provinces alone provided slightly more than 60% of all overseas emigrants prior to 1579. These provinces were Seville, Badajoz, Toledo, Cáceres, Valladolid, Huelva, Salamanca and Burgos.\(^59\) This was broadly speaking the main axis of sixteenth-century Spain. The route connecting Seville and Old Castile via Almadén, Mérida, Cáceres, Alba de Tormes, Medina del Campo and Valladolid can be followed on Juan Villuga's famous itinerary of 1546. From Valladolid other routes led to Burgos, Santander and Bilbao. But it should be observed that, according to the analysis made by Gonzalo Menéndez Pidal of Villuga's itinerary, the route from Seville via Córdoba, Ciudad Real and Malagón to Toledo was probably more important than that from Seville via Cáceres to the cities of León and Old Castile. In any case, the cities of Toledo, Medina del Campo, Salamanca, Valladolid and Burgos were the major centers of communication in western Spain at the time. Additionally, one of the main sheep trails (cañadas) of the powerful Association of Sheep Owners (La Mesta) followed the western road, connecting the plains of Seville with the Meseta via Badajoz, Cáceres and Salamanca. Though communications would surely not be enough to explain the pattern of regional distribution of overseas emigration, they clearly form an element which cannot be ignored.\(^60\)
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Boyd-Bowman's data on regional distribution on the provincial level also underscore the southwestern predominance. The province of Seville alone accounted for about a fourth of total emigration. Together the provinces of Seville, Toledo, Badajoz and Cáceres were responsible for no less than 48%. In Appendix 5, I give a table of regional distribution on the provincial level which is based on the elaboration of Boyd-Bowman's figures prepared by Jorge Nadal Oller. For the period of 1560-79 I have carried out that elaboration myself.61

Mario Góngora has stressed still another level of regional distribution, that is by the type of jurisdiction over the place of origin. Out of his Panamanian sample in 1519, a fourth came from places under seigneurial jurisdiction (señorío) and that of the Orders.62 He has also indicated that during the Conquest (1509-38), 35% of all the Extremaduran emigrants came from the lands of the Order of Santiago.63 However, as we shall see, these and other features of regional distribution become meaningful only if confronted with the distribution of population in Spain itself.

A final aspect of regional distribution is that of urban-rural origin. Boyd-Bowman finds that no less than a third of all emigrants between 1540 and 1559 came from ten cities only and more than half from a total of 38. The leader was the city of Seville-Triana. According to his data it was responsible for more than 18% of total emigration until 1579. He has tried to check if all the "Sevillanos" were really born and bred in the city, and were not recent immigrants there,64 and seems justified in concluding, on the basis of the nomenclature used, that most of them were indeed natives. Obviously, in central and southern Spain no clear division could be drawn between urban and rural settlements. Also relatively large agglomerations would hold numerous groups of peasant residents. Nevertheless, the little we know about the social recruitment of the emigrants of the sixteenth century lends support to the impression of a largely urban migratory movement.

SOCIAL COMPOSITION

The question of the social origin of an immigrant group is always a delicate one. Traditionally, Latin Americans used to point with pride at their "noble" origins. But some, including Simón Bolívar himself, underlined instead the low and "degenerate" extraction of the conquistadores to explain their "cruelties" and "vices." In more recent times, on the other hand, the "popular" character of early migration may be presented as a redeeming feature, a contrast to the hierarchization of later times.

What we know for certain about these problems is not very
impressive. In the licenses at Seville, information on professions is scarce. The supplementary data gathered by Boyd-Bowman contain some pertinent information but only on about a sixth of the people listed. Out of 13,262 migrants in 1520-38 he found some 255 sailors, 275 religious, 179 merchants, 289 hidalgos, but because of his reliance on biographical data in literature, people of humble extraction will more often than not have escaped his classification. Even so he found that one migrant out of ten in the period 1540-59 was a servant. 65

James Lockhart, in his study of early Peruvian society (based largely on the notarial archives) makes the conjecture that about a tenth of all Spaniards in Peru, some 20,000 between 1532 and 1560, were working artisans in trades which they had surely learnt in the home land,66 and that Pizarro’s men also comprised several artisans. However, one third belonged to the small gentry possessing hidalgua. A particularly interesting feature in Lockhart’s analysis concerns literacy. He finds that at least 76 of Pizarro’s 168 men were functionally literate and 41 were not, while nothing was known about the rest: “marginal hidalgos” and “upper plebeians” formed the core of the conquistadores of Peru.67 The most explicit sample of social composition so far is Mario Góngora’s list of 84 conquistadores from Panama in 1519. Whereas 11 could be classified as gentry and soldiers, and 10 as belonging to the urban middle strata, the greater part were of popular extraction: 20 had been artisans in the old country, 14 peasants and 11 sailors. 68

Seeking support in Góngora’s sample, Juan Friede vigorously argued in favour of the “popular character” of the settlement in the New World. He justly underscored the fact that in a hierarchical society individuals would always try to hide antecedents considered “vile.” Thus, few people would willingly reveal peasant or servant origins.69 In 1971, Friede’s argument was challenged by Angel Rosenblat, who restated the “hidalgo character” of Spanish colonization. He found support for this in a considerable number of quotations from chroniclers and other contemporary observers, while evidently ignoring Góngora’s evidence. Rosenblat is convinced that the language transferred to the New World reflected the Spanish elite rather than the popular strata; it forms a red thread in his article.70 Whatever its truth, however, it should not necessarily mean that popular participation was “amazingly” slight. Also, groups of peasants might at times have accompanied their masters overseas, as one source shows. “Hidalgos” and “peasants” are by no means naturally exclusive. 71

As always we know even less about social composition in the seventeenth and eighteenth centuries than in the sixteenth. According to Hernández Sánchez-Barba’s sample of 1,050 migrants from the years 1729, 1749 and 1780, 30% were servants, 13% merchants, 8% administrative personnel, 6% ecclesiastics and 23% manual workers. The
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representativeness of the sample is debatable however. Two famous travellers of the 1730's, Juan and Ulloa, would have us believe that Spanish immigrants were, "as a rule, of low birth in Spain, or of little known lineage, without education..." 72

One migratory social group of special interest is the ecclesiastics. In theory if not always in practice they were excluded from contributing to the genetic pool of the New World. They constituted a continuous flow of impressive proportions as José Castro Seoane's catalogue for the sixteenth century and later documentation show. Also many foreign religious were able to join this stream. 73

Another group which deserves special attention is the merchants and their agents. According to Boyd-Bowman their share of overseas passengers increased considerably after 1540: for the period 1540-59 one out of 20, for 1560-79 one out of 16. They had to post bond, if crossing the Atlantic without their wives, to ensure that they would return within a specified, usually brief, length of time. Many made the crossing repeatedly on these terms, Boyd-Bowman assures us. The phenomenon was even more important during the eighteenth century. Such merchants were hardly "emigrants" in any real sense. We do not know how many did in fact remain and contribute to the colonial population. 74

Finally, special mention must be made of those Negro slaves who, particularly in the early years of colonization, were sent to America from Spain rather than directly from Africa. In Seville, Negro slaves were particularly numerous, as servants and in other capacities, and as Ruth Pike has shown, some were even sent to the Indies as business agents of their masters. She also points to the many black and mulatto freedmen who went from Seville to the New World. 75

RE-EMIGRATION

Ninety years ago a pioneer scholar produced a series of "Laws of Migration." One of these read: "Each main current of migration produces a compensating counter-current." 76 Early migrations to Spanish America were no exception. Though the journey was expensive, lengthy and risky, many settlers chose eventually to return. Some had by then made the fortune which was their principal aim when leaving Spain. They preferred to spend it and pass their last years in the home country. So, for example, a brother of Santa Teresa returned in the 1570's, shocked his old acquaintances by assuming the title of Don, and bought land near Avila for 14,000 ducats. 77 Others returned because they were disappointed. Some of the employees and ecclesiastics appointed to positions in the Indies stayed and died there, but others left. Brutto migration is, in fact, of a limited interest if we cannot measure the opposite stream.
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However, Boyd-Bowman's data do not cover re-emigration; and the volume of shipping is an inaccurate yardstick as the space available on return journeys was probably unevenly used. A unique sample is that presented by Lockhart with respect to Pizarro’s men. Out of these 168 Peruvian *conquistadores* no less than 74 eventually returned to Spain. The final destiny of 36 men is unknown. Many of them may have returned, too. Lockhart tries to relate this phenomenon with the degree of experience, military and social rank of the returnees. Veterans, *hidalgos*, and horsemen with large shares in the booty of the Incas were the ones most likely to return. It must be stressed, however, that this sampling is an extraordinary one. There were few groups as suddenly successful as these in the history of Spanish overseas migration. They were fighters, not settlers: their mentality was very different from that of the 668 early colonists whose letters to Spain have recently been unearthed. These correspondents were peaceful, ordinary men for whom one trip across the Atlantic was usually enough; they presumably constituted the vast majority of Spanish overseas migrants.

**THE “CAUSES” OF SPANISH OVERSEAS MIGRATIONS**

**GENERAL VIEWPOINTS**

The Spanish migration to the New World was a voluntary movement. No Spaniards were ever forced to leave their country for the overseas territories. It is true that the government, to a greater or lesser degree, tried to direct or restrict the outflow of people, but its effort at directing emigration had a mixed success. Nor was it overly difficult for individuals who wanted to migrate to bypass legal restrictions. The real obstacles were economic rather than legal. Voluntary migration is based on individual decisions, which involve two different stages. First, single individuals and heads of family have to make up their minds to leave their homes for somewhere else. Second, they have to decide the time and method of doing it.

Consequently, one should first analyse why people came to the general decision to go overseas, by studying the comparative geographical and social levels of population with a different frequency of migration. This structural analysis reveals the respective “migration differentials.” Second, there is the timing and the way the migration actually took place, which must be studied in a chronological context.

At both stages of analysis, one can discern forces of repulsion (from the old country) as well as forces of attraction (to the new one); they both involve possible “push factors” constituted by socio-economic, political and religious conditions at home. But they will also involve “pull factors,” such as the popular image held of the country of destination; in fact, the choice among possibly existing alternatives of migration will be due to “pull factors.” A sixteenth-century Spaniard living in a poor rural
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district, for instance, might be able to choose between looking for a job in the nearest big town, going to a more prosperous rural area somewhere else in the country, joining the army in Italy or Flanders, or, finally, going to the Indies. On the other hand, it is irrelevant to the phenomenon of migration whether the prospective migrant's image of the various destinations was real or false. In the course of history, false images often produced more tangible results than true images. It is another matter if the Spaniard's disappointment with the country of destination induced him to go back if it was still feasible.

In the analysis of timing and method of actual migration both "push" and "pull factors" can often be discerned. Emergency situations of different kinds may transform a general disposition into action. Epidemics, starvation, and wars could have been such "push factors." The loss of jobs or land may have had a similar effect. A relaxation of government regulations may also induce more people to migrate. "Pull factors" often dominate the picture, though: a propaganda or recruitment campaign; free or cheap transportation presented in the form of passage money (either sent from relatives already settled in the other territory or provided within the framework of colonization schemes); news from the country of destination announcing tempting opportunities. Research on nineteenth- and twentieth-century migration focusing on these elements has led to a highly sophisticated study of business cycles on both sides of the Atlantic. In more distant times, the news of a successful expedition of conquest or the discovery of a rich silver mine produced similar results. In both periods, however, migration would often follow overseas events only after considerable delay. This "distributed lag" makes it more difficult to discern the causal connection. 79

In 1956 Charles Bishko affirmed: "For Iberian population history as related to overseas colonization, almost all is yet to do." 80 Since then, the study of Spanish population history has progressed notably. A number of regional investigations have been carried out, and some of the earlier generalizations have been undermined or proved false but have not yet been replaced. Thus, paradoxically, we appear to know less now than we used to. But, in fact, our solid knowledge has increased considerably. On the other hand, apart from a few pages in a book by Jorge Nadal Oller, no effort has yet been made to relate Spain's population history to that of Spanish America, and in this respect, Bishko's gloomy statement is as valid today as it was 20 years ago.

REGIONAL AND SOCIAL PATTERNS

As we have already seen (Appendix 4), in the sixteenth century about 90% of Spanish overseas migrants came from Andalusia, Extremadura, León and the two Castiles. Consequently, our search for relevant patterns of regional structure can safely concentrate on these parts of the
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Peninsula. According to Domínguez Ortiz’s interpretation of the well-known count of 1591, Andalusia had by then some 1.3 million inhabitants, that is about 17% of Spain’s 7.9 millions. Extremadura had 540,000 (7%), and the two Castiles and León 3.2 millions, that is, 41%. The real basis for Spanish overseas migration would then be confined to some 65% of the total population.81

However, as Boyd-Bowman’s data suggest, the intensity of migration also differed widely within this large zone. Eight provinces alone—Seville, Huelva, Badajoz, Cáceres, Toledo, Valladolid, Salamanca and Burgos—provided slightly more than 60% of total overseas migration, prior to 1580. At the same time, their share of total Spanish population should have been no more than 30%. Between 1560 and 1579 the four provinces of Seville, Badajoz, Cáceres and Toledo, alone, according to Boyd-Bowman, were responsible for more than half of overseas migration. On the other hand, in the 1590’s their share of Spain’s total population was less than a fourth.82 This highly diversified pattern should provide a promising basis for the investigation of migration differentials.

In Appendix 6, I have taken New Castile for analysis because Noel Salomon’s excellent study of its rural structure in the 1570’s provides most of the data we need. The population of the major cities had to be estimated, however. The table clearly shows that the provinces of Toledo and Madrid, comprising about 50% of New Castile’s population, were responsible for more than 70% of its overseas migration (prior to 1580). Though their provincial capitals had large populations, their urban population as a whole (nuclei of more than 500 households) was smaller than that of the other provinces of the region except Guadalajara. We may therefore assume that rural conditions are important in our search for migration differentials in New Castile. Thanks to Salomon’s study we now know the number of rural households under each of the four categories of jurisdiction existing at the time: the royal, ecclesiastical, and secular Señorío, and the Military Orders. After the Military Orders were incorporated with the crown under the Catholic kings, these forms of domination—as far as peasant conditions were concerned—became similar; however, peasants were and felt somewhat more oppressed under the ecclesiastical and secular Señorío.83 It is therefore surprising that the provinces where most rural people lived under the Royal or the Military Orders’ jurisdiction (Toledo and Madrid) were the ones which led in overseas emigration. Purely economic burdens might have played a greater role. Salomon’s data on the tithe taxation, which by comparison made seigneurial dues appear insignificant, do suggest that tithes were particularly heavy in Toledo and Madrid. Or is the causal relationship between Señorío and emigration opposite to what one would first expect? Were peasants under Señoríos, perhaps more
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often than others, kept on the land of their secular or ecclesiastical lords, instead of emigrating as they wanted to?

Rural structure must have been a factor in emigration in the case of Extremadura, a region which, with 7% of Spain's population, provided some 17% of all overseas migrants prior to 1580. Of this impressive share, no more than a fourth came from five cities, all of them small. According to Mario Góngora, in his study of the district of the Order of Santiago in Extremadura on the eve of the Discovery, peasants there found the efforts of the Order towards the formation of "enclosures" (dehesas) and other seigneurial demands based on jurisdiction increasingly irksome; this would help to explain the extent of early emigration from the territories of the Order. To understand the continuation of heavy emigration from Extremadura, however, Góngora's study cannot stand alone. Until further research is carried out, the general poverty of the region and the nearness of Seville remain commonsense explanations. It is easy to illustrate the growing distress of the Castilian peasants from the sixteenth century onwards. But did this lead them to participate in overseas migration on a larger scale? Or induce them rather to move to the nearest city? According to Salomon, no less than 60-70% of the rural population of New Castile were rural workers living in abject misery. In view of their limited perspectives and total lack of means, they might well try to escape to the nearest city, but it would be less likely for them to join the stream of overseas migrants.

Urbanization did, in fact, increase during the latter half of the sixteenth century. And there can be no doubt as to the significantly "urban" character of sixteenth-century overseas migration in general, particularly if only the major cities are taken into account. A total of 31 cities provided 45% of the total overseas migration prior to 1580, according to Boyd-Bowman, ten cities and towns as much as 33%. Furthermore, two of these, Seville and Toledo, provided no less than 22%. It is true that they were the two biggest cities in Spain at the time but their share of the total population of the country in the 1590's was probably less than 2%. At the same time, they differed widely. Seville, thanks to its external trade, grew by leaps and bounds throughout the sixteenth century and it was three times larger than any other Andalusian city in 1600. Toledo, an important center of various trades and of commerce, grew slowly during the same period. Bypassed by its neighbour Madrid, the new capital of the country, Toledo began a steep decline around 1600. Reflecting this, Seville increased its share of Spain's total overseas migration (according to Boyd-Bowman) from 18% in 1493-1519 to 22% in 1560-79, with its share of total Andalusian migration rising from 44 to 58%. Toledo, too, succeeded in raising its share of total migration from 1.9% in 1493-1519 to 3.1% in 1560-79 but its share of that of New Castile dropped from 20.9 to 16.1%, as shown in
Appendix 7. As long as Boyd-Bowman’s material has not been presented in detail for the later period we can only guess that the share of the “rural” sector of New Castile increased. Madrid, in any case, did not augment its share, despite its extraordinary expansion.

As for the northern Meseta (Old Castile and León), the data suggest a trend towards an increasingly “urban” character of overseas migration. The varying fortunes of Valladolid, a major administrative center until its abandonment by the court in 1560, appear to be reflected here. Its share of regional emigration dropped from 8.7% in 1540-59 to 3.4% in 1560-79. Inversely, the share of Salamanca, the great university center, increased, as did that of Segovia, the expanding industrial center of Old Castile. Burgos, the traditional center of the wool trade, which suffered its decisive crisis in the 1560’s, held a higher percentage of emigration during the early part of the century than from the 40’s onwards.

Thanks to Bartolomé Bennassar’s elaboration of the census of 1561 these data on emigration from the cities of Old Castile and León can be related to information on their social structure. We have tried to do this in Appendix 7:0. It is clear that the tertiary sector was particularly large in Valladolid and Salamanca. The number of merchants, lawyers, students, shopkeepers, servants, priests, beggars, and other people whom Bennassar groups under this heading, equalled that of artisans. Valladolid and Salamanca were the two cities in the region which sent the highest number of emigrants to the New World. But, if one relates the number of migrants to the number of households of each city, the picture becomes much less clear. Salamanca emerges as the undisputable leader whereas Valladolid drops to last place on the list. Is Salamanca’s lead to be attributed mainly to its large student population? Does the great number of textile workers at Segovia and the high percentage of other labourers at Medina del Campo explain why they occupy second and third places? Thanks to Bennassar’s meticulous study, we know that there was a lack of manpower in Valladolid during the period 1540-60, and the overseas migration of the city dropped from a high in 1540-59 to a low in the bad years of 1560-79.

The search for migration differentials raises more problems than it solves at the present stage of research on the economic and social history of Spain between 1493 and 1580. To pursue the analysis in depth, we shall need the detailed data for the period following 1539.

The results of our discussion on migration differentials during the sixteenth century must therefore be summarized as mainly negative. The example of New Castile showed that it cannot be assumed that a high degree of laical or ecclesiastical Señorío led to a more extensive overseas migration. As Boyd-Bowman has often pointed out, that emigration was strongly urban. But, it was not necessarily so if the border between “urban” and “rural” is, in an unavoidably arbitrary way, set at 500 households. The great centers of migration were the largest cities under the crown of Castile, with Seville and Toledo as the
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undisputed leaders. On the whole, the relative growth of overseas migration coincided with the expansion rather than the decline of the large urban centers. No clear relation between socio-economic structure and frequency of migration can yet be discerned. Interestingly, Salamanca, with its low share of people active in production, had a high frequency of overseas migrants, whereas Valladolid, with a similar structure, had a very low one.

So far, the pattern which has emerged gives little support to those looking for different “push” factors. On the other hand, “pull” factors might explain the extraordinary predominance of the city of Seville, western Andalusia and Extremadura, as well as the provinces and cities situated along the main routes of the Meseta. The principal cities were the ones most easily reached by news from the Indies and by recruitment campaigns. Their expanding sixteenth-century population comprised heterogenous social elements, which for one reason or another would be attracted by overseas migration. But Boyd-Bowman’s fragmentary data on the social background of migrants suggest that there was a structural change towards mid-century. More families left. Most of the women were among the Sevillan and Andalusian emigrants, and there were more professional men, artisans and servants. Out of a sample of 98 Spanish artisans in sixteenth-century Peru, Lockhart found 32 were natives of Andalusia, 24 of Old Castile and León. Servants as well as clergy were especially numerous among the emigrants of Old Castile.

No meaningful search for migration differentials for the period after 1580 can take place if we ignore the social composition of seventeenth-and eighteenth-century migration. It is a reasonable guess that the deepening crisis of Castile in the seventeenth century increased the role of “push” factors in overseas migration. In the case of the northern seaboard, lack of land and excess of population in respect to available resources triggered migrations which were mainly, if not exclusively, internal: in this structural pattern overseas departures apparently became an element of increasing importance. But also the emigration from the eastern seaboard seems to have increased during the eighteenth century. One may venture the guess that if such were the case, it was in line with the demographic and economic expansion of Catalonia and Valencia and a result of “pull” rather than “push” factors. The Canaries, finally, were an area where “pull” factors were strong, because of their relative proximity to and frequent communication with the New World. At the same time, the archipelago was underpopulated for a long time.

CAUSAL CONTEXT AND TIMING OF OVERSEAS MIGRATION

Because we know practically nothing about the quantitative evolution of overseas emigration, the causal context cannot be discussed in concrete terms yet. It is true that, as far as the sixteenth century is
concerned, Boyd-Bowman found particularly great numbers of migrants during two 20-year periods, 1520-39 and 1560-79. But he explicitly cautions us that such variations may be only “apparent”: with the period 1560-79 the “increase” could simply be attributed to more complete passenger registries.98

The role of “push” factors in the timing of emigration is well known today. But they are hard to prove in the case of Spanish overseas emigration prior to the nineteenth century. What role did political factors play? In 1521 the Comunero rebellion of Castile, involving not only townspeople but also many peasants, suffered a crushing defeat. In the case of Toledo, bulwark of the movement, Javier Malagón Barceló has suggested that “among the names of those who crossed to the Indies we would find many of a Comunero background. . . .” Boyd-Bowman’s name lists should, to some degree, permit such a scrutiny.99 The devastating war with Portugal after 1640 is also reported to have caused widespread emigration to America from the border areas.100

Political “repulsion” forces are often concurrent with religious ones. In the case of Spain, individuals who harboured traces of Jewish or Moslem faith would have been likely to prefer the somewhat more lax New World environment to that of their homeland. However, emigration control was on the whole quite efficient here even if one or two individuals slipped through; we are not certain, for example, whether Morisco elements escaped in the early seventeenth century.

In the course of the sixteenth and particularly the seventeenth century Spain passed through a series of increasingly serious socio-economic crises, often combined with epidemics. They must have influenced the pattern of overseas migration but in which direction?101 They should have augmented vagrancy, temporary or short distance internal migrations. But were those wishing to leave for the Indies able to procure the passage money or the shipping space they needed in a moment of crisis? Nadal Oller speculates that the plague of 1649-52 may have drastically reduced Andalusian emigration. On the other hand, in the middle of the next period of disaster, from the late 1670’s to the early 80’s, a contemporary observer reports that as many as 6,000 people left with one Atlantic fleet “for not being able to live in Spain.”102

One thing is certain. Spaniards who once left for America with the intent of returning later on would often change their minds when they heard about a crisis in their homeland: “their wings broke” as one of them wrote in 1577. Instead, they would opt to acquire landed property and marry local girls, and their migration would become a fact.103

At the individual level, emergency situations led continuously to emigration decisions. For example: Cervantes, who once tried in vain to get a government position in the Indies, presents in his El celoso extre-
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meñío a character who is "without any money and also without any friends," and has to resort "to the means of so many other lost people of that city (Seville), that is to go to the Indies." How he got the passage money, the author does not tell.\(^{104}\)

"Pull" factors were no doubt particularly strong at the individual level, when convincing messages, sometimes containing passage money, came from relatives already settled in America. The newly discovered letters, with their descriptions of the good life in America, were especially persuasive when the situation in Spain got particularly bad. In 1576, for example, a weaver in Mexico tells a cousin that he sells his products more profitably than in Spain, "Therefore you would make me happy getting away from the misery over there by coming here."\(^{105}\) By the mid-sixteenth century life became more settled, colonial society more stabilized and travelling somewhat less exacting and dangerous; accordingly the "pull" factors increased. It was no longer necessary to be overly brave to cross the Atlantic and to settle down in America. Families and women were attracted in increasing numbers. One of the most interesting results of Boyd-Bowman's extensive work is that he can show the accelerated increase in female migrants between 1540 and 1579.\(^{106}\) Whereas there were always a number of migrants who rightly or wrongly went to the Indies in quest of adventures and sudden riches, from the mid-sixteenth century onwards, the newly-discovered letters and other evidence suggest that most migrants were more realistic and mundane. They did look for something "better," but in terms of a generally higher standard of living; and Enrique Otte claims this was more important than their social aspirations.\(^{107}\) As time went by, they were probably also better informed about conditions and opportunities in the New World.

As yet, the stimulating effect on emigration caused by the news which reached the more literate and less isolated strata of the Spanish population cannot be measured. There can be no doubt, however, that the discovery of mines was bound to be especially attractive. Boyd-Bowman has given us a fascinating example. No less than 166 persons left the small Andalusian mining town of Guadalcanal for New Spain in the 1530's: the silver mine of Taxco had just been discovered, while silver mining in Guadalcanal itself had started its decline. The short-lived attraction of Peru between 1540 and 1559, Boyd-Bowman observes, was probably due to another, much more important mining discovery, that of Potosí (1545).\(^{108}\)

On a collective level, "pull" factors sometimes took the shape of organized campaigns of emigration recruitment. These were organized by the leaders of expeditions of conquest, but also, at times, by the authorities themselves. In 1511 the officials of the Casa de Contratación at
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Seville were instructed by the king to relax all legal restrictions and to urgently send to the Indies as many working people as needed. They sent agents to Biscay and the mountain regions “where there is an excess of people, and in other sterile parts so that as many working people as possible” left for the Indies.109 Another emigration campaign has been studied by Manuel Giménez Fernández: the efforts of Fray Bartolomé de Las Casas to promote the emigration of married, well behaved peasants (labriegos) to the Indies in 1517-19. It deserves to be presented in some detail because it also illustrates some important obstacles that overseas emigration faced. Las Casas thought it was in the interest of the Indians to replace the earlier waves of “greedy adventurers” with true settlers. He finally obtained from the crown a series of privileges for peasant emigrants: free passage and maintenance from their residence to the place of destination, free crown support during their first year in America, free acquisition of land lots in perpetuity, exemption from taxes (even the sales tax, but not tithes), free medical assistance, a certain amount of free Indian labour, bounties for successful cultivation of different crops, and still other favours. The zealous friar was instructed to conduct a campaign throughout the realm to recruit emigrants. He was to point to the benefits of the climate and of the soil in the New World. He was also to address himself particularly to tenant farmers who, as the text significantly runs, “pay more rent than they gain and who do not obtain enough to sustain themselves, their wives and children without much poverty and drudgery ....” Las Casas himself has described his tour through seigneurial lands of the province of Soria. At Berlanga,110 a place of 200 vecinos, no less than 70 declared themselves willing to leave for America. Some made it clear that the quest for wealth was not their main objective; they wanted to go in order to settle their descendants “on free and royal lands.” The great landlord of the region, by virtue of his Señorío, countered by prohibiting his subjects from purchasing any property from prospective emigrants. Such resistance, along with intrigues at the court and Las Casas’ own desperation at finding it impossible to fulfill the clause promising a year of crown support, help explain the total failure of this fascinating attempt.111 In the eighteenth century, government-sponsored recruitment campaigns once again became a striking feature in areas like the Canaries and Galicia.

THE IMPACT OF OVERSEAS MIGRATION ON SPAIN

CONTEMPORARY VIEWS

There is an abundance of contemporary complaints, especially vociferous during the seventeenth century, about the bad effects of overseas migration on Spanish society. To quote just one example, a royal
Spanish Migration prior to 1810
decree of 1622 condemns the outflow of great numbers of people without
license, because of the “lack they cause in these Kingdoms, both in terms
of settlement, cultivation and production of the soil and the needs of
war...”  

But the acute crisis of Spain during the 1590's also produced a great
amount of analytical, self-critical writing, scrutinizing social ills and pro-
pounding various sorts of remedies. Many of these so-called arbitrista
authors of the seventeenth century took up the population issue. In the
first place, they were far more certain than modern students of Spanish
historical demography that the country was suffering a sharp population
decline in their own time. They believed, in fact, that Spain used to have
a much larger population in ancient and medieval times, and they did
not hesitate to attribute the depopulation, in great part, to overseas
emigration.  

Benito de Peñaloza, writing in 1629, believed that those who had
already left for the Indies “would not fit into ten Spains.” Sancho de
Moncada, in 1619, considered emigration to the colonies one of the
main causes of depopulation, but thought the enormous inflow of for-
eign merchandise into Spain was the root of the evil and that once this
inflow was stopped, national wealth would increase. Thus people
would no longer have to leave their fatherland in order to gain a decent
livelihood. Pedro Fernández Navarrete, in 1626, declared that next to
the expulsion of the Jews and Moriscos, emigration to the colonies was
the principal “cause” of the “depopulation” of Castile. He estimated
that no less than 40,000 Spaniards left their country each year destined
for the New World, Flanders and other Spanish outposts; and that few
of them came back and even fewer subsequently married and were able
to contribute to population growth. Fernández Navarrete resigned him-
self to the fact that such emigration was unavoidable, the price of Em-
pire. Diego de Saavedra Fajardo, writing around 1640, seemed less
certain that emigration on a large scale was necessary to preserve the
colonies, and pointedly referred to the qualms of the Romans about
faraway, manpower-absorbing colonies.  

In terms of early mercantilist ideas, the anxiety of these seventeenth-
century Spanish observers is easily understood. A dense population was
an important prerequisite for the attainment and defense of national
power. Furthermore, a large population would permit low wages, and
produce export surpluses to enrich the state.

A treatise signed by Captain Vicente Montano in 1681, studied by
Robert S. Smith, is an extraordinary exception, however, to this general
line of thought. Anticipating Malthus, Montano underscores the inevita-
table trend towards excessive population growth, and suggests a number
of extreme measures to stop it, such as the introduction of epidemics and
subsidies to convents to promote celibacy! Montano claims, however,
that fortunately Spain does not need such measures yet, because of the
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continuous emigration to America and because of its numerous military obligations throughout the world. Therefore, what other arbitristas considered Spain’s particular handicap from the demographic point of view was, in Montano’s view, a blessing. Still, he shared their evaluation of the great extent and impact of the migratory phenomenon.119

Eighteenth-century political and economic writers who continued to think in terms of an updated mercantilism did not go very much beyond their seventeenth-century predecessors in analysing the population problem. Also, the worst crisis had passed and there was less desperation in their voices. José del Campillo y Cosio calculated yearly emigration to be about 14,000 people and he speculated that, in the course of time, it must have cost Spain about a million inhabitants. In his best known work, Nuevo sistema de gobierno económico para la América (1742), Campillo, for a change, took up the demographic issue, with Spanish America as his point of departure. It was necessary to promote population in the colonies but it seemed difficult to increase emigration from Spain without causing depopulation. However, Campillo found three social groups undesirable in Spain: he believed prisoners condemned to penal servitude and prostitutes would make excellent citizens in the colonies, especially if they intermarried, and that 12,000 gypsies would provide an outstanding means of colonizing the Orinoco shores.120 In his well known Proyecto económico (1762), Bernardo Ward, in referring to the demographic problems of Spanish America, merely repeats, word by word, Campillo’s views on the subject. But he also takes up the population problem of Spain itself. He believes economic growth will eventually lead to earlier marriages and demographic increase. He does not share the common belief that emigration depopulated Spain. Some qualified emigrants proved even more useful “vassals” in Spanish America than in Spain itself. Others were “lazy-bones” or hidalgos and military officers who would probably have been killed on the battlefields of Flanders and Italy anyway, before producing offspring.121 An Irishman himself, Ward also thought foreign immigration into Spain most useful: thus he recommended that wealthy colonial Spaniards or criollos (“indianos”) be attracted back to settle down and invest their money in Spain. In this way they would, indirectly at least, promote Spanish population growth.122

Two notable eighteenth-century writers challenged the whole idea of the overwhelming importance of overseas migration. Gerónimo de Uztáriz, in his Theorica, y práctica de comercio, y de marina (1724, 1742), pointed out that the provinces which in his day sent the most emigrants to America were Cantabria, Navarre, Asturias, Galicia and the “montaña” of Burgos. Nevertheless, these areas remained the most densely populated ones of Castile. Also, most of the emigrants were destitute and “perhaps would not have married, even if they had remained in
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Spain. In the Indies they were able to marry and they even sent money home to help support their relatives and thus indirectly helped to increase Spain’s population. Eugenio Larruga, writing in the 1780’s, dealt extensively with the problem of poverty and underpopulation in the province of Toledo. He declares that no province sent fewer emigrants to the New World (in his day, that is) than Toledo, and that its underpopulation was not due to overseas emigration. When Larruga found evidence of overseas emigration, however, he usually lamented it: he observes that many young people of the province of Burgos left for America, attracted by its chimeric riches.

The country will thus lose as many arms as would augment its population, commerce and industry. In this way, each emigrant who goes to America implies that the country receives an imperceptible but mortal stroke which in time will make it bleed. It is so when there is no excess of arms but rather of occupations.

He had to admit that although most emigrants got lost overseas, facing vice and poverty, some obviously obtained some wealth since they sent money back to their families. In Larruga’s view this also had a negative impact.

At the very moment of receiving money from the Indies all those who do so leave cultivation to take on the airs of lords (Señores). Thus, this poorly invested money will increase the number of lazy-bones reducing that of diligent people.

POSSIBLE APPROACHES AND MODELS

Modern general views regarding the extent of overseas migrations and their impact on the home country vary as much as those of the seventeenth- and eighteenth-century writers, and, as we have seen, they too lacked an empirical basis until recently.

In 1934, Earl J. Hamilton maintained that there was good reason to believe that “the loss of population through emigration to the Indies was altogether negligible.” The opposite view is best represented by the Catalan historian Jorge Nadal Oller, who declared in 1966: “Emigration to America, being continuous in time, limited in space, affecting men of the best working age, a much smaller percentage than now, caused a decisive wound during the age of the Austrians. Not one wound among others, but a decisive wound inflicted on Castilian demographic potential.” Intermediate views can be exemplified by John Parry, who believes that the absolute numbers of emigrants “were never very large, but . . . came from a population which [during the seventeenth century] was declining through other causes” and by John Elliott, who maintains that the loss from emigration “in terms of quality must have been considerable” to Castile.
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How can we possibly expect to measure, even roughly, the demographic impact of overseas emigration as long as we ignore the temporal aspects? Boyd-Bowman has repeatedly emphasized that his figures are far from providing absolute numbers, and do not permit us to gauge the chronological evolution of emigration. Obviously, only a hypothetical approach can elucidate the problem. Jorge Nadal Oller has taken as his starting point the estimate of 4,000-5,000 emigrants yearly, suggested by Domínguez Ortíz. On the assumption that the great majority of emigrants were males 16-25 years old, he then tries to estimate what its proportion is to the total male population (on the basis of the age classification available for Spain in 1768-69) and finds it no more than 14.9%. He concludes that overseas emigration represented a yearly loss of eight to ten per thousand of the young males of early seventeenth-century "Castile." 129

In view of Boyd-Bowman’s recent findings that the proportion of female emigrants rose rapidly from the 1540’s to 1560-79 when they constituted almost a third of all emigrants, Nadal’s neglect of female emigration seems misleading. To calculate on the basis of exclusively adult emigration is also risky as soon as family emigration becomes important; finally, the use of the age distribution in 1767-68 as a basis for estimates for a period some 150 years earlier is questionable. 130 On the other hand, the geographical percentages calculated by Boyd-Bowman give us a better idea of the different impact of emigration on national, regional and provincial levels. Boyd-Bowman once made the guess that sixteenth-century emigration ought to have reached some 200,000. On the basis of the Chaunu data on navigation discussed above, we made an estimate of the maximum framework of overseas emigration prior to 1650. For the sixteenth century we found that 240,000 was a reasonable figure. We use both Boyd-Bowman’s data on regional distribution and our own estimates on the maximum size of migration to construct a number of “models” in Appendix 8, the hypothetical character of which should be strongly emphasized.

The most striking feature of Appendix 8 is the great difference between the national and regional levels and the provincial one. A yearly emigration of 0.5-0.7 per thousand, as in the first two cases, must be deemed quite low. On the other hand, the estimated rate of 1.4 for those provinces which sent most emigrants overseas in the sixteenth century is more noticeable, though the rate is less than a tenth of the emigration of the areas sending most emigrants overseas 300 years later. However, it approaches the national Spanish emigration rate of that later time.

Naturally, it is misleading to draw any immediate conclusions from these temporal comparisons. In the 1590’s Spain had some 15 inhabitants per square kilometer; in the 1880’s, about 35. In the 1590’s popu-
Spanish Migration prior to 1810

Population was probably stagnant or declining; in the 1880's population increased by some 0.4% yearly. In the sixteenth century, the whole demographic pattern was that of the ancien régime with its devastating recurrent plagues, only compensated for by high fecundity. In the 1880's Spain, though belatedly and less so than other European countries, had reduced its mortality rate considerably. On the other hand, fecundity remained high.\textsuperscript{131}

Thus, the phenomenon of sixteenth- to eighteenth-century Spanish emigration to the New World must be seen against the backdrop of recurrent, very violent fluctuations, imposed by the ominous combination of crop failures, famines, and plagues.\textsuperscript{132} However difficult it may be to discern the overall trends, recent research suggests that, in the lands of the crown of Castile, the 1560's formed the watershed between the earlier rising and the later declining trends.\textsuperscript{133} In the early eighteenth century the definitive demographic expansion began.\textsuperscript{134}

Although Nadal Oller has explained these changing long term trends better than anyone else, we believe that his generalization that overseas emigration was the "decisive wound" inflicted on Castile under the Habsburg cannot be accepted without modifications. Overseas emigration prior to the 1570's apparently did not have any real impact on the demographic situation, except perhaps at the provincial level in Extremadura.\textsuperscript{135} On the other hand, from the end of the sixteenth century until the early eighteenth century it may have had a negative impact; but we know nothing for sure about the size of overseas emigration during that period.\textsuperscript{136} We do know that it coincided with the expulsion of the Moriscos in 1609-14, the effects of which were not confined to Valencia.\textsuperscript{137} It also coincided with the continuous drain of war casualties in Flanders and Italy. The war in Flanders may have cost 8,000 Spaniards yearly during the reign of Philip II, and, according to Domínguez Ortíz, 12,000 yearly between 1635 and 1659.\textsuperscript{138} Above all, there were the great plagues of 1597-1602 which cost the crown of Castile some half a million dead, and that of 1649-52 which seems to have killed another half million. The latter struck especially heavily in Andalusia and in the city of Seville, that is, the heart zone of overseas emigration.\textsuperscript{139} If yearly emigration around the mid-seventeenth century was anywhere near 4,000 people (see Appendix 2), it may well have had a "decisive" marginal effect on a regional and provincial level. Even if we believe that the age structure of overseas emigration cannot be approximated yet, there can be no doubt that young adults and adult males were relatively numerous. They always are in such a context. On the other hand, children, old people, and weaker individuals were the first victims of the great plagues.\textsuperscript{140}

There are some phenomena in sixteenth- and seventeenth-century Spanish society which might reflect, to some extent, overseas emigra-
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tion: the very high incidence of "widows" in the cities and (to a lesser extent) in the countryside of Old Castile during the latter part of the sixteenth century, as shown by Bennassar. War losses can be blamed, of course, but long-abandoned wives of overseas emigrants were probably also classified as "widows." There is also the great number of "deserted villages" (despoblados) in the fertile district of Aljarafe in the province of Seville. As Nicolás Cabrillana points out, overseas emigration was very strong in this area, so close to the great port and structurally transformed under the impact of Spanish American demand. Varied agricultural production turned into the monoculture of wheat, olives or wine destined for the Spanish American markets. Thus, the pattern of settlement also changed and some earlier villages became superfluous. But in the case of these and similar phenomena, only systematic research would, hopefully, reveal the underlying pattern and the possible role of overseas emigration.

It is also difficult to discuss seriously the qualitative aspects of the impact of Spanish overseas migration at the present stage of our knowledge. That Spanish emigrants were "above average in intelligence and ability" is a truism. Emigrants per se tend to be more able than those who choose to remain.

To hypothesize about the eighteenth century would be even more risky. There are virtually no data from which estimates could be constructed. Evidently, in that period the demographic advance of the eastern seaboard was assured. It could hardly be disturbed by emigration of the size one might reasonably expect. On the other hand, overseas emigration, as an integrated part of a structural movement of migration from the poor and overpopulated regions of the northern seaboard, may have played some positive role in relieving demographic pressure. For the central parts of Castile it was probably of little importance. In these areas, in the course of the eighteenth century, one can see trends towards renewed ruralization.

FINAL COMMENTARY

Inevitably, the results of this study are provisional and largely hypothetical. Boyd-Bowman for example will soon present the main results of his research on the period 1580-99, a dramatic moment in Spanish social history. They will perhaps modify the views I have expressed. Continuing work by several Spanish and foreign scholars on regional developments in sixteenth- through eighteenth-century Spain may also provide a picture considerably different from that painted by the pioneers, Salomon, Bennassar, and others. Also, my abundance of figures should not belie their largely hypothetical nature. To begin with, I have not been able to consider all the gradual changes in territorial
Spanish Migration prior to 1810

administrative divisions taking place in Spain from the early sixteenth century. Now and then they might have been of relevance to my figures. Second, there is as yet no scholarly agreement on which coefficient should be used to convert vecinos into total population. My choice may eventually be proved wrong. Third, in using the percentages on regional distribution derived from Boyd-Bowman's data, we must keep in mind that these data cover only a fourth or fifth of total migration. Though they surely point in the right direction, these percentages may be misleading in details.

Much research remains to be done in this field. Spanish overseas migration during the sixteenth through the eighteenth century is the history of the foundation of Spanish American societies. It is also an important variable in the evolution of Spain itself. Finally, it is the earliest and most impressive antecedent of the great Atlantic migrations from the mid-nineteenth century onwards.

Acknowledgements

Dr. Rosario Parra, Director of the Archivo General de Indias, Seville; Prof. Analola Borges, La Laguna; Prof. Peter Boyd-Bowman, Buffalo, N.Y.; Dr. Fred Bronner, Jerusalem; Prof. Nicolai Vorolev, Kishinev; Prof. Francisco Morales Padrón, Seville; Prof. Jorge Nadal Oller, Barcelona; and Prof. Enrique Otte, West Berlin, have kindly satisfied inquiries received from the author or given valuable comments on the paper. The Seminar of Iberian and Latin American History at the University of Cologne, the Library of the Ibero-American Institute of Berlin and the City Library of Munich have kindly provided documentation not available in Sweden. The Royal Library, Stockholm, the University Libraries of Uppsala and Lund, and the Ibero-American Institute of Gothenburg have also been helpful. Last but not least, my collaborators at the Institute of Latin American Studies, Stockholm, have rendered invaluable assistance in various ways.
APPENDIX 1

Series of Records on Overseas Migration
kept at the Archivo de Indias, Seville
according to R. Konetzke (1948)

1. Informaciones y licencias de pasajeros, 1534-1790, Contratación, bundles 5217-5535.
2. Libros de asiento de pasajeros a Indias, 1509-1701, Contratación, bundles 5536-5540.
3. Licencias para pasar a Indias, 1556-1671, Contaduría, bundles 240-244.
8. Pasajeros a Nueva España, Filipinas, Perú, Buenos Aires, islas de Barlovento, etc., 1516-1834, Indiferente general, bundles 2048-2107.
9. Relaciones de pasajeros y embarcaciones que van y vienen de Indias, 1563-1833, Indiferente general, bundles 2162-2172.
10. Licenses scattered in the Registros de Reales Cédulas of the various audiencia sections of the Archives.

APPENDIX 2

Approximate Framework of Spanish Overseas Migration
1500-1650

A. Average tonnage per ship ("toneladas")
B. Average number of crew per ship
C. Average number of passengers per ship
D. Average total of westward journeys

766
Spanish Migration prior to 1810

<table>
<thead>
<tr>
<th>Period</th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
<th>E.</th>
<th>F.</th>
<th>G.</th>
<th>H.</th>
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<td>100</td>
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<td>15</td>
<td>1781</td>
<td>26,715</td>
<td>689</td>
<td>16,536</td>
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<td>689</td>
<td>16,536</td>
<td>43,251</td>
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<td>1601-1650:</td>
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Comments and Sources:

B. Based on Carande (1943) 274-275. He gives the minimum crews required for the various units of tonnage. See Chaunu (1955-58) 6:1. 305-306. See also Parry (1964) 85.
C. Our approximation for the period 1506-60 is somewhat lower than that of Friede (1952) 471-472. However, we maintain his relation between crews and passengers for the later periods as well. Our conjectures in this highly uncertain matter should be on the lower side.
D. According to Chaunu (1955-58) 6:6. 337. The total (1506-1650) is 10,635.
G. The deduction ought to take care of mortality during westward journeys, due to shipwrecks and other causes, and also of returnees with other ships. On losses of ships during westward journeys see Chaunu (1955-58) 6:6 bis. 861-864.
APPENDIX 3

Navigation and Overseas Migration
1508-39

## Spanish Migration prior to 1810

### APPENDIX 4

**Regional Distribution of Spanish Overseas Migration According to Various Sources. Percentages**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Spanish America I. 1509-1538</th>
<th>Spanish America II. 1493-1519</th>
<th>Panama 1519</th>
<th>Peru IV. 1532</th>
<th>Peru V. 1532-1560</th>
<th>Peru VI. 1535-1560</th>
<th>Spanish America VII. 1560-1580</th>
<th>Mexico City VIII. 1560-1580</th>
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<td>34.3</td>
<td>34.5</td>
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<td>28.9</td>
<td>45.2</td>
<td>36.9</td>
<td>30.2</td>
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<td>17.7</td>
<td>10.7</td>
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<td>15.5</td>
<td>11.4</td>
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<td>14.2</td>
<td>12.8</td>
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<td>27.5</td>
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<td>9.9</td>
<td>17.7</td>
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<td>7.5</td>
<td>6.0</td>
<td>11.5</td>
<td>7.9</td>
<td>4.8</td>
<td>5.4</td>
<td>1.9</td>
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<td>-</td>
<td>0.8</td>
<td>2.6</td>
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<td>-</td>
<td>-</td>
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<td>1.4</td>
<td>0.5</td>
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<td>1.1</td>
<td>-</td>
<td>-</td>
<td>0.6</td>
<td>0.5</td>
<td>0.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Baleares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Canaries</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1.1</td>
<td>0.6</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**Spaniards**

|                  | 98.3                         | 96.3                          | 94.0        | 98.5         | 95.0             | 100.0               | 97.8                         | 95.6                         |

**Foreigners**

|                  | 1.7                          | 3.7                           | 6.0         | 1.5          | 5.0              | Excluded            | 2.2                          | 4.4                          |

**Total with known origin**

|                  | 100.0                        | 100.0                         | 100.0       | 100.0        | 100.0            | 100.0               | 100.0                        | 100.0                        |

**Absolute numbers**

|                  | 11.821                       | 18.743                        | 84          | 131          | 3.431           | 1.708               | 26.631                       | 1.117                        |

---

4. Lockhart (1972a).
9. Includes individuals from Ceuta, Gibraltar, Cartagena, Málaga.
10. Includes 2 Montaneses.
11. Includes people from Montaño, Rioja, La Mancha.
12. In 1560-79, according to Boyd-Bowman (1973) 90, Extremenos constituted as much as 19% of Mexican immigrants.
### The Movement of People

**APPENDIX 5**

**Distribution of the Spanish Overseas Migration on a Provincial Level**

<table>
<thead>
<tr>
<th>A. Absolute numbers, 1493-1559</th>
<th>B. Regional Rank</th>
<th>C. Total emigration, 1493-1579</th>
<th>D. Absolute numbers, 1493-1579</th>
<th>E. Regional Rank</th>
<th>F. Total emigration, 1579 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Andalusia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almería</td>
<td>1</td>
<td>8</td>
<td>26</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cádiz</td>
<td>519</td>
<td>4</td>
<td>11</td>
<td>1,149</td>
<td>4</td>
</tr>
<tr>
<td>Córdoba</td>
<td>658</td>
<td>3</td>
<td>8</td>
<td>1,201</td>
<td>3</td>
</tr>
<tr>
<td>Granada</td>
<td>378</td>
<td>6</td>
<td>17</td>
<td>764</td>
<td>6</td>
</tr>
<tr>
<td>Huelva</td>
<td>984</td>
<td>2</td>
<td>7</td>
<td>1,701</td>
<td>2</td>
</tr>
<tr>
<td>Jaén</td>
<td>533</td>
<td>5</td>
<td>10</td>
<td>958</td>
<td>5</td>
</tr>
<tr>
<td>Málaga</td>
<td>251</td>
<td>7</td>
<td>21</td>
<td>514</td>
<td>7</td>
</tr>
<tr>
<td>Seville</td>
<td>5,826</td>
<td>1</td>
<td>1</td>
<td>9,852</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>9,150</td>
<td>37.1%</td>
</tr>
<tr>
<td><strong>II. Extremadura</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Badajoz</td>
<td>2,371</td>
<td>1</td>
<td>2</td>
<td>5,168</td>
<td>1</td>
</tr>
<tr>
<td>Cáceres</td>
<td>11,212</td>
<td>2</td>
<td>5</td>
<td>2,918</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>13,583</td>
<td>16.2%</td>
</tr>
<tr>
<td><strong>III. New Castile</strong></td>
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<td></td>
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<tr>
<td>Ciudad Real</td>
<td>384</td>
<td>3</td>
<td>15</td>
<td>987</td>
<td>3</td>
</tr>
<tr>
<td>Cuenca</td>
<td>164</td>
<td>5</td>
<td>22</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guadalajara</td>
<td>259</td>
<td>4</td>
<td>19</td>
<td>697</td>
<td>4</td>
</tr>
<tr>
<td>Madrid</td>
<td>471</td>
<td>2</td>
<td>13</td>
<td>1,186</td>
<td>2</td>
</tr>
<tr>
<td>Toledo</td>
<td>1,456</td>
<td>1</td>
<td>3</td>
<td>3,377</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>2,734</td>
<td>12.5%</td>
</tr>
<tr>
<td><strong>IV. Old Castile</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ávila</td>
<td>491</td>
<td>3</td>
<td>12</td>
<td>840</td>
<td>3</td>
</tr>
<tr>
<td>Burgos</td>
<td>605</td>
<td>2</td>
<td>9</td>
<td>1,215</td>
<td>2</td>
</tr>
<tr>
<td>Logroño</td>
<td>123</td>
<td>8</td>
<td>25</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Palencia</td>
<td>333</td>
<td>5</td>
<td>18</td>
<td>728</td>
<td>5</td>
</tr>
<tr>
<td>Santander</td>
<td>153</td>
<td>6</td>
<td>23</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Segovia</td>
<td>417</td>
<td>4</td>
<td>14</td>
<td>745</td>
<td>4</td>
</tr>
<tr>
<td>Soria</td>
<td>148</td>
<td>7</td>
<td>24</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Valladolid</td>
<td>1,221</td>
<td>1</td>
<td>4</td>
<td>1,905</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>3,491</td>
<td>17.0%</td>
</tr>
<tr>
<td><strong>V. León</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>León</td>
<td>268</td>
<td>3</td>
<td>20</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Salamanca</td>
<td>999</td>
<td>1</td>
<td>6</td>
<td>1,704</td>
<td>1</td>
</tr>
<tr>
<td>Zamora</td>
<td>383</td>
<td>2</td>
<td>16</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>1,650</td>
<td>7.3%</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
<td>22,680²</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Nadal Oller (1973) 66-67 (A-C); Boyd-Bowman (1973) 93 (D-F).
1. Number 20 is the Biscayan province of Guipúzcoa (539 migrants) not included in the table.
2. Net figure only including those listed by province by Nadal Oller.
Spanish Migration prior to 1810

APPENDIX 6

Overseas Migration and Structural Differentials among
the Provinces of New Castile around 1575-80

A. Percentage of the emigration of the region, 1493-1579. 1
B. Estimate of total number of households (fuegos), 1575-80. 2
C. Approximate percentage of the population of the region.
D. Approximate percentage of population living in villages of less than 500 fuegos. 3
E. Percentage of royal fuegos of the total number of rural fuegos of each
province. 4
F. E. plus fuegos under the Military Orders. 4
G. Share of emigration 1493-1579.
H. Degree of urbanization. 5
I. Share of population under royal jurisdiction.
J. Share of population under the jurisdiction of the crown and the Military
Orders.

<table>
<thead>
<tr>
<th>A</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
<th>E.</th>
<th>F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Castile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ciudad Real</td>
<td>14.0</td>
<td>25.000</td>
<td>17.5</td>
<td>32.0</td>
<td>40.4</td>
</tr>
<tr>
<td>Cuenca</td>
<td>6.0</td>
<td>20.000</td>
<td>14.0</td>
<td>20.0</td>
<td>19.8</td>
</tr>
<tr>
<td>Guadalajara</td>
<td>9.5</td>
<td>25.000</td>
<td>17.5</td>
<td>66.0</td>
<td>19.7</td>
</tr>
<tr>
<td>Madrid</td>
<td>17.2</td>
<td>22.000</td>
<td>15.0</td>
<td>55.0</td>
<td>53.3</td>
</tr>
<tr>
<td>Toledo</td>
<td>53.3</td>
<td>51.000</td>
<td>36.0</td>
<td>39.0</td>
<td>6.03</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>143.000</td>
<td>100.0</td>
<td>(Average)</td>
<td>(Average)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42.0</td>
<td>38.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G.</th>
<th>H.</th>
<th>I.</th>
<th>J.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Rank:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toledo</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Madrid</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Ciudad Real</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Guadalajara</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Cuenca</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

1. Based on Boyd-Bowman (1973) 93. His "1499" must be a typing error.
2. For the rural population based on Salomon (1964) 25-43. The households of the cities have been roughly estimated on the basis of Carando (1943) 38 (who used the coefficient of 5). In the case of Cuenca and Ciudad Real, González (1829) has also been used.
3. Based on Salomon (1964) 42-43.
4. Based on Salomon (1964) 204.
5. Based on our estimate of the households of the cities (included in B.) plus estimates of population living in villages of under 500 households. Salomon (1964) 42-43.
The Movement of People

APPENDIX 7

Some Data on Spanish Cities and Overseas Migration

A. Ranking of major cities

<table>
<thead>
<tr>
<th>City</th>
<th>Size 1591-94</th>
<th>Population Increase/Decrease 1530-91</th>
<th>Share of Overseas Migration 1493-1579</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seville</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Toledo</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Madrid</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Valladolid</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Córdoba</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

B. Relation between Capital and Province as to population and emigration

<table>
<thead>
<tr>
<th>Provincial Capital</th>
<th>Population 1591</th>
<th>Capital's share of the population of the Province, Percentage</th>
<th>Capital's share of the overseas migration of the Province, 1493-1579, Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avila</td>
<td>14.130</td>
<td>4.7</td>
<td>35.2</td>
</tr>
<tr>
<td>Burgos</td>
<td>13.325</td>
<td>4.5</td>
<td>30.9</td>
</tr>
<tr>
<td>Córdoba</td>
<td>31.285</td>
<td>13.5</td>
<td>56.0</td>
</tr>
<tr>
<td>Madrid</td>
<td>37.500</td>
<td>23.4</td>
<td>52.2</td>
</tr>
<tr>
<td>Salamanca</td>
<td>24.765</td>
<td>7.5</td>
<td>44.7</td>
</tr>
<tr>
<td>Segovia</td>
<td>27.740</td>
<td>13.4</td>
<td>50.7</td>
</tr>
<tr>
<td>Seville</td>
<td>90.000</td>
<td>15.7</td>
<td>85.1</td>
</tr>
<tr>
<td>Toledo</td>
<td>54.665</td>
<td>21.0</td>
<td>32.9</td>
</tr>
<tr>
<td>Valladolid</td>
<td>33.750</td>
<td>16.9</td>
<td>26.6</td>
</tr>
</tbody>
</table>

C. The share of major cities of overseas migration on a regional level

<table>
<thead>
<tr>
<th>Region</th>
<th>1493-1519</th>
<th>1520-39</th>
<th>1540-59</th>
<th>1560-79</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Andalusia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seville</td>
<td>44.1</td>
<td>42.4</td>
<td>54.8</td>
<td>58.5</td>
</tr>
<tr>
<td>II. New Castile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toledo</td>
<td>20.9</td>
<td>19.0</td>
<td>13.1</td>
<td>16.1</td>
</tr>
<tr>
<td>Madrid</td>
<td>11.0</td>
<td>8.0</td>
<td>7.1</td>
<td>5.0</td>
</tr>
</tbody>
</table>

1. Based on Boyd-Bowman (1973) 97; Carande (1943) 38.
2. Based on Carande (1943) 38; Nadal Oller (1973) 66-67; Boyd-Bowman (1973) 93, 97.
3. Based on Boyd-Bowman (1973) 93, 97.
Spanish Migration prior to 1810

III. Old Castile and León

<table>
<thead>
<tr>
<th>City</th>
<th>1561</th>
<th>1591</th>
<th>1561</th>
<th>1591</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salamanca</td>
<td>6.3</td>
<td>6.0</td>
<td>7.2</td>
<td>10.6</td>
</tr>
<tr>
<td>Valladolid</td>
<td>2.8</td>
<td>6.9</td>
<td>8.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Segovia</td>
<td>3.2</td>
<td>3.9</td>
<td>3.2</td>
<td>5.0</td>
</tr>
<tr>
<td>Medina del Campo</td>
<td>3.3</td>
<td>4.0</td>
<td>4.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Burgos</td>
<td>4.5</td>
<td>4.3</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>20.1</td>
<td>25.1</td>
<td>27.2</td>
<td>27.1</td>
</tr>
</tbody>
</table>

D. Some data on the major cities of Old Castile and León

<table>
<thead>
<tr>
<th>City</th>
<th>Valladolid</th>
<th>Salamanca</th>
<th>Segovia</th>
<th>Medina del Campo</th>
<th>Burgos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1561 Households</td>
<td>6,644</td>
<td>5,047</td>
<td>4,409</td>
<td>3,160</td>
<td>4,347</td>
</tr>
<tr>
<td>1591 Households</td>
<td>8,112</td>
<td>4,404</td>
<td>5,548</td>
<td>2,760</td>
<td>2,665</td>
</tr>
<tr>
<td>Primary and secondary sectors: percentage of population in 1561</td>
<td>19</td>
<td>19</td>
<td>57</td>
<td>48</td>
<td>23</td>
</tr>
<tr>
<td>Percentage of regional emigration, 1493-1579</td>
<td>5.3</td>
<td>8.0</td>
<td>4.0</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Emigration, 1560-79, as a percentage of the number of households of each city in 1561</td>
<td>1.5</td>
<td>6.2</td>
<td>3.2</td>
<td>4.1</td>
<td>2.4</td>
</tr>
</tbody>
</table>


APPENDIX 8

Hypothetical Models to Show the Demographic Impact of Overseas Migration

I. Spain around 1590

Assumptions:
- Total population: 7,880,000
- Annual overseas emigration: 4,000

Conclusion:
- Annual overseas emigration per thousand: 0.5
The Movement of People

For comparison:
Annual overseas emigration per thousand
Spain, 1881-90 2.16
Spain, 1901-08 4.48

II. Andalusia, Extremadura, Old and New Castile and León ca. 1580
Assumptions:
Total population 5,000,000
Annual overseas emigration 3,400
Conclusion:
Annual overseas emigration per thousand 0.7

III. Provinces with highest frequency of overseas emigration ca. 1580
Assumptions:
Total population of the provinces of Seville, Badajoz, Toledo and Cáceres 1,400,000
Their annual overseas emigration 2,000
Conclusion:
Annual overseas emigration per thousand 1.43

For comparison:
Annual overseas emigration per thousand in 1885-86
from the Spanish provinces with highest rates of emigration
1. Canaries 18.0
2. Pontevedra 13.3
3. La Coruña 12.7
4. Oviedo 8.5

2. Based on our estimate in Appendix 2: total emigration 1561-1650 = 351,998, yearly average 3,911.
4. Based on Domínguez Ortiz (1973) 76.
5. Based on the application of the share of the five regions of Spanish emigration, 1560-79, 87.6%, calculated by Boyd-Bowman (1973) 95, to the yearly average for the period 1561-1600 as estimated in Appendix 2 (3,930).
6. Based on the data on “vecinos” in Ruiz Almansa (1943), applying the coefficient of five.
7. According to Boyd-Bowman (1973) 74, the share of the four provinces of Spain’s total overseas emigration, 1560-79, was 51.6. This has been applied to the average of 3,930 (see above n. 5).
SIXTEENTH CENTURY SPAIN: DENSITY OF POPULATION, MAIN ROADS AND OVERSEAS MIGRATION

A Map based on works by P. Boyd-Bowman, A. Domínguez Ortiz and G. Menéndez Pidal

- Modern national borders
- Modern provincial borders
- Main roads in the mid-sixteenth century

Cities sending more than 300 identified settlers to the New World prior to 1580
Cities sending 501-800 identified settlers to the New World prior to 1580
Cities sending 801-1,200 identified settlers to the New World prior to 1580
Cities sending more than 1,200 identified settlers to the New World prior to 1580

Provinces sending more than 500 identified settlers to the New World prior to 1580

Inhabitants per square kilometer in 1591

- Less than 5
- 5 - 10
- 11 - 15
- 16 - 20
- More than 20

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I. Modern Regions and Provinces

**ANDALUSIA**
1. Almeria
2. Cádiz
3. Córdoba
4. Granada
5. Huelva
6. Jaén
7. Málaga
8. Sevilla

**EXTREMADURA**
9. Badajoz
10. Cáceres

**NEW CASTILE**
11. Ciudad Real
12. Cuenca
13. Guadalajara
14. Madrid
15. Toledo

**OLD CASTILE**
16. Avila
17. Burgos
18. Logroño
19. Palencia
20. Santander
21. Segovia
22. Soria
23. Valladolid

**LEON**
24. León
25. Salamanca
26. Zamora

**BALEARIC and CANARY ISLANDS**
not on the map

<table>
<thead>
<tr>
<th>Modern Regions and Provinces</th>
<th>MAP: APPENDIX</th>
</tr>
</thead>
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<td><strong>Cities sending more than 300 identified settlers to the New World prior to 1579</strong></td>
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<tr>
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<td>28. Guipúzcoa</td>
<td>B. Toledo</td>
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<td>29. Vizcaya</td>
<td>C. Salamanca</td>
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<td><strong>NAVARRA</strong></td>
<td>D. Trujillo</td>
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<tr>
<td>30. Navarra</td>
<td>E. Córdoba</td>
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<tr>
<td><strong>ASTURIAS</strong></td>
<td>F. Madrid</td>
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<tr>
<td>31. Oviedo</td>
<td>G. Granada</td>
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<tr>
<td><strong>GALICIA</strong></td>
<td>H. Palos-Moguer</td>
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<tr>
<td>32. La Coruña</td>
<td>I. Valladolid</td>
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<td>33. Lugo</td>
<td>J. Jérez de la Frontera</td>
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<td>34. Orense</td>
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<td>35. Pontevedra</td>
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<td><strong>MURCIA</strong></td>
<td>M. Medellín</td>
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<td>36. Murcia</td>
<td>N. Segovia</td>
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<td>37. Albacete</td>
<td>O. Burgos</td>
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<td><strong>VALENCIA</strong></td>
<td>P. Zafra</td>
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<td>38. Alicante</td>
<td>Q. Guadalcanal</td>
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<td>39. Castellón</td>
<td>R. Cáceres</td>
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<td>40. Valencia</td>
<td>S. Ciudad Rodrigo</td>
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<td><strong>ARAGON</strong></td>
<td>III. River</td>
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<td>41. Huesca</td>
<td>Guadalquivir</td>
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<td>42. Teruel</td>
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<td>43. Zaragoza</td>
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<tr>
<td><strong>CATALONIA</strong></td>
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<td>44. Barcelona</td>
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<td>45. Gerona</td>
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<td>46. Lérida</td>
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<td>47. Tarragona</td>
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</tbody>
</table>

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NOTES

When only the author’s name is given in the following notes the full information can be found in the alphabetical Bibliography at the end of this section of the volume (pages 797-804).

1. For definitions of the concept of “migrations” see Jackson (1969) 12-13. Efforts are sometimes made to distinguish them as “voluntary” transfers of population different from mass invasions or the involuntary change of place of abode of refugees and forced labour. Odén (1971) 1. No such distinction is made in the present paper. On the other hand, an intent of lasting if not permanent stay in another country would be implicit. Otherwise “migrants” would also include ship crews and short-term visitors. But it usually proves hard to make this distinction in the source material available.

2. Thistlethwaite (1960) 34.


4. Legislation summarized by Veitia Linaje (1945) 327-337. A general amnesty was decreed in 1618. Despite all the exceptions and failures in applying the law, Konetzke (1945b) 289, believes that the degree of application was sufficient to ensure “el caracter español” of the white population of Spanish America. With this one has to agree. See also Konetzke (1959); Wolff (1962); Pons (1960) 1. 77-78.


7. Konetzke (1965) 60, referring to DIA 32. 245 ff., a royal decree to the Casa de Contratación in 1511 stressing the need of colonists in the West Indies. “Parésceme que debeis desimular e non apretallos /a los que aqui quysieren pasar dende aqui adelante/como fasta aqui a que den ynformacion de quienes son” (!) See also Friede (1952) 478-479. Active emigration propaganda is also recommended: “... debeis themer vuestras yntelixencias en Vizcaya e en las montañás, que ay xente sobrada, e en las otras tierras que son esteriles, para que de alli vaya toda la mas xente de trabaxo que ser pueda.” On the other hand, according to a French observer, Pons (1960) 1. 75, emigration was much discouraged around 1800. He claims it was quite difficult for a Spaniard to obtain a permit to settle down in Spanish America!

8. Licenses were openly put on sale; Friede (1952) 483. Information was also falsified. When Mateo Alemán, author of the picaresque novel Guzmán de Alfarache, went to America in 1607, his girlfriend was listed as his daughter in the license. His mother’s Jewish family name was also fortunately omitted: Valentín de Pedro (1954) 230. The sixteenth-century chronicler López de Velasco (1971) 19, considers that unruly elements would have been much more numerous than they were in Spanish America without the licensing system. On the other hand, many slipped through under the pretext of being sailors or merchants on a specially permitted business trip.

9. See n. 14 below.


11. Friede (1951), (1952); Konetzke (1948) 3-23.

12. In a letter of July 1974, the Director of the Archivo General de Indias, Miss Rosario Parra, informs me that the fourth volume of the Catálogo is now being prepared.

13. Boyd-Bowman (1964-68) 1. p. x (note 9). Records at Seville were also used, however. Boyd-Bowman (1967) 69 n. 2. See also below n. 41.


18. Konetzke (1959); Wolff (1962); Aspurz (1946) 19-42. See also Friede (1961) 619. Additional documentation can be found in Führer (1972) passim.
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22. The authorities are ordered to find out how many Spanish residents in their respective jurisdictions “hubieren pasado sin licencia mia y los admitan a indulto, menos a los que fueren casados en España, porque a éstos se les ha de obligar a que vengan precisamente a vivir con sus mujeres como está mandado. . . .” Muro Orejón (1956) 1. 355.
28. Censo (1953). Whereas the summary for the province of Copiapó lists 3,868 Peninsular Spaniards, the local lists when added total no more than 11! For Santiago and Concepción there are no data on Peninsulares. In Valparaíso there were 69, in La Serena 51 in 1813, elsewhere, only handfuls.
29. Konetzke (1948) 289 suggests the formation of a card index to be kept at the Archivo de Indias. Boyd-Bowman (1971) 627, uses the computer for his linguistic LASCODCTS project but apparently not for his biographical recording.
30. Rubio y Moreno (1947); Hamilton (1934) 299.
31. Catálogo (1940-46) 1. 11-12.
32. Friede (1951) 334.
33. Céspedes del Castillo (1958) 393-394.
34. Konetzke (1965) 70. Basing himself on the figures for 1534-38 he believes 2,000-3,000 passengers to have been a reasonable sixteenth-century yearly average.
37. Hernández Sánchez-Barba (1954) 117-118; (1958) 326. It is unfortunately difficult to share his belief that “La emigración española del siglo XVIII es fácil calcularla a través de tres años importantes y estratégicamente situados [= 1729, 1749, 1780].”
39. Personal letter from Dr. Peter Boyd-Bowman, 10 June 1974.
40. “Exhaustive” is the word used by TePaske (1972) 436.
41. Boyd-Bowman (1973) 72. See also above n. 13.
42. Boyd-Bowman (1964) ix. Domínguez Ortiz (1973) 77, on the other hand, does not think that sixteenth-century emigration attained 200,000.
44. Bellotto (1971) 246-255. Domínguez Ortiz, in a study quoted by Fernández Vargas (1968) 13, criticizes an early eighteenth-century author, Campillo (see below n. 120) for stating that 14,000 Spaniards left Spain for America every year by referring to the fact that available tonnage, 15,200, would not at all allow for such a number.
45. Humboldt (1966) 78, 565; Rosenblat (1954) 174. The 15,000 estimate is given by Flores Caballero (1969) 17-22. He lists census data for the cities of Guanajuato, Oaxaca, Orizaba and Jalapa in 1793 which give a total of 683 Europeans. Out of the 623 whose age is known, interestingly enough as many as 46% were above 40 years old. See also Lerner (1968) 329-330. In Durango, where an observer in 1827 found the population to be overwhelmingly white, of Biscayan, Navarrese and Catalonian descent, a census of that same year reveals that no more than 240, that is 0.3% of the population, were Spanish-born. Sims (1971) 545, 549. An estimate of Peninsulares and Canarians in Venezuela in 1800 by Brito Figueroa (1966) 1. 160, gives a total of 12,000, that is 1.3% of the population.
46. See especially Martin (1957).
47. Juan and Ulloa (1953) 319-344.
Spanish Migration prior to 1810

52. List reproduced by Morales Padrón (1951) 429-435. A breakdown into age groups for the 213 persons for whom age is given is as follows:

<table>
<thead>
<tr>
<th>Years</th>
<th>Male</th>
<th>Female</th>
<th>Years</th>
<th>Male</th>
<th>Female</th>
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<tr>
<td>0-6</td>
<td>28</td>
<td>26</td>
<td>25-39</td>
<td>28</td>
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<tr>
<td>7-15</td>
<td>36</td>
<td>23</td>
<td>40-</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>16-24</td>
<td>16</td>
<td>16</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Totals</td>
<td>113</td>
<td>100</td>
</tr>
</tbody>
</table>

The total number of persons of the sample was 223, divided into 44 families, that is an average of 5 per family.

53. According to Boyd-Bowman (1973) 91, Basques, in 1560-79, had only formed slightly more than 1% of European immigrants in Mexico.
54. See for example Mendoza (1955) and Crespo (1969).
55. On the changing regional composition of immigration into Chile, according to Thayer Ojeda, see Foster (1960) 32. In the early sixteenth century, there is a striking lack of references to Canarians also in Spanish American sources, according to Boyd-Bowman (1973) 37. Historian Analola Borges is preparing a kind of biogeographical catalogue of Canarian migrants in America to be published by the Instituto de Cultura Hispánica in Madrid.
56. Morales Padrón (1951) 428-429. In a very interesting letter to the author, of 26 December 1974, Prof. Jorge Nadal Oller points out that there are, indeed, demographic data suggesting a new pattern of overseas emigration in late eighteenth-century Spain. The population counts of 1768-69 and 1787 both show that New Castile, Aragon, and Extremadura were areas with a strong surplus of males. On the other hand, Galicia, Asturias and the Canaries were areas with an even greater deficit of males. This phenomenon could hardly be explained solely in terms of internal migration or other circumstances.
57. Boyd-Bowman (1967) 45-46; (1973) 40-50, 79. In 1560-79 he found no less than 2,051 female migrants from the city of Seville alone, a number exceeding that of the men.
60. Villuga (1546); Menéndez Pidal (1951) 84-86, maps I-II and passim; Bennassar (1967) 80. See also our own map, p. 775 below. In the eighteenth century the road pattern became more centralized with Madrid as its center.
61. Nadal Oller (1974) 66-67. The percentages of 25.7 (Seville) and 48.0 are based on his total of 22,680 for the period 1493-1559 which only includes those identified on a provincial level. Boyd-Bowman’s total figure for the same period is therefore some 4,000 higher. The percentages in question then become slightly lower. If Boyd-Bowman’s data for the entire period until 1579 [(1973) 93, 96: discounting foreigners but with no further discount for lack of data = 44,081] are being used, the result would be: Seville = 22.4%; the four provinces = 48.4%.
62. Góngora (1962) 76-77. See also Friede (1966) 16.
64. Boyd-Bowman (1967) 40-42; (1973) 74-76.
68. Góngora (1962) 79-83. He also makes the following breakdown: 50% “hombres de oficios bélicos e similares (sailors!),” 30% “hombres de oficios mecánicos sedentarios,“
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11% “profesiones y ciudadanos medianos.” Góngora sees no reason why this small sample should not reflect a general tendency. He underscores the presence of peasants and artisans, “tendencia más duradera” than the presence of nobles, as he sees it.


70. Rosenblat (1971). One of the few things on which Friede (1966) and Rosenblat agree is the absence of the higher nobility in migration. See also Góngora (1962) 83-84 who stresses particularly the absence of urban patricians (caballeros).

71. We refer to Rubio y Muñoz-Bocanegra (1947) no. 110, p. 86, on the 15 “labradores que Gonzalo Ruiz de Córdoba . . . llevó para beneficiar y cuidar de su hacienda.”

72. Hernández-Sánchez Barba (1954) 118. How the calculation has been arrived at is not clearly explained. Juan and Ulloa (1953) 323.

73. Castro Seoane (1956-62); Aspurz (1946).

74. Boyd-Bowman (1973) 76-77.


77. Valentin de Pedro (1954) 268-269.

78. Lockhart (1972) 44-52.

79. The discussion is based on Odén (1971), Jackson (1969), Guillaume and Poussou (1970) and the reading of various monographs on modern European migration.


81. Domínguez Ortiz (1973) 76. Compare Nadal Oller (1966) 20, 23, 47; (1974)16, who gives a total of 8.5 millions. The crucial question is to establish the coefficient for ”vecino” (neighbour). This is the unit of the 18 provinces of Castile covered by the census of 1591. Bennassar (1967) 163-164 opted for 4.5, Domínguez Ortiz for 5, Ruiz Almansa (1943) for 6.

82. Based on data in Ruiz Almansa (1943), which in turn are a rearrangement of the data in González (1829).

83. On the questions of jurisdiction see Salomon (1964) 225-227. He discusses the beginnings of the “seigneurial reaction,” more evident around 1600.

84. Salomon (1964) 225-227. See below in this study, 757-758.


87. On Toledo see Malagón-Barceló (1963).

88. As is shown in Appendix 7 B, no more than 32.9% of the emigrants of the province of Toledo came from the city itself. It should be observed, however, that another 12.9% came from that of Talavera.

89. See particularly Bennassar (1967) 350-351. See also Domínguez Ortiz (1973) 80-81.

90. Excellent comparative viewpoints on these cities in Bennassar (1967) 225-231. Salamanca had as many as 6,778 students in 1584.

91. Bennassar (1967) 225-231. Most apprentices of the guilds at Valladolid were immigrants from the provinces north of the city.

92. There is every reason to agree with Morales Padrón (1970b) 626, that “La emigración sevillana viene determinada sobre todo por su condición de puerto único.” The importance of ”pull” factors with regard to Andalusia was pointed out already by Rodriguez Azúa (1947) 703.

93. Boyd-Bowman (1973) 47-53, 76-81; Lockhart (1968) 96-97, 240. In 1780, Andalusians and Biscayans were the most numerous groups among the Spanish artisans at Buenos Aires. Corona Baratech (1951) 54-55.

94. Within the urban sector, the growing rigidity of the guild system reducing the ascent to mastership would be such a factor. Domínguez Ortiz (1973) 135. General unemployment and misery would be another.


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96. Sánchez-Albornoz (1973) 146 attributes eighteenth-century Catalan emigration to America, in the first place, to the removal of legal barriers. This is hardly correct. See n. 5 above. He shows his mistrust of the estimate of Hernández Sánchez-Barba (1954, 1958) concerning eighteenth-century migration. But he bases his comparison with Portuguese emigration on this same estimate.


98. Boyd-Bowman (1973) 72. As in a letter to the author he claims a total of 55,000 prior to 1600, the figure for the period of 1580-99 should be about 10,000.

99. Malagón Barceló (1963) 98. The repression of the rebels was discontinued in 1527.

100. Domínguez Ortiz (1963) 89.


104. El celoso extremeño (a part of Cervantes' Novelas ejemplares, published in 1613) deals with Felipe de Carrizales' journey to the Indies, "refugio, y amparo de los desesperados de España, Yglesia de los alcá; dos, saluqondo de los homicidas, pala y cubierta de los jugadores (a quien llaman ciertos los peritos en el arte), añagaza general de mugeres libres, engario común de muchos y remedio particular de pocos." Despite this vehement condemnation of the land of destination and of the migrants, Cervantes allows Felipe to be very successful in the Indies. In 20 years he acquires a fortune of more than 150,000 pesos ensayados with which he returns to Spain. See also Valentín de Pedro (1954) 173. Cervantes' application, in 1590, was rejected with the annotation "Busque por acá en qué se le haga merced." Ibid., 76-78.


106. From 6% in 1520-39 and 16.4% in 1540-59 to 28.5% in 1560-79. Boyd-Bowman (1972) 351.


109. DÍA 32 (1879) 249-250.


111. Giménez Fernández (1953) 2. 609-638. According to that author (627) the basic reason for the failure was the fact that "dado el régimen jurídico del campo castellano" it was useless to persuade the peasants to go, as long as "los señores semifeudales... estaban decididos a defender con uñas y dientes la continuación de aquellos en la gleba."


115. Moncada (1746) 47-51.

116. Fernández Navarrete (1626) 58.

117. Saavedra Fajardo (1927-30) 3. 171.

118. Heckscher (1931) 2. 32-34, 139-149.


120. Colmeiro (1863) 2. 48; Campillo (1789) 260-265.

121. A case like that of the Sande brothers, hidalgos and military officers of the late sixteenth century, could be used to support this argument! One of them died in Italy and two in Flanders; the fourth went to the Indies. Rubio y Muñoz-Bocanegra (1947) no. 110 p. 109.

122. Ward (1787) 58-62, 305-306. See also Hamilton (1934) 112 (note).


124. Toledo did exhibit an extraordinarily high proportion of people classified as "poor" by the mid-eighteenth century. Anes (1970), 136. Together with Extremadura, Cuenca, and La Mancha it also had the highest proportion of rural day workers. Artola (1966-71) fasc. 6. 29. See also Herr (1958) 92-94.
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125. Larruga (1787-95) 7. 8-9; 27. 75-76.
126. Hamilton (1934) 299. His source was an earlier version of Rubio y Moreno (1930).
129. Nadal Oller (1974) 64-69. He finds Vicente Montano’s view (see n. 119 above), in a way, to harmonize with his own reasoning. It should also be mentioned that Nadal makes a clear disclaimer: “Tengo plena conciencia de haber llevado el juego más lejos de lo que permiten los pocos datos fidedignos a mi alcance.”
130. See also Guillaume and Poussou (1970) 186, 224. A French sample from 1691 shows that the men between 15 and 24 years of age constituted 20% of all males. In the eighteenth century, adults between 15 and 24 years old constituted 42% of the emigrants for the French West Indies, those between 25 and 34 some 36%.
131. Nadal Oller (1974) passim. Bennassar (1967) 191, 197 and passim found families in sixteenth-century Valladolid to be relatively small and infant mortality exceedingly high. For conditions in France, see Guillaume and Poussou (1970) 177. The birth rate in Valladolid was between 35 and 45 per thousand. The “normal” mortality rate was only a little lower. See also Domínguez Ortiz (1973) 77.
135. It had some 7% of Spain’s total population in 1591, according to Domínguez Ortiz (1973) 76; but merely 4% in 1787. Nadal Oller (1974) 199.
136. In scarcely-populated Tenerife a desperate official in 1647 exclaimed that there were many more natives of that island in the Indies than in Tenerife itself. Morales Padrón (1950) 6.
137. In 1609 there were about 88,000 Moriscos in the crown of Castile but they only formed some 1.3% of the total Castilian population. Nadal Oller (1974) 54.
139. Bennassar (1969) 62-68. It is also interesting to notice that Ponsot (1971) found agricultural production in a few villages in Huelva stagnating in the seventeenth century. It would rise again in the early eighteenth century.
141. Bennassar (1967) 190-191. See also Domínguez Ortiz (1963) 95. For the eighteenth century see for example Artola (1966-71) fasc. 3. 28.
142. Cabrillana (1965) 482-484.
143. Elliott (1970) 77. His speculations about the effects of the reinvestments of the “indianos” in Spain are necessarily lofty, in the absence of any systematic research on that aspect of the problem as yet.
144. Artola (1966-71) fasc. 0.37; fasc. 3. 42-43; fasc. 6. 35.

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One notes gratefully the growing success scholars are having in estimating the numbers, regional origins, and some other characteristics of the emigrants from Spain to America in the sixteenth century. Later emigration stands open to study by the same means—primarily the compilation and analysis of data gathered by governmental agencies of the time. Already we see a movement of truly mass proportions, far more broadly based as to region and social recruitment, far more sustained than we once had reason to think. The implications are both deep and broad, bearing in the most direct way possible on the manner of creation of Spanish America, the main lines of the evolution of early modern Spain, and the general or comparative history of emigration.1

Interpreting the movement is no easy matter. One cannot use gross data of the type available for direct measurement of the impact of emigration on either place of origin or point of destination, much less for meaningful discussion of the question whether emigration was "good" or "bad" for Spain. Aside from some work of an economic and statistical nature, the social history of early modern Spain is virgin territory, far less explored than Spanish America itself; in measuring the effects of emigration the scholar faces the logically contradictory problem of measuring the impact of a loss on a vacuum.

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In any case, there is a whole area of interest left untouched by the emigration statistics. What of the emigrants' expectations and motivations? What of contacts preserved with home? These and other matters can never be elucidated with the sources and statistical methods for the study of the overall trends of migration. What is required to answer such questions is a direct understanding of the processes of migration as they affect individuals. Correlations of emigrant statistics with rising or falling trends of overall population or with differential regional characteristics still do not bring us close enough to that understanding. Two things are needed: study of direct utterances by the individuals involved, if possible at the level of frank, intimate discourse; and work on career patterns, the total lives of emigrating and returning individuals, including their position in the society that surrounded them on both sides of the Atlantic. Work on such materials has hardly begun.

Here I wish mainly to bring together some impressions from research done by my colleague Enrique Otte and myself, formulating in more general terms what we have already said in scattered publications. This cannot replace a major research effort, but perhaps it can give some hint of the kinds of results that larger-scale, more concentrated investigation could yield. Like many others, Otte and I have seen the phenomena of emigration only from the edges, as historians of Spanish America. The private letters Otte has worked with were mainly written from the Indies to Spain. So far, few letters sent from Spain to the Indies have appeared. The search should be pressed, for such letters would be even more direct data on the private Spanish image of America than those going in the other direction. My own work on the social history of Spanish America has led me to deal on occasion with the returnee to Spain as an important element in the cycle, and to study some actual careers, but only as seen in the characteristic sources of the Spanish American historian, on this side of the Atlantic and in Seville's Archive of the Indies. The subject demands study as Spanish social history; one wishes for a comprehensive book on a given Spanish city in the sixteenth century, one part of which would deal with returnees, as well as their status in and impact on a community whose structure is well understood.

I will present here some glimpses of three topics touched on in the work I have mentioned above: first, some special characteristics of the stream of emigration as seen in private correspondence; second, the image of the Indies that the settlers presented to Spaniards at home; and third, the role of the returnees, with less emphasis on their direct impact in Spain than on their part in a dialectic of emigration, return, and further involvement brought on by the return. This process established lasting personal-familial-regional relationships between colony and
motherland which became an important part of the life of the motherland itself.

In speaking of emigration, I want to give priority to a person of transcendent importance who strongly affected the settlers' manner of depicting the New World, and loomed large in ongoing connections: the nephew. The greatest commerce in Spanish America was the importation of nephews on credit, against promises of favor and fortune. One is tempted to say that the Indies were populated by nephews, sent for by their importunate uncles, pushed out by their hard-pressed fathers. To judge from its reflection in the letters we know, correspondence from Spain to the Indies seems to have been largely an appeal for money; correspondence from the Indies to Spain sometimes appears as one great appeal for nephews.

An encomendero (holder of a grant of Indian tribute and labor) in Trujillo, Peru:

What I would need here is what there is too much of there, which is a boy from among those nephews of mine, to ride about on horseback inspecting my properties.\(^6\)

A rich linen-trader in Puebla, Mexico:

Nephew, you will give me the greatest happiness if you will come here with me; I have no one to give all this to but you.\(^7\)

A petty dealer in Indian goods in Mexico City:

Now, nephew, I am advanced in years and can no longer take care of everything. I wish, if it please God, that you would come to this land, as I have written you in other letters, so that I could rest and you would remain in the business.\(^8\)

An Augustinian friar and professor of theology in Mexico City:

And if one of my nephews knew Latin and wanted to be a friar. . . .\(^9\)

A priest at the silver mines of Potosí:

The priests and friars who have a nephew here whom they can trust are very rich. . . .\(^10\)

The rationale of the pattern is not far to seek. To reconstruct an archetypal situation, the oldest son of a family would stay in Spain to take over whatever property or position the family might have, while his younger brother, in his twenties and still unmarried, would leave for the Indies. Even there he would not marry until he had established himself in some way. Once established, he would want trusted subordinates and aides, in a word sons, but since he was newly married, he would have small children or none, and so he would write off to his older
brother, who was himself no longer movable but whose sons would now be approaching manhood. Once again a younger son would be chosen, and the cycle was completed.

That the operation of the pattern was indeed cyclical and long-continuing can be seen in the work of David Brading on the Spanish merchants of Mexico in the later eighteenth century. Even at that late date, family continuity (and peninsular Spanish management) was often assured by the practice of bringing a young relative from the north Castilian home town of the merchant; there were large businesses which were handed on in this way two or three times in succession over the period of a century. Nor was the pattern in all probability new in the sixteenth century. In a dissertation on the seventeenth-century Portuguese merchant community, David G. Smith points to a long-standing migration of this type from certain Portuguese provincial towns towards Lisbon. As Smith himself notes, in migration to America the Indies plays the role traditionally played by the large city.

With this, let us leave the nephew; he can remind us that much of the pressure of the Indies on Spain was that of recruitment, and that much of the lasting connection between Spain and the Indies had a familial substratum. Indeed, in the correspondence, other relatives including women are frequently implored to come. Letters often ask for people with special skills as well, and, out of exuberance or despair, make even wider appeals. But the emphasis is on young unestablished male relatives.

At the same time as the letters triply underline the kinship orientation of migration, they contain resentful mention of others who come without the help of relatives; usually the writers point to them in order to shame the pusillanimous kin who have not yet decided to come. I quote passages from two of the letters cited above.

The encomendero:

Somehow two thousand paupers manage to get here; they look for a way to come across and finally they find it.

The linen-trader:

Why, there are others who have the courage without having any support here, who make the fortunes they can without owing anyone anything.

But even these waifs do not proceed out of nowhere into the unknown. The linen-trader continues, “except for the favor they get for being from that part of the country.” Where kinship left off, regionalism took over, and some Spaniards went to the Indies knowing that many from their home town had gone there already and might give them aid.
As for the image of the Indies that settlers painted for Spaniards at home, it must have been conveyed in two main ways, by people returning and by letters. Not having the returnees' conversation, we must rely on the letters, which we may presume contain much the same picture. We may not, of course, presume that those at home accepted it as the whole truth. There is little need to go into detail about the vision that the letters project, because it is so familiar to us; it is nearly identical to the tales of a land of opportunity and plenty with which immigrants to the United States inundated Europe in the nineteenth and early twentieth centuries. The image has great uniformity, whether coming from the highly placed or the humble, whether from Mexico or Peru. I know of no fuller expression of it than a letter from a tailor in Puebla. There is plenty of work, and it is better paid than in Spain:

Imagine that if back there we got 8 reales for a coat and a short cloak, here they give us 32.

Every Spaniard has a horse to ride. Food is plentiful and cheap. Things from Spain (wine specifically) are expensive, but with so much money from good pay, one thinks little of it and buys what one needs anyway.

This is not El Dorado, not treasure, romance, and gold in the streets. The letters, even from rich encomenderos and miners and even when most enthusiastic, speak not of something for nothing, but of business opportunities, of helping people get started, of a rich reward for a good effort. Those who have made fortunes have done so "by their industry." A minor official of western Mexico wrote his nephew:

There are many things I could write you about this land, but I will mention only one, which is that here men who know how to work and give themselves to virtue make a living, and those who don't, don't.

Let us compare this picture for a moment with that presented by viceroys and governors during the second half of the sixteenth century, in whose reports Spaniards in the Indies will not work; rebellion is to be expected any moment; Spaniards, mestizos, and blacks should be deported; the silver mines lie in ruin for lack of labor; and even food in the cities is high-priced and in desperately short supply. I think it is clear which version is closer to the mark. Unlike the viceroys, the settlers in private correspondence do make qualifications, do mention vagrants and other problems in a realistic perspective; they often come as near to a good general statement as could be expected from people whose business is not disinterested analysis. The letter last quoted (dated 1577) assesses the food situation perfectly:

Wherever a man goes he will find someone to feed him, though it is true things are getting tighter than they used to be.
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Surely such words, uttered between relatives and friends, must have affected the opinions and actions of Spaniards more than overwrought official reports. The private lines of communication that existed between Spain and the Indies are fully as important as the public lines of governors' reports, chronicles, and pamphleteering. The public statement is often a reflex, a secondary comment on and reaction to a primary social-cultural reality better reflected in more private, individual materials.

The letters of viceroy's, bishops, friars, and even the public correspondence of encomenderos and miners, are thickly populated with Indians; controversies over their treatment and concern over the spread of Christianity among them are very nearly the dominant topics of the whole literature. A striking facet of the private correspondence, however, is the near-absence of Indians or worry over their religious welfare. If such things come up at all, it is usually in passing. The priest at Potosí writes mainly in order to acquire a nephew to run a silver-ore refining mill for him, but in deliberating over whether he might return to Spain or stay in Peru, he says:

If I decide to stay, I will buy a very good farm or chacara, with a vineyard of ten or twelve thousand stocks and many trees, Castilian and local, that will support me when I want to retire and rest, and not go about instructing Indians, which is surely a great travail.

Here the disparity between the two bodies of correspondence is of a different sort. The private letters reveal the artificiality and one-sidedness of the public ones in this subject matter as well, but no one could say that Indians were not in a hundred ways important to the Spaniards, or that the Spaniards were irreligious, for their letters are dotted with prayers, preaching, and thanks for divine help. On the basis of the correspondence, Indians were not much in the forefront of the settlers' consciousness; they were seen as outside the private, internal world of Spanish affairs. Certainly neither Indians nor religious ministry to them plays any discernible role in the image of the new land which the settlers presented to those at home. That image, and the type of motivation it implies for both the settler already in the Indies and the migrant just leaving Spain, are those associated with European settler colonies in areas where there was little or no indigenous population.

One part of the Spanish image of America emerges clearly from the settlers' letters, not as anything they are trying to project, but rather in their replies to what relatives at home have written them, and in their awareness of what is expected of them. One of the few known personal letters from a conqueror at the scene of the Conquest, addressed from Peru to the young writer's father in the Basque country, begins:
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Sir: It must be about three years ago that I got a letter from you, in which you asked me to send some money. To people in Spain, during the conquests and later, the Indies were a place relatives might send money from. The settlers usually sent traveling money to those who were coming to join them, and/or promised payment of debts accumulated on the trip. But beyond this, there was the expectation that they would send something every time they wrote. Hardly a letter fails to contain an apology for not sending money at the moment, with promises to do so in the future—sometimes for dowries for the girls of the family, occasionally to educate the boys, most often without specific mention of purpose. Often enough, instead of apology there was the money itself, a substantial amount of from 50 to several hundred pesos; some settlers sent such amounts repeatedly over the years, whenever they could find a carrier to be trusted.

If a new area seems a land of promise, there must be a counter-image of the old country, and so we find it here. The letters cast one aspersion after another on Spain, calling it a "land of scarcity," referring to the "misery" there (the favorite word), scoffing at the paltriness of Spanish dowries, making fun of Spanish housing ("those little huts they have there").

We have, then, the image of America as a place where there is opportunity and wealth for all who will work; and the people of Spain are prepared to believe this to the extent of investing second sons and hounding the big talkers for money. What role did the returnees play in all this, or rather, since we lack evidence of their sentiments as direct as the correspondence for the settlers, what can we say about the patterns of their activity, about their impact on Spain and the Spain-Indies nexus? Quantitative aspects of the stream of return migration can be studied in the same way as for the original emigration from Spain. We do know that it was a steady, significant movement. For the social history of the movement, I will try to draw a few general implications from Peruvian research I have engaged in.

The often harsh treatment that Spanish literary sources give to the indios would make one think that they were rejected in peninsular society; but the unflattering picture may just as well be the expression of resentment over their success. In any case, it is a stereotype beneath which we must search for a social reality if we are to understand either the real role of the returnee or the real meaning of the comment about him. The situation in sixteenth-century Trujillo (Extremadura) can throw light on the picture of the indiano as an uneducated upstart, perhaps rejected, perhaps vaulted into undeserved eminence.

The evidence consists of fairly coherent, if skeletal, career information on one group known in its entirety: the ten first conquerors of
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Peru, members of Francisco Pizarro’s main conquering expedition, who returned rich to their native Trujillo, recruiting point for the expedition’s first nucleus. They and their wealth must have jolted the town. As to the property they bought and the marriages they made, only hints are presently available. But we do have information systematic enough to bear analysis when it comes to the Trujillo town council, which they packed shamelessly. By mid-century about half of them were councilmen. These shared several characteristics: they were literate, had been treated with consideration in Peru from the inception of the Conquest, and bore the names of known hidalgo families of the town. Of those who were not councilmen, only one or two were literate, and all were of lower stations: a Pizarro steward, a horseshoer, a black crier and piper. They had the wealth and presumably the shared ideal, but never became councilmen. We do not know, actually, that the plebeians even attempted to gain seats, but one of them at least was dissatisfied, for after years in Trujillo he returned to Peru and there attained a seat on the council of Cuzco. Here, perhaps, is our upstart and rejected indiano.

The Trujillo case shows us that even under what would appear to be a situation uniquely conducive to social revolution—where a dozen returnees came into a small city at the same time, probably tripling or quadrupling the liquid wealth in the local economy—no change of a structural nature took place. By 1550 there were council members who would not have been there but for the upheaval, but they were men of the same type as before. The repercussions were of a lesser magnitude. Personnel was displaced; there must have been severe disappointments, realignment in Trujillo’s long standing familial-political factions or bandos, and probably some screaming that the city patrimony was being sold to nobodies, untrue as that was. As for the plebeians, they generally contented themselves with a certain wealth, respect, and fame short of the highest social position. It is my impression that most of them made no move to marry the noble doñas of the town, or to invade the council chambers. Within this framework of accommodation by hidalgo and plebeian, returnee and stay-at-home, there was a little dissent by commoners who had enough connections or education to feel eligible for higher status, but whose pretensions were rejected because the people at home remembered their beginnings too well and saw the disparities too sharply. These men might become disgruntled, might even return to the Indies.²⁶ Cases like this may have contributed more than their share to the indiano’s literary image.

Although I have no other overview of a local situation to compare to Trujillo, this analysis can be generalized at least for the body of conquerors returning from Peru to Spain in the 1530’s and flourishing there through the middle years of the century. Despite their unparalleled wealth, only those who could pass reasonably well for hidalgos by
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peninsular standards were able to sit on the town councils of their home areas. Others accepted a lesser success, and a few, all of them plebeians, went back to Peru after some years in Spain. Quite possibly the aggregate from all areas of the Indies over a century or two could have been an appreciable element in Spain’s internal economy, but that question goes beyond my resources. In the internal social organization of Spain, one might hazard that the returnees caused only a ripple; they were conservative men, whose ambition was to realize conventional ideals through a conventional pattern of activity.27

Let me proceed to the somewhat more tangible topic of how the returnees, who appeared to be abandoning the Indies, were actually important in strengthening Spain’s involvement there: they made various kinds of interaction with the Indies a normal, almost internal process, establishing traditions and social-economic networks.

If the experience of the first conquerors, along with some other early returnees from Peru, was at all representative, each new arrival from the Indies quickly went to his home area in Spain, bought income properties or annuities, built or bought the largest house he could, either at his very birthplace or in the nearest town of any size, and filled it with as large a following of servants and retainers as he could afford.28 Often he could afford a substantial establishment, because by the mores of the Indies one went home rich or not at all. Again the example of the first conquerors of Peru: those who returned immediately after the Conquest were all in all those with the largest shares of treasure; the others hoped to accumulate more before returning. Again and again in the settlers’ letters the writer announces he will be home in two or three years—if he has saved a given amount of money. Sometimes a Spaniard with no position and few prospects in the Indies would have a windfall and go home with a few hundred pesos.29 But overall, in early Peru, the returnee was someone who had made a fortune in Spanish peninsular terms without getting hopelessly enmeshed in local affairs, as most did. It is also observable that those returning tended to belong to the upper half of settler society in birth and education.30

Whatever the impact of the returnee on Spanish society generally, one effect of his return was to send young men from his own town scrambling for the Indies, generally to the part of the Indies he had come from, to do the same as he had done. As powerful an inducement as letters and money were, the actual presence of the person was more powerful. In working with documents on early Peru, when I saw someone leaving rich, I learned to expect the quick appearance of his relatives. For the first conquerors there are some documented examples,31 and my impressions tell me the phenomenon went far beyond that. One tends to attribute it to the demonstration effect, but it need not have been that alone. Once home, the man of the Indies could give his
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relatives and compatriots a much more detailed, convincing account in repeated conversations. Also the returnee, with his wealth, generally became the functioning head of his lineage, and may have used his new authority to send the young men of the family off to do what he felt was best for them. In any case, the effect of the returnees, particularly when a number of them came into a single Spanish community, was to strengthen and deepen the tie between the community and some part of the Indies, to make the citizens of the Spanish town more knowledgeable about the colonial settlement, hastening a second generation of involvement with it, and helping create a cycle and a set of expectations. There was an expectation at certain times and places that when anyone returned from the Indies someone else should be sent to replace him, to take advantage of his connections, and in a sense to inherit his position. A corresponding expectation existed in the Indies. In discussing private letters from Puebla, Otte points to a long-standing association between Puebla and the Castilian town of Brihuega: not only letters and emigrants, but also successful returnees were involved in maintaining the tie.32 Brading speaks of the same small Castilian towns sending sons to Mexico City generation after generation until the end of the colonial period.

If the returnees were important to the creation of lasting regional ties, they were even more essential in establishing professional networks that spanned the Atlantic and transcended the internal history of either Spain or the Indies, while representing an important part of each. The best developed of these by far were the mercantile networks. Among the merchants we are in a different world. In their letters from the Indies there is no talk of a land of opportunity, no wooing of recruits; the writer is a junior partner addressing his superior, and the man at home knows as much about the Indies as the local representative, probably from having been there.33 Among merchants, the goal was Seville, because that is where the large companies were based. In fact, it is often inappropriate to speak of merchants leaving anywhere, or returning. One could go and come, abandoning nothing, advancing along a single line of promotion within a single family network: first running errands for Father around the docks in Seville; then setting off for Lima as a lad to learn from, help, and tattle on Uncle, the firm’s main representative there; perhaps a stint taking merchandise to Arequipa and the mines of Potosí; then succeeding Uncle when he returns to Seville after Father’s death; finally returning to Seville and the top position oneself; and eventually sending one’s son to Lima in turn. Of course companies did not usually last long, and there were disasters of many kinds. Failure for the company or the individual meant that the latter stayed wherever he happened to be at the moment. But the same migration pattern obtained even outside company channels. A young man of merchant family might
emigrate as an individual, get a start in Potosí in local commerce, advance to head a medium-sized company of his own in Lima, and then when he had accumulated enough capital, repeat the process on a larger scale in Seville. There may never have been a time when an actual majority of the large exporters of Seville had had beginnings in the Indies, but one could easily get that impression. In a letter of 1553 Francisco de Escobar, long in Peru himself and now head of a large Seville combine trading with Lima, is considering new company arrangements, in the course of which he discusses a number of other exporters to Peru; one name after another goes by, of men once active in Lima or Panama, except for the prior of the Seville consulado, and even he has sent a son to Lima. For a century or so this inseparable unity of Seville and the Indies continued in commerce, based on economic factors, but maintained in large part by the movement of people back and forth within well-defined channels and conventions. 34

Notaries also showed some of the merchants’ tendencies, although the movement was comparatively minor and irregular, and outside any network. In early Peru notaries were among those most likely to return to Spain, and once there they sometimes, though not as invariably as merchants, continued dealings with the Indies. A notary among the first conquerors of Peru became a solicitor in the Council of the Indies. 35 Juan Franco, once chief notary of Lima, went to Spain and bought one of the notarial offices of Seville; much of his business there concerned the Indies, and the merchant Francisco de Escobar (see above) issued documents before Franco in Seville as he had formerly done in Lima. 36

I do not know of studies about other professions which would permit a full discussion of trends. Mariners moved back and forth more than anyone else, but they were so peripheral in Spain and so scorned in the Indies that they barely belong to the internal history of either area. In Church and government, some of the same patterns prevailed as in commerce. The hierarchies embraced both hemispheres, and a number of the most fully successful individuals followed a career pattern which led first to the Indies and then to a high position in Spain. It appears to me, however, that in the upper levels of the colonial Church, returning to Spain was always more an exception than a rule, perhaps because of the relatively advanced age of high dignitaries when appointed. On the lower levels, on the other hand, and especially among the loosely supervised secular clergy, many returned, but more in order to retire wealthy, like other returning Spaniards, than as a step in professional advancement. In government, particularly for judges, one can discern a promotional ladder like the one in commerce: it led from minor audiencias to those in the viceregal capitals, then to the Council of the Indies or other high posts in Spain. Moreover, the pattern remained valid for a long period of time, and also included the sending back of younger
relatives to take one's place. What audiencia in the Indies was without its Licenciado Altamirano or Doctor Maldonado, appointed through the influence of a relative formerly stationed there and now on the Council? One is left with the feeling, however, that in no other branch of life was the social integration of the two hemispheres as complete as in commerce.

All of these networks met the same fate. At some point the cycle broke down in that most of the successful figures stopped returning and built positions in America instead. This led to two parallel, partially competing entities rather than one integrated one. Partial maturation of the American system would seem to account for the change: the capitals of the Indies became progressively better places in which to retire, the European sector of American life grew too large and complex to be managed from outside, and the economy generated enough capital to allow cash buying from Seville rather than full dependence. The process is not well understood in any of the branches, but one can say a word or two about the broad lines of it in the commercial world. By the seventeenth century the trans-Atlantic companies had split in two. Seville firms penetrated only as far as Veracruz and Portobello, where other firms, based in Mexico City and Lima, bought up the shipments wholesale. By the eighteenth century, Brading shows us, the large merchants of Mexico were acquiring titles, lands, and all the appurtenances of a permanent position in the Indies. Even so, these merchants were still Spanish-born. The input of nephews long survived the breakdown of full integration, and continued in a now traditional fashion until Spanish-American independence and even beyond. At any rate, for many decades before the pattern changed, Spain and the Indies functioned as a unit in various important respects, and some of the most influential people in Spanish life were men made in the Indies.

NOTES

1. A whole vein of older work drawing conclusions from supposed differences in English and Spanish emigration patterns is now thoroughly outdated. It emerges increasingly that early modern English and Spanish emigration movements were quite similar in kind, and further that the European emigration wave of the nineteenth and twentieth centuries contains practically nothing new, i.e., that the entire set of movements represents a single phenomenon.
3. Otte has published many articles which are part comment and analysis, part publication of letters, and I will have occasion to refer to one or two of them later. The two largest collections, with substantial analysis of many aspects of the letters' significance, are “Cartas privadas de Puebla del siglo XVI,” Jahrbuch für Geschichte von Staat, Wirtschaft und Gesellschaft Lateinamerikas 3 (1966) 10-87, and “Die europäischen Siedler und die Probleme der Neuen Welt,” ibid., 6 (1969) 1-40. Otte and I have prepared an
English translation and edition for some of these letters along with others both private and public in a volume entitled *Letters and People of the Spanish Indies: Sixteenth Century* (forthcoming, Cambridge University Press).

4. For present purposes let us accept the convention that the English language contains the horrid neologism “returnee,” meaning not a person forcibly returned somewhere, but one voluntarily going back to his homeland, usually permanently. “Returner” yields the wrong sense; “repatriate,” which I have used before, on the model of “expatriate,” strikes most people as an active verb form; *indiano* is a loaded, over-literary, partially anachronistic category.


6. Otte, “Die europäischen Siedler” (n. 3 above) 18.
8. Otte, “Die europäischen Siedler” (n. 3 above) 28.
9. Ibid., 39.
10. Ibid., 32.
13. Otte, “Die europäischen Siedler” (n. 3 above) 19.
14. Otte, “Cartas privadas” (n. 3 above) 47.
15. Ibid., 56-58.
17. The well-known collections of documents relating to the Indies are filled with such letters. A good sample may be seen in *Cartas de Indias* (Madrid 1877).
18. Or so it appears superficially. Very often what is going on is a power struggle between Spaniards, of which the Indians are only the occasion, or even the pretext.
19. Otte, “Die europäischen Siedler” (n. 3 above) 33.
22. Otte, “Die europäischen Siedler” (n. 3 above) 38.
23. Theopolis Fair in his doctoral dissertation “The *indiano* during the Spanish Golden Age from 1550-1650” (Temple University 1972) hardly begins to exploit his announced topic, but does, in estimating the stream of repatriation, give a gross figure of 60,000 for the century between 1550 and 1650 (p. 75). Registers were kept of passengers on returning ships. The average number per ship register can be found and multiplied by the total estimated number of ships to give yearly totals. The method seems sound and capable of considerable refinement, though Fair’s averages are based on samples from only five years in the 1570’s.
24. Fair at times takes this position in “The *indiano*” (n. 23 above).
25. See Lockhart, *The Men of Cajamarca* (n. 5 above) 58, and information scattered through the individual biographies of men from Trujillo.
26. Short of going to the Indies, one could (though few did) go elsewhere in Spain, where one’s wealth and good presence could be seen and one’s origins were not known so precisely. In fact, the only plebeian on the Trujillo council was an Alonso Ruiz, born in the kingdom of León, who became in Peru the partner of a Trujillan, and on return married his partner’s sister and settled in Trujillo. See Lockhart, *The Men of Cajamarca* (n. 5 above) 343-346.
27. See Lockhart, *The Men of Cajamarca* (n. 5 above) 54-59 and 63-64.
28. I do not agree with those who postulate one mentality for “conquerors,” another for “settlers.” The conquerors’ letters read just like those of their successors. Conquerors who could not afford to return home set about exactly the same kind of economic activity as “settlers”; they were in fact the pattern-setters for those after them and around them. So many of the first conquerors of Peru returned because they had unparalleled removable assets. “Settlers” who had the same did the same, merchants as well as
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notaries, artisans, agriculturists, and others. Comparative analysis shows that the factor determining the rate of return was not mentality but the degree to which position in the Indies could be translated into position at home. The emigrants' letters indicate that practically all settlers originally intended to return, and that the maximum ambition for all, regardless of how often it could be realized, was a seigneurial existence in Spain.

29. See Lockhart, Spanish Peru (n. 5 above) 145-146.
30. See Lockhart, The Men of Cajamarca (n. 5 above) 50.
31. Ibid., passim.
34. See Lockhart, Spanish Peru (n. 5 above) 80-81, 87-91.
35. Lockhart, The Men of Cajamarca (n. 5 above) 264.
36. Lockhart, Spanish Peru (n. 5 above) 75.
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Part X

SCIENCE AND TRADE
The Columbian Discoveries and the Growth of Botanical Ideas with Special Reference to the Sixteenth Century

by Joseph Ewan

I believe there are many plants and many trees which are worth a lot in Spain for dyes, and for medicines or spicery; but I do not recognize them, which gives me great grief.” So wrote Columbus, coasting among the Bahamas on his first voyage.¹

The sixteenth century witnessed the rise and decline of the herbal illustrated with woodcuts, the better known herbalists being Brunfels, Fuchs, Mattioli, Clusius, and Dodoens. But the Columbian era of discovery produced few of the newsworthy plants incorporated into these herbals. There is a lag, even today, between discovery and reporting, especially reliable, accurate reporting.² Brunfels’ herbal of 1530 includes no reference to American discoveries, and Fuchs, who published his herbal exactly 50 years after Columbus first arrived in

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America, illustrated only two American squashes\(^3\) and maize. Clusius, the herbalist of Antwerp, refers by 1583 to “white beans of Guatemala” and “dama de noche,” and provides a good figure of “four o’clocks,” the “marvel of Peru.”\(^4\)

By the time Francis Bacon wrote his *Novum organum*, three premises had been admitted: first, for every ill there was a plant remedy; second, for every clime there was a blossom; and third, America was a *new* world. Apothecaries dispensed the providentially provided remedies: for example, from a heart-shaped leaf came relief for cardiac disorders; from red juices, relief from hemorrhages; and from the brain-like walnut meat, brain power. This doctrine of signatures was a happy palliative for the ills of the Renaissance. Now with the return of Columbus came the great pox, for which the Old World pharmacopoeia was ill-equipped. But soon holywood, lignum vitae, was discovered in the beneficent New World,\(^5\) and later it gave quinine from *Cinchona* for malaria.\(^6\) As John Ray said:

One observation I shall add relating to the Virtues of Plants, in which I think there is something of Truth, that is, that there are, by the wise Disposition of Providence, such *Species* of Plants produced in every country as are most proper and convenient for the Meat and Medicine of the Men and Animals that are bred and inhabit there.\(^7\)

More academic was the second proposition: that for each environment in the world there existed an adaptation. The New World reinforced that proposition. As the heart of Africa was penetrated, green skeletons were met with—leafless dragon trees that bled white when cut as the Dragon Tree of Tenerife bled red. These tree euphorbs so characteristic of the deserts of Africa and Arabia were testimonials of the fitness of “form to function.” When another plant reminding men of the African tree euphorbs was encountered in the Caribbean and later along the Spanish Main, the word *Kaktos*, given to a spiny plant of the Aegean islands, was employed for the distinctive New World cactus. So one of the earliest psylipses took place. From cactus came the edible tunas and the dyestuff of immense importance to European commerce, cochineal (again carrying a Greek name), produced on the cochineal “fig,” a cactus. Another witness that habitats have distinctive growth forms following the dictates of climate was the American counterpart of the African aloe, the *Agave* of the West Indies and Mexico, the “American aloe.”\(^8\) Four centuries later all these would be recognized as the products of convergent evolution. In time, true species pairs from the Old World and the New were also distinguished: for example, the lotus, *Nelumbo nucifera* and *N. pentapetala*; and the Old World plane, *Platanus orientalis*, and the New World *P. occidentalis*.  

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Botanical Ideas

To prove the third proposition came not only the antisyphilitic holywood and the antimalarial drug Cinchona, but the novel cacti, the hummingbirds who visited the cardinal flowers, and the insectivorous pitcher plant were all recognized as unique to the Americas. Carnivory among plants was not truly recognized until the eighteenth century, though Pinguicula, an insectivorous genus of Europe, had long been known among Scandinavian folk for its ability to curdle milk. The insect-catching pitcher plant of lower Canada, later named Sarracenia purpurea, was mentioned by Clusius in 1576 and figured for its tubular leaf. The report was based on a plant sent to Lisbon, evidently by a Portuguese sailor out of Newfoundland who delivered it to the Paris apothecary Claude Gonier. The following 200 years saw various surmises about the function of the hollow leaves: that they supplied water for frogs during dry spells, or that they drowned insects in their flasks. The theory that the plant’s tissues digested the insect bodies first came in the early nineteenth century. Singularly, the carnivory of Drosera, the sundew of Europe, had not been correctly interpreted. The American insectivorous plants brought the animal attribute of digestion to the attention of the investigator. But it was the endemic Carolinian Venus fly-trap that elicited the greatest interest, beginning with its discovery in 1760. When finally Charles Darwin directed his attention to the subject he pronounced Dionaea “the most wonderful plant in the world.”

Other botanic propositions developed specifically as results of New World discoveries. One was the antitropical distribution pattern: for example, the black crowberry of the north temperate zone and the red crowberry of the south temperate left the biogeographer with the problem of why or how the genus managed to cross the torrid zone and leave no tracks.

Endemism—an ever growing awareness of the distinctiveness of floras and faunas—was a major development. Theobroma cacao—named the gift of the gods by Linnaeus—pineapple, tobacco, Brazil nut, cherimoya—worth crossing the Atlantic for, said Humboldt—all brought excitement when their discovery reached Europe. Cacao beans, brought across from the Pacific slope as a common Indian trade item, were used as money on the Atlantic coast of Honduras. Pineapple, Columbus’ son Ferdinand described as a “great pine cone; and the plant is grown in large fields [in Veragua] from shoots that grow out of the same pina ... [and] plants last for three or four years, always producing fruit.” King Ferdinand conceded it the palm among fruits. Columbian discoveries were often interpreted, naturally, in light of what was then comparable: the plants known from Guinea. So the yams of West Africa were the reference plant for the New World root crop yuca. In turn the yuca was
to be confused with the sweet potato. When Cuban thatch palms were encountered on 28 October 1492, they were likened to “another kind than those of Guinea.” When the use of palm hearts as food was noticed in Darien, they were compared with the cabbage palms of Guinea.16

Another floristic principle of endemism was the southern extension of the northern more temperate component of vegetation into the tropics. On his last venture Columbus met with pines and live oaks on the coast of Honduras. He was perhaps the first to recognize the commingling of floras in the New World, that is, what we would now call biogeographic provinces.17 Naturalists slowly grasped the significance of regional, often narrowly endemic, patterns of distribution, as suggested by the fact that Linnaeus in the mid-eighteenth century based his accounts of the West Indian floras solely on Hans Sloane’s Jamaica records (and then only to the eastern portion of that island) and on Plumier’s plants from “Domingo” (not the present Dominic Republic, but Haiti) or Martinique, where Plumier is known to have botanized extensively. Linnaeus’ plant records, as William T. Stearn has said, must be interpreted against their historical background.18 Incidentally, Columbus initiated the confusion in place names which was to beset commentators for centuries.

In summary, then, to the question “What bearing did these Columbian discoveries have on the development of botanical concepts in sixteenth-century Europe?” the answer must be “little.” Our understanding of plants, their forms and functions, was the result first of stumbling confusion, then of a slow awakening during later centuries.

NOTES

2. For example, when Columbus was shown some roots which reminded him of medicinal rhubarb brought to Spain from China he believed he was surely in Cathay! See Morison (n. 1 above) 1. 380. Botanists of Harvard University supplied the identifications in Samuel E. Morison's Journals and Other Documents on the Life and Voyages of Christopher Columbus (New York 1963). There the “rhubarb” is identified as roic or fausse rhubarbe (Morinda citrifolia L.) but that species was introduced from Asia much later than the Columbian era. The root Columbus saw would have been Morinda royoc L. For several references to roic see Valmont de Bomare, Dictionnaire raisonné universel d'histoire naturelle (ed. 4 enlarged, 15 vols. Lyon 1791) 7: 74. For a concise appraisal of this inessential bearing of contemporary exploration on the progress of botany see A. C. Crombie, Medieval and Early Modern Science (ed. 2 rev., 2 vols. Garden City, N.Y.) 2: 262-269.


4. “Mirabillas del Peru” is illustrated in his Rariorum aliquid stirpium (Antwerp 1583) 400. Cestrum nocturnum is mentioned under the polynomial “jasminum indicum sive mexicanum” (p. 401) and white beans of Guatemala as “phaseoli albi ex Guatemala” (p. 730). This bean is likely the “Fava indiana” mentioned in Girolamo Porro’s account of the Padua botanic garden (1591) and may have dated from the founding of the garden in 1545. Two of these genera introduce two biological topics that still interest us today: “dama de noche,” that is, the night-blooming, cloyingly sweet Cestrum nocturnum, demonstrates the relation of attractant to insect visitors; and four o’clocks, “Marvel of Peru,” genus Mirabilis, the phenomenon called biologic clocks.


6. M. L. Duran-Reynals, Fever Bark Tree (New York 1946), which includes a bibliography of the principal literature.

7. John Ray, The Wisdom of God Manifested in the Works of the Creation (ed. 4 London 1704) 131. Certainly Ray’s most popular and influential achievement, as Charles E. Raven says in his John Ray, Naturalist: His Life and Works (Cambridge 1942): “It was imitated, and extensively plagiarised, by Paley in his famous Natural Theology; and more than any other single book it initiated the true adventure of modern science, and is the ancestor of the Origin of Species or of L’Evolution Créatrice” (p. 452). “Though [Ray] refuses to believe that nature has no value in itself he cannot escape the contemporary confidence that its primary purpose is its utility to man” (p. 455).

8. The first “aloes” that Columbus saw were probably Agave bahamana. William Trelease, “Agave in the West Indies,” National Academy of Sciences Memoirs 11 (1913) 7, remarks that it was the use of these plants and not their form that attracted attention. The earliest written mention of them is in Chana’s account of the aloes of Haiti in 1493. The maguey or century plant of Mexico, Agave americana, was described under the name “Aloe americana florida,” the flowering American aloe, in Tobia Aldini’s account of the garden of Cardinal Odoardo Farnese in Rome in 1625. Aldini was physician to the cardinal. But as Arthur S. Aiton has stressed in his essay on “The Impact of the Flora and Fauna of the New World upon the Old World during the Sixteenth Century,” Chronica Botanica 12 (1949) 121-125, to base the date of introduction of American plants into Europe on reports in the botanical literature of the period alone, without recourse to the archival records, is misleading. He suggests that account books of hospitals and church institutions, cargo manifests of ships arriving from America, as well as Spanish and Portuguese plays, novels, and other popular literature, should all be chronologized to determine the first mention of plant introductions, and their later dispersal.

9. See Francis E. Lloyd, Carnivorous Plants (Waltham, Mass. 1942) 112. Lloyd’s choice of Sarracenia minor from Florida as the first species to be noticed in America rather than the Canadian S. purpurea cannot be supported by the evidence (p. 15). See J. and N. Ewan, John Banister and his Natural History of Virginia, 1678-1692 (Urbana 1970) 210-212.
10. See J. Ewan, "Annals of the 'Most wonderful plant in the world' (Darwin)," *Festschrift für Claus Nissen* (Wiesbaden 1973) 173-184. Incidentally, William Bartram understood the imprisoning action of Venus fly-trap in 1791 before the digestive function of the leaf of pitcher plant was established.


12. Alexander von Humboldt in his *Personal Narrative of Travels to the Equinoctial Regions*, ed. Helen Maria Williams (7 vols. London 1818-29) 5. 537-538, praises Jean de Laet for his "remarkable description" of *totocke*, or what today is known as Brazil nut (*Bertholletia excelsa* Humb. & Bonpl.). Botanists would scarcely have looked for a detailed description in a "work merely geographical," says Humboldt. It is unfortunate that for want of indices the abundant commentary buried in Humboldt's *Personal Narrative* cannot readily be mined. Humboldt evidently made use of far-flung library resources apart from his own collection of 11,164 items for which Henry Stevens published a catalogue in London in 1863 (rpt. Leipzig 1967).

13. The first botanical reference to cacao is in Charles de L'Ecluse (Clusius), *Exoticorum libri decem* ([Leiden] 1605) Ch. 28, under the name "Cacao fructus." The resemblance of cocoa 'beans' to almonds may be dated at least from Bauhin (1623). José Cuatrecasas, *Contributions of the U. S. National Herbarium* 35 (1964) 383-385, summarizes the pre-Linnaean literature. Jacques Le Moyne's oft-reproduced drawing of two "hermaphrodites" carrying a basket of produce to the storehouse concerns Florida about 1586, and probably pictures not cocoa but maize.

14. Quoted in Sauer (n. 1 above) 133. See also Peter Martyr, *Decades of the Newe Worlde or West India* (London 1555) Decade 3, Book 9, alluding to pineapple: "Pyne trees of the beste kynde, and such other deyntie dysshes of nature, whereof wee haue spoken largely before. Ye, thyncke that their habitauntes of other Ilandes had their seedes of soo many frutes from hense." See also Oviedo (n. 1 above) 99. Berthold Lauffer, in "American Plant Migration," *Scientific Monthly* 28 (1929) 246, details the history of pineapple, but J. L. Collins corrects some of Lauffer's errors relating to Columbus in his "Antiquity of the Pineapple in America," *Southwestern Journal of Anthropology* 7 (1951) 145-155.

15. A useful and often amusing account of West African plants will be found in Willem Bosman, *Voyage de Guinee* (Utrecht 1705) or the English translation, *A New and accurate description of the Coast of Guinea* (London 1705). Letter Sixteen "treating of trees and other plants" with vernacular names (gobbe-gobbes for peanut, etc.) was based on the author's 14-year residence on the west coast of Africa.

16. Palms present particular difficulty for the botanical historian. The use of palm hearts or "cabbages" as food in the West Indies and Guinea involves different genera. The palm Columbus met with in Darien may be the peach palm or pejibae, *Guilieima*, according to Sauer (n. 1 above) 173.

17. Pines were first encountered by Columbus on the Oriente coast of Cuba: see Samuel E. Morison and Mauricio Obregón, *The Caribbean as Columbus Saw It* (Boston 1964) 55, for present-day habitats of *Pinus tropicalis*. For good botanical commentary see Frère Marie-Victorin and Frère Léon, *Itinéraires botaniques dans l'île de Cuba* (2 vols. Montreal 1942-44) 1. 152-156.

Changing Perception and Exploitation of New World Plants in Europe, 1492-1800

by Jonathan D. Sauer

AMERICAN VEGETATION PATTERNS AND GREEK CLIMATIC ZONES

The classical scheme of latitudinal climatic belts, with the fortunate temperate lands sandwiched between frigid and torrid deserts, could not survive the discovery of America. The lush, tropical forests of the West Indies, in the same latitudes as the Sahara, made a powerful impression on Columbus, which he evidently communicated eloquently at the Spanish court. After listening to Columbus, Peter Martyr wrote that the New World’s lands were reported to be the most fertile of all those the stars shine on. Other explorers soon added eloquent depictions of Caribbean rain forests. Oviedo’s accounts of the grandeur and complexity of those forests have scarcely been surpassed by modern naturalists. Acosta stated clearly that the American tropics contradicted the Old World rule that rain decreases seasonally and latitudinally as the sun stands higher in the sky.

Meanwhile, exploration of the temperate Atlantic coast of North America showed discrepancies from European patterns. Verrazano
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found Rhode Island in May remarkably colder than Rome on the same parallel; elsewhere on the New England coast he recognized the coniferous forest as composed of cold climate trees. However, the Greek climatic scheme died a slow death and the early colonists of eastern Canada and New England were totally unprepared for the rigors of winter. Even after surviving one, some thought they had bad luck with an exceptional year or that the country only needed clearing of its forests to be as warm as France in the same latitudes.

It soon became obvious that a new theory of world climatic and vegetational patterning was needed but it was a long time before enough was known to formulate one. Explorers usually reported little about vegetation except when it struck them as especially strange or beautiful. Europeans of all nations evidently shared a liking for open, grassy country with groves of trees. Such park savannas were reported from many regions with quite diverse climates. Verrazano described them from New England and the Carolinas, Raleigh from Guiana; and they also dominate sixteenth-century engravings, such as de Bry’s of Florida and Virginia. On sixteenth-century maps, Indians and animals were often depicted on bare ground; but where vegetation was shown, it was usually a pretty park landscape. Of all the world’s major vegetation formations, savannas have most thoroughly frustrated attempts at climatic correlations. The early explorers and settlers often regarded them as the product of fires set by the Indians to clear cropland or keep the woods open, an interpretation that has been revived by modern geographers and ecologists after nineteenth-century efforts at other explanations.

Geographers working with the information available in Europe during the seventeenth and eighteenth centuries were able to make little sense of American vegetation and climatic patterns. Varenius paid no attention to vegetation at all and tried to discern climatic patterns from anecdotes, such as the snow encountered in the Straits of Magellan in summer, or Drake being driven south from New Albion by cold in June. Substantial progress came only when scientifically inclined travellers saw the country for themselves. Ulloa made a pioneer attempt at inter-regional comparisons of vegetation and climate, but his observations were too unsystematic to give a clear picture. Effective replacement of the Greek scheme began in 1799, when Humboldt and Bonpland set out on their five-year voyage to Spanish America. They were prepared to make systematic meteorological and botanical observation. They traversed the whole spectrum of vegetation zones from the equatorial lowlands to Andean paramos and snow-capped Mexican volcanoes. Humboldt’s resulting scheme of altitudinal and latitudinal vegetation patterns was the foundation of nineteenth-century plant geography.
CATALOGUING THE NEW WORLD FLORA

In 1492 scientific classification of plants in the modern sense was far beyond the horizon. For over 250 years Latin names were to remain unstandardized and anarchic. Renaissance herbals usually arranged plants by medicinal usage or listed them alphabetically or capriciously. Early knowledge of the American flora was communicated to Europe mainly by use of folk taxonomy.

The basic units in most folk classifications of plants are intuitive groupings of species, expressed in such common words as pine, palm, and oak. These genera are divided into species by adjectival modifiers, cork oak or royal palm. Many such taxa have been taken over intact by modern taxonomy. Folk taxonomy has many weaknesses and inconsistencies, of course, but on the whole it has served fairly well for communication among people with a shared background. Many of the explorers and colonists evidently had an admirable knowledge of plants back in Europe; few modern urban Americans could compete with them. They saw immediately that part of the flora could be given European generic names and part could not. For the latter, after trying some uncomfortable analogies with European plants, they usually quickly adopted Indian folk taxa. The names learned from the Island Arawak and other tribes that were contacted early often spread as lingua franca names. On the whole the nomenclature was surprisingly stable and unambiguous. However, there have been some confusing transfers of generic names between Old and New World plants, especially crops, and a few between unrelated New World plants, e.g., the sweet potato and common potato.

In the Caribbean it was immediately seen that the flora was essentially discrete from that of Europe. Peter Martyr reported that many unknown trees were seen on Columbus’ first voyage, only pines and palms being familiar.14 Oviedo wrote about the myriad of strange kinds of plants, adding that not even the Indians had names for most of them, much less the Christians because they had never seen anything like them before.15 He noted a few species native to Panama that were shared with Castile.16

On the North American continent the pattern was quite otherwise, most of the common trees and other wild plants being identifiable with European generic names. Carl Sauer noted that nowhere else on earth could voyagers have gone so far and found so many unfamiliar organisms as across the North Atlantic.17

In both tropical and temperate America, interest was strongly focused on crops and useful wild plants until the eighteenth century; the flora was catalogued mainly under utilitarian headings.

Indigenous Food Crops: There were many accurate and informative early accounts of Indian crops. Any sixteenth-century European who
read the available publications would have known that there was a very respectable array of American food crops and that they were mostly quite distinct from those of the Old World. The distinctness of New and Old World crops was clearest shortly after the Discovery; it became blurred by name transfers in some cases, particularly with maize, beans, and squashes.\textsuperscript{18} Also, as some other crops with unambiguous names spread, their origins were not always remembered.\textsuperscript{19}

The European explorers were often hungry enough to appreciate strange foods. Oviedo thought little of peanuts as Christian food but this was an unusual reaction for him. He considered maize tortillas very savory, starchy sweet potatoes very good boiled and better baked, the sweeter kind much better yet, fit for an emperor any way they were cooked; he raved for pages about pineapple.\textsuperscript{20}

Thevet in Brazil agreed that pineapple was marvelous.\textsuperscript{21} In fact, travellers' accounts reaching Europe were a nearly unanimous chorus of praise for New World crops. Many of the species were soon introduced to Europe, but acceptance there was another story, as we shall see shortly.

Regional differences in the Indian crop complexes were discernible in the published sixteenth-century sources. The de Bry engraving of a Virginia Indian garden showed with crystal clarity the uniquely North American sunflower crop as well as the ubiquitous maize, pumpkins, and tobacco.\textsuperscript{22} Cieza de León recorded the contrast between the peculiar Andean highland crops, e.g., quinoa, coca, the common potato, and those of the adjacent lowland valleys, e.g., manioc.\textsuperscript{23} Far more information on Indian crop geography was locked up in manuscripts, such as the great \textit{Relaciones geográficas} of around 1580, which were not published until modern times.

\textit{Wild and Semi-Cultivated Fruits and Nuts:} Not to mention Viking tales of Vinland, explorers of eastern North America from Verrazano on complimented its wild grapes, plums, cherries, mulberries, strawberries, hazelnuts, chestnuts, and walnuts, all genera with closely related European species. They also tried to convey their enjoyment of some new genera, e.g. persimmons and hickories.\textsuperscript{24}

The tropical Indians were reported to enjoy an astonishing variety of native fruit and nut trees, both wild and semi-domesticated in dooryard gardens. Oviedo,\textsuperscript{25} Acosta,\textsuperscript{26} Thevet,\textsuperscript{27} and many others tried to tell the people back home about papayas, guavas, cashews, peach palms, custard apples, and a host of other fruits that one must live in the tropics to know. Cashews and Brazil nuts began reaching Europe in the seventeenth century.

\textit{Spices and Flavorings:} Columbus' initial attempts to identify East Indian spices in the West Indies do not seem to have been taken seriously for long. Peter Martyr wrote that Columbus had brought back
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tree branches that imitated cinnamon in form and ginger in odor and flavor.\textsuperscript{28} New spices were soon appreciated in their own right, e.g., allspice, also called pimienta dulce, jamaica, and bay-rum tree. A royal \textit{cédula} of 1535 requested information about allspice from the \textit{Audiencia} of Santo Domingo; later in the century it attracted pirate incursions into Hispaniola.\textsuperscript{29} From the seventeenth century to the present, its commercial exploitation has mainly been in Jamaica.\textsuperscript{30} Since the eighteenth century a few trees have grown under glass in European orangeries.

Chile peppers were taken back to Spain in 1492 and soon spread throughout the Old World as a crop, as will be discussed shortly.

Chocolate was also quickly accepted by Europeans, and produce of the Indian cacao orchards of southern Mexico and Central America was soon diverted from its aboriginal trade channels. Acosta recorded large exports from Mexico to Spain and said that an English corsair [Drake] had just burned more than 100,000 cargas of cacao in the Oaxacan port of Guatulco.\textsuperscript{31} By 1657 the English had learned better and chocolate was being advertised in London.\textsuperscript{32} By Dampier’s time, cacao was considered prize plunder by the English pirates.\textsuperscript{33} During the seventeenth century, the Spanish expanded production for both colonial consumption and export; planting was extended into the Greater Antilles and northern South America. Also, the finding of wild cacao stands in the Orinoco-Amazon region was a major factor in opening up that area by Spanish and Portuguese missionaries and laymen. The rich literature on cacao exploitation has been surveyed by Patiño.\textsuperscript{34}

Vanilla production remained in Indian hands during the Spanish colonial period. It was based entirely on the gathering of pods from wild orchids until late in the eighteenth century, when the Totonacs of Vera-cruz began to plant the vines.\textsuperscript{35} The Spanish learned to flavor chocolate with vanilla early and commerce in the two became closely related.\textsuperscript{36} After throwing away many cargoes of vanilla taken from Spanish ships, the English corsairs became aware of their value in the late seventeenth century; Dampier even gathered the pods in Panama forests and tried unsuccessfully to learn the Indians’ secret of curing them.\textsuperscript{37}

\textit{Colorings and Dyestuffs:} Oviedo\textsuperscript{38} and other chroniclers wrote much about annatto (\textit{Bixa orellana}), a shrub grown in many Indian gardens for the red pigment used for body paint and many other interesting purposes. By the seventeenth century, Spanish colonists were using it to color chocolate and other foods, as we do today, and quantities were being exported to Europe and to China for dyeing silk.\textsuperscript{39} In Dampier’s time, chests of annatto were considered more valuable loot than indigo.\textsuperscript{40}

Several species of tropical legume trees were promptly recognized by the Spanish and Portuguese as similar to costly Old World dyewoods. The old name \textit{brasil} was transferred to a New World species and then to
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a region where it grew. Thevet struggled with the question as to whether the wood from Brazil was the same as the legendary brasil.41 On Hispaniola, Columbus had great hopes for profits from brazilwood.42 By 1501 Peter Martyr had news of brasil forests being cut there and piled up waiting for ships;43 the fleet that brought Acosta back from there carried 134 quintales of it.44 Cargoes of related dyewoods, brasilette and logwood, were carried from Central America and Mexico by Spanish ships in the sixteenth and seventeenth centuries. Late in the seventeenth century, English buccaneers in the Bay of Campeche learned the value of logwood, quit burning prize Spanish cargoes of it, and began seeking stockpiles of it ashore. Finally they settled down along the coasts of Campeche and Belize to cut the wood themselves. Dampier spent some years in this occupation and had much to say about it.45

Fibers: The explorers found cotton in Indian gardens and manufactures from Peru and the West Indies to the Hopi pueblos, although not in eastern North America. Producing better fiber than the Old World cotton species, the American species were destined to provide the entire world's commercial crop.46 In the Spanish colonies, woven cotton mantas were exacted as tribute from the Indians; later rather small-scale manufacturing developed with Indian labor under Spanish supervision.47 During the eighteenth century, commercial cotton planting became significant in British, French, and Dutch West Indian colonies and in the Guianas and Carolinas. By 1763, because of its sugar and cotton, Guadeloupe was considered a fair exchange for Canada. By the end of the century, the Industrial Revolution had begun with machine ginning in America, power spinning and weaving in Liverpool.48 Various kinds of century plants, including sisal, henequen, and cabuya, were recorded by Oviedo49 and others as important in aboriginal cordage, hammocks, and other uses. Like cotton, such fiber was a standard tribute item in many regions during the sixteenth century.50 Large-scale commercial production in America and East Africa only began late in the nineteenth century.

The kapok or silk-cotton tree attracted immediate Spanish attention, partly because of its size. Oviedo reported that four ceibas could shade an Indian marketplace with 2,000 people and a dugout canoe of a single trunk could carry 130 people.51 He also noted the fine, waterproof fibers but commercial exploitation of kapok did not develop in the New World as it did in the East Indies.52 Dampier recognized the species as identical in the West and East Indies.53

Medicines and Drugs: European explorers were often highly receptive to Indian medicinal lore. Like that of Europe at the time, it was based mainly on crude plant products that had noticeable effects on human
metabolism. The panaceas and wonderful cures reported soon created
demand in Europe for American drug plants.

Monardes, a leading physician of Seville, the entrepôt for all trade
with Spanish America, was in an ideal position to obtain news and
seeds, which he grew in his own physic garden. He extolled the
therapeutic virtues of a long list of New World plants, some known in
Europe only as dried bark, leaves, or gums: sarsaparilla, sassafras, coca,
copal and other aromatic balsams, guaiacum or lignum vitae, etc. He
knew that the Indians on Hispaniola had given the Spanish both syphilis
and the cure for it, guaiacum. Monardes published the first accurate
drawing of a tobacco plant, presumably growing in his own garden. He
prescribed tobacco as a wonderful panacea, not smoked but in poultices
and infusions; smoking was something he had heard about but not
seen.  

Acosta recognized that the New World balsams were different from
the original in Egypt; so did the Vatican, for Rome granted permission to
substitute the local kinds in consecrated chrism for baptisms in
America.  

In recommending the plant resources of Virginia, Hariot empha­

sized sassafras and quoted Monardes’ high opinion of it. Sassafras was
the most profitable item brought from North Virginia to England in 1602;
it was also the main object of Pring’s voyage to Massachusetts Bay the
next year.  

Another famous Spanish doctor, Francisco Hernández, was sent to
America by Philip II in 1571 to report on medicinal plants. He was
instructed to spend five years on a comprehensive survey of their
identities, uses, cultivation, and geography throughout Spanish Amer­
ica. After five years he had toured only parts of Hispaniola, Cuba, and
central Mexico but had collected, drawn, and described hundreds of
species. He also experimented with Indian herbal remedies on patients
in Mexican hospitals. Although contemptuous of native medical dogma,
he was impressed by the ability of people he regarded as uncultivated
and barbarous to identify and name almost every kind of plant in the
Mexican flora. Too old and ill to go on, Hernández returned to Spain in
1577 laden with manuscripts, sacks of seeds and roots, pots, barrels, and
casks with growing plants for the Alcazar gardens in Seville. Publication
of Hernández’ original works was long delayed but extensive extracts
were published in the seventeenth century and incorporated into the
mainstream of European botanical literature.  

European respect for Indian knowledge of drug plants led to inven­
tion of a legend that the Indians kept the use of quinine secret from the
Spaniards, a bizarre idea considering malaria was not present in the
New World aboriginally. The Spanish began treating malaria with
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Jesuits' bark from wild *Cinchona* in the viceroyalty of Peru about 1630. By 1649 the drug was attracting the attention of physicians throughout Europe. The Chelsea Physic Garden had a *Cinchona* tree in its conservatory by 1685.⁶¹

In Canada the Jesuits recognized that a native forest herb was related to a legendary Chinese panacea, ginseng. In 1718 they shipped their first boatload of Canadian ginseng to Canton, where it sold at $5 a pound. Ginseng soon became a major export of other North American colonies.⁶²

**Timber and Naval Stores:** Oviedo wrote chapters on the fine Caribbean hardwoods.⁶³ Acosta saw precious timbers of various sorts exported from Havana to Spain.⁶⁴ There were innumerable cases of small-scale colonial exploitation of American tropical hardwoods.⁶⁵ There was also early interest in Caribbean pines for lumber and naval stores. However, the North American pines aroused more interest. In the Virginia colony, abundance of pitch pines yielding rosin and turpentine was noted by Hariot,⁶⁶ a forecast of the great naval stores industry in the late colonial period. Captain George Waymouth’s exploration of Maine in 1605 brought news of forests yielding turpentine in marvelous plenty, of good and great oaks, fit timber for any use, and of notable high trees, masts for ships of 400 tons.⁶⁷ Waymouth took back specimen logs of mastwood and seeds that were planted at the family estate, Longleat, of a pine that is still sometimes known in England as the Weymouth pine. This is *Pinus strobus*, the famous eastern white pine, the most magnificent conifer that Europeans ever saw before western North America was explored. By 1650 New England sawmills were exporting its lumber not only to Europe but to the Guinea coast and the Antilles, establishing the three-cornered trade that was the foundation of New England wealth. Attempts by the British crown to reserve the best white pines for naval masts led to defiance by colonists bent on selling lumber and clearing the land for farms; this conflict was part of the background of the American Revolution.⁶⁸

**Ornamentals and Novelties:** A few American plants attracted early attention simply because they were beautiful or strange. However, early attempts to describe them must have conveyed little to Europe; even today among technically trained taxonomists verbal descriptions of strange plants are of limited use. Oviedo’s amusing attempts to describe cacti in European terms were obviously failures; he realized pictures were needed.⁶⁹ Both Oviedo and Hernández made sketches of plants that would have been helpful had they been published promptly. There were few good botanical drawings made on the spot in America until the late seventeenth century; the best early drawings of American plants were done in Europe from living or dried specimens. It was the gradual amassing in European gardens and herbaria of such collections that led
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to interest in the whole novel flora of America and ultimately to its systematic study.

Philip II's gardens had a few curiosities and ornamentals, such as a cactus brought back by Hernández and a floripondia (Datura candida), whose early-morning fragrance was thought by the viceroy of Peru to make it worthy of being sent to the king. However, the Iberian countries were not the major portals for such introductions. In the seventeenth and eighteenth centuries, a swelling stream of non-economic plants flowed to Holland, France, and especially Britain from their New World colonies.

From eastern North America, few plants that are not patently useful were introduced before 1600. In 1635, Cornut published beautiful drawings of about 30 eastern North American species that were growing in Paris gardens, the black locust and some others being primarily ornamental. The year before, John Tradescant listed the locust tree and about 40 other North American species, mainly wildflowers and forest trees, as growing in his garden on the Thames; this was before his son made three plant-collecting trips to Virginia. Between 1678 and 1692, John Banister sent seeds, specimens, and drawings of hundreds of Virginia plants back to John Ray, Leonard Plukenet, and other English botanists. Starting in 1734, a native American, John Bartram, whom Linnaeus called the greatest natural botanist in the world, began flooding Britain and other European countries with dried plant specimens and seed collections from North America. By the end of the century, North American species were prominent among exotic plants being sold by commercial seedsmen and nurseries to gardeners of Britain and the continent. This flood of botanical riches has been blamed for destruction of the natural-looking park landscapes that Lancelot Brown had established as the ideal in British gardens earlier in the century; gardens ceased to be works of art composed by architects and became flower beds and one-of-a-kind shrubberies for plant lovers.

Meanwhile, British and French botanists had begun working on the floras of West Indian islands taken from Spain. In 1687-89, Hans Sloane, not yet a knight, collected hundreds of Jamaican plants, forming the nucleus of what was to become one of the world's great herbaria. Before 1700, collectors working for Sloane and his associates sent back large consignments of living plants from Jamaica and Barbados. After hearing of Sloane's collection, Louis XIV sent Père Charles Plumier to collect for him in the French Antilles in 1689-95: he was the first of a series of distinguished French West Indian botanists. After Louis' grandson ascended to the Spanish throne, another Minim friar, Louis Feuillé, was sent exploring for plants and other things in western South America.

Around the middle of the eighteenth century, the flow of botanical
information and specimens from various parts of America into European collections turned into a torrent. A sort of chain reaction set in with discoveries stimulating further exploration. The search for plant diversity became an end in itself, any new species being valuable and exciting, not just those that were useful or pretty or bizarre. On Cook’s first voyage in 1769, Banks and Solander went ashore in Tierra del Fuego to collect plants that nobody but a taxonomist would look at twice; two of their companions froze to death and they nearly died themselves, but Sir Joseph recalled later that “probably no botanist has ever enjoyed more pleasure . . . than Dr. Solander and myself among these plants.”77

The heightened interest and increased collecting were both a cause and a result of important methodological changes going on concurrently in plant taxonomy. One seemingly trivial change, the general adoption of Linnaeus’ binomials, was crucial because it replaced separate folk taxonomies and unstandardized Latin polynomials with uniform and easily remembered species names. Simultaneously, naturalists grouped species into larger taxa that better represented natural relationships. Also, by the late eighteenth century, better record was kept of the sources of collections, so that accurate data on plant geography were becoming available. Instead of being casual accumulations, herbarium collections were objectives of expeditions and bones of international contention when captured. They were not yet, however, the tremendous data banks that they became in the nineteenth century.

Throughout the eighteenth century, British and French botanists played most of the leading roles, but they were joined by Swedes and others from non-colonial powers. Peter Kalm and other apostles of Linnaeus ranged widely in the Americas in mid-century.78 From 1755 to 1759, Nicolaus von Jacquin made important West Indian collections for the Austrian emperor’s gardens and greenhouses at Schönbrunn.

In the last quarter of the century, the Portuguese and Spanish governments initiated a last flurry of botanical exploration in their American colonies: Rodriguez Ferreira in Brazil, Ruiz and Pavon in western South America, Muyis in Colombia, Sessé and Moção in Mexico and on up to Nootka Sound, where they met Vancouver’s expedition with Archibald Menzies as botanist.79 The Spanish founded the Orotava botanical garden in the Canary Islands in 1788 in the hope of transmitting more tropical American and Asiatic plants to Spain after acclimatization there in a climatically intermediate waystation.80 They would have done better to try direct introductions to Spain of the flora from Chile and California, their possessions with a Mediterranean climate.81 The first Spanish plant collections in California were made by the Malaspina expedition, which was at Monterey in 1791 about five years after a French expedition under La Pérouse. La Pérouse’s expedition and nearly all its collections met disaster in the Solomon Islands, but a packet of Monterey seed that
eventually reached France produced the type specimen of a sand verbena named *Abronia umbellata* by Lamarck; this was the first plant from North America west of the Mississippi known to science.\(^{82}\)

**THE NEW WORLD FLORA AND EUROPEAN BOTANICAL THEORY**

Discovery and classification of this fascinating flora did not lead to any quick, radical changes in European scientific theory. Findings in the New World may have slightly speeded the decline of respect for classical botanical authorities, although Cornut\(^ {83}\) and Piso\(^ {84}\) still were trying in the seventeenth century to identify Canadian and Brazilian plants in the works of Theophrastus and Pliny.

As for testing scriptural authority, the new tribes of people and new kinds of animals stirred up much more argument than the plants. Since they were not in the Ark, the plants did not have to migrate from Ararat. If the olive tree survived the Deluge, maybe others had. However, in the late seventeenth century, with the rise of Neptunian theory in geomorphology, it was widely accepted that the earth’s surface had been drastically reshaped by the Flood.\(^ {85}\) Woodward postulated that the Deluge must have picked up all vegetation and other debris in a chaotic suspension but that afterwards the plants and their seeds settled back where they came from, “to their proper Places: to their old natural Soil and Climate.” The pattern was the same as at the Creation, and Paradise might still be found where Adam left it.\(^ {86}\)

Woodward’s theory was generally rejected but no alternative was proposed. Few people thought that deeply about historical plant geography. Plants were created and distributed over the earth according to divine plan. No one was surprised by apparent separate creations of the same species in different regions; nor was it considered remarkable that different regions were endowed with different floras. Even domesticated crops were God-given; no process of domestication or human dispersal was invoked. Although the divine plan itself was above explanation or criticism, there was evidently no reluctance to rearrange it by introducing plants outside their native regions.

An evolutionary explanation of the origins of American plants was, of course, out of the question in Renaissance Europe. The whole plant kingdom was only four days older than mankind. Even in the late eighteenth century, when Hutton’s radical geological theory rejected catastrophism, and postulated an eternal earth, it only reaffirmed the permanence of the divine plan.\(^ {87}\) By then some European scholars were beginning to doubt the fixity of species but the flora of the New World had little to do with starting the ferment, much less than European fossil faunas, for example. I suspect that the overwhelming task of identifying and classifying the American flora may rather have hindered development of evolutionary and migrational theory.
The great accomplishment of eighteenth-century taxonomists was to construct out of the bewildering diversity of the earth’s biota unified, orderly classifications that do express some evolutionary relationships. They did this quite intuitively, the theoretical underpinning being supplied long after by Charles Darwin. It is noteworthy that Darwin’s theoretical contribution, like Humboldt’s, did not emerge from information accumulated in Europe but from first-hand field observation in the New World. Darwin’s crucial revelation came when he saw that the endemic species in the Galapagos were related to those in South America, where the environment was quite different, rather than resembling those of the Cape Verde Islands, which were environmentally similar to the Galapagos. This led him to the unthinkable idea that the species had not been created as he saw them in the Galapagos Islands and Cape Verde but had evolved from migrants from South America and Africa, respectively.

NEW WORLD CROPS IN EUROPEAN AGRICULTURE

For a long time after Columbus, Europeans felt they had given America far more value in crops than they received, although the exchange was less one-sided than in domestic animals. As we have seen, explorers and colonists did appreciate many American food plants and did try to introduce them back home but most of the attempts were frustrated by practical barriers. The useful native plants of temperate America were generally wild or semi-domesticated and could be converted into economic crops only by long breeding. The fully domesticated Indian crops were nearly all tropical in origin and only a fraction of them were capable of maturing in a European growing season. Of these, the roster of species that proved valuable in European agriculture is short.

Maize was introduced repeatedly and many varieties were widely grown in European gardens during the sixteenth century but usually only as a minor crop. Its earliest European success as a staple may have been in the northwest of the Iberian peninsula. Historians of the region report maize was introduced to northwestern Portugal from Cádiz about 1520 and soon led to revolutionary changes in land use. In regions formerly devoted to extensive cattle pasture, maize brought terracing, irrigation, and much forest clearance. The chronology is vague but the process seems to have been under way by 1600. Maize eventually became the main food grain of Portugal in terms of quantity harvested, although second to wheat in acreage. In southern Spain, in spite of its early introduction, maize became important slowly. In Andalusia it became a dominant cereal only in the last quarter of the seventeenth century; in Valencia, planting of maize under irrigation expanded gradually in the seventeenth and eighteenth centuries and in the late eighteenth
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century maize replaced dry-farmed cereals until it was second only to wheat by the 1790's. Other important maize-growing areas of modern Europe are northeastern Italy and the Balkans, where maize dishes have come to be regarded as traditional regional specialties.

The chronology of the spread of maize and the other members of the classic American Indian crop trilogy, beans and squash, begs for investigation by regional specialists in European history.

The European histories have been better worked out for American crops belonging to four genera in the nightshade family: tobacco, potato, chile pepper, and tomato. These provide intriguing contrasts in rate of diffusion. Tobacco rapidly graduated from a medicine to a habit. Both of the domesticated species, the commercial tobacco and the so-called peasant tobacco, were widely grown in Europe by 1600. During the seventeenth century, the crop and assorted ways of enjoying it spread rapidly across the continent to Turkey, boosted along by strong moral and legal opposition. In addition to the domestic product, high-quality leaf was always imported from the West Indies and after 1615 from Virginia. British domestic production was prohibited in mid-seventeenth century in order to favor the North American colonial crop.

The common potato was first recorded as a European food crop in Seville, where it was already being regularly bought in quantity by hospitals in 1573. The great herbals document its rapid spread through Italy and Central Europe and to England, but as a curiosity or luxury of the elite rather than as a staple. This has often been attributed to peasant conservatism and prejudice, but the original Andean varieties were probably ill-adapted to the long European summer days and produced very few tubers until after slow evolutionary adaptation to the new day-lengths. The story of the rise of this species to a staple crop in seventeenth- and eighteenth-century Europe has been told repeatedly and well; its crucial role in shaping the economy and demography of modern Europe hardly needs advertising.

Of the several species of chile peppers domesticated by the American Indians, Capsicum annuum has been most grown in Europe; this species includes common chile, cayenne, paprika, sweet bell peppers and other varieties. In 1565, Monardes reported this species abundant in every garden in Spain, to be used in all manner of meats and potages; he liked it better than the East Indian black pepper and said it cost nothing but the sowing. However, the Portuguese and Venetian pepper imports from the East Indies continued to flourish through the sixteenth century.

The tomato spread rapidly in sixteenth-century Europe, and was widely recorded as a curiosity or as medicinal or ornamental in the great herbals. In spite of assurance from America by Acosta and others that the fruits were good to eat, acceptance was slow. In 1544, Matthioli
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reported the tomato, recently brought to Italy, was cooked and eaten the same way as eggplant; there were rumors of such former use in Italy and Spain in many later European writings, but these generally informed the reader that the fruits were evil and dangerous. By the late eighteenth century, tomatoes were finally being grown and eaten in abundance in Italy, Spain and Portugal; there they were in common use, raw and cooked, in a great variety of dishes. At that time the French were tentatively beginning to eat tomatoes but north Europeans, although they had heard rumors from the south, were taking no chances.

Some other American Indian crops had more localized early success in Europe, particularly in the south of Spain. Already in Monardes’ time, sweet potatoes were being shipped from Vélez in Málaga by the caravel load. By the late eighteenth century cotton cultivation to supply the Catalan calico industry displaced sugar cane from the whole Vega de Motrill in Granada. In the late eighteenth century, Spanish efforts to introduce tropical American plants to the mother country were intensified under Charles II and Charles III; Humboldt said no country spent more than Spain on such enterprises. By about 1790, avocado, papaya, cacao, allspice, and cherimoyas were reported to be growing and fruiting well in Málaga, and such plants continued to become more important in the landscape; they resulted in what Sermet called the tropicalization of Andalusia.

NOTES

1. Carl O. Sauer, The Early Spanish Main (Berkeley 1966) reconstructs the aboriginal landscapes of the Caribbean as seen by Columbus and his contemporaries. However, this work cannot be applied intact to our present purposes because it draws largely on sources that remained as inaccessible manuscripts until recently; it is concerned with the impact of America on European explorers and vice versa rather than with the dissemination of their observations in Europe.

2. Peter Martyr, De orbe novo décadas (Alcalá 1516), with many other early editions and translations. Page citations are from a recent critical edition by Edmundo O’Gorman, trans. A. Millares Carlo, Décadas del nuevo mundo (2 vols. Mexico 1964); the present statement is from 1. 111.

3. Gonzalo Fernández de Oviedo y Valdés, Historia general y natural de las Indias. The first 20 volumes of Oviedo’s great work contain most of his botanical observations; these were published during his lifetime (Seville and Salamanca 1535-57) and soon translated into French and Italian; the last of the volumes, including his plant drawings, remained unpublished until the nineteenth century. Page citations are from Vol. 1 of the edition by Juan Peréz de Tudela Bueso in Biblioteca de Autores Españoles 117-121 (5 vols. Madrid 1959); the forests are described on p. 278.

4. José de Acosta, Historia natural y moral de las Indias (Seville 1590) with other early Spanish editions and various Latin, Italian, French, Flemish, and English translations. Page citations are from the edition by Edmundo O’Gorman (ed. 2 Mexico 1962); the present statements are on pp. 67-70.

5. Lawrence C. Wroth, The Voyages of Giovanni da Verrazano, 1524-1528 (New Haven 1970) 129-130. Verrazano’s narrative was first published by Giovanni Battista
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Ramusio as volume 3 of his great collection, Delle navigationi et viaggi ... nel quale si contengono Le navigazioni al Mondo Nuovo (Venice 1556). An English translation of this text was published by Richard Hakluyt in Divers voyages touching the discouerie of America (London 1582).

6. Carl O. Sauer, Sixteenth Century North America: The Land and the People as Seen by the Europeans (Berkeley 1971) 99. Various explorers' optimistic impressions of summer vegetation and climate followed by colonists' experiences of lethal winters are surveyed in this work and also in Douglas R. McManis, European Impressions of the New England Coast, 1497-1620, University of Chicago, Department of Geography, Research Paper 139 (Chicago 1972).

7. Wroth (n. 5 above) 124-130.

8. Walter Raleigh, The discoverie of the large, rich, and beautifull Empire of Guiana ... (London 1596) 48. Raleigh wrote: "we passed the most beautiful countrie that ever mine eies beheld; and whereas all that we had seen before was nothing but woods, prickles, bushes, and thornes, heere we beheld plains of twenty miles in length, the grassse short and greene, and in divers parts groves of trees by themselves, as if they had been by all the art and labour in the world so made of purpose: and stil as we rowed, the Deere came down feeding by the waters side, as if they had been used to a keepers call."


10. Wilma B. George, Animals and Maps (Berkeley 1969) reproduces sixteenth-century maps with proper animals in different regions but with groves of trees looking about the same everywhere.


12. Bernardus Varenius, Geographia generalis, in qua affectiones generales telluris explicantur (Amsterdam 1650) was the standard physical geography textbook in Europe for over 100 years, later editions being revised by Newton and others; the present references are from the third English edition (London 1736) 609-610.

13. Antonio de Ulloa as a young Spanish naval officer was attached to the famous French Academy of Sciences South American expedition of 1736-43. He later had much experience in other parts of the Americas, including positions as governor of Louisiana and Florida, which permitted him to make comparisons between regions in his general work, Noticias americanas (Madrid 1772).

14. Martyr (n. 2 above) 1. 110.

15. Oviedo (n. 3 above) 278.

16. The species that he said were shared are in fact identical or closely related, e.g., purslane, basil, and nightshade; these are clearly identified in his Sumario de la natural y general historia de las Indias, ed. José Miranda (Mexico 1950) 232. This tour de force was written from memory for Carlos V during a brief home visit by Oviedo while his notes were in Santo Domingo; the first edition (Toledo 1526) was followed by sixteenth-century Latin, Italian, and English editions. Most of the many other plants that Oviedo discussed in the Sumario and in the Historia general (n. 3 above) are clearly identifiable. He was far ahead of his only model, Pliny, in accuracy and originality. His incredible virtuosity in botany is discussed by Juan Pérez de Tudela Bueso (n. 3 above) cxliii-cxliv and by Angel Palerm, Historia de la etnologia: los precursores (Mexico 1974) 216-218.

17. Carl O. Sauer, "The Settlement of the Humid East," U.S. Department of Agri-
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culture, Yearbook of Agriculture: Climate and Man (Washington 1941) 159. Sauer presents many examples of North American plants given European generic names by Verrazano, Cabeza de Vaca, Cartier, de Soto, and other explorers; see Sauer (n. 6 above).

18. The names of wheat and other Old World cereals were sometimes applied to maize in early accounts, although careful description of the ear as a novelty made it quite clear the name was being used in a generic rather than specific way. Transfer of the Portuguese word milho from grain sorghum to maize, first with adjectival modifiers that were later lost, has obscured the historical records of the two crops in the Old World and has fed a still active controversy over possible pre-Columbian introduction of maize to Africa and Asia. A variety of opinions on this question are appended to Mervyn D. W. Jeffreys, “Maize and the Mande Myth,” Current Anthropology 12 (1971) 291-320. Not long ago, it was even considered possible that maize had originated in Asia. However, this and various other complex and ingenious hypotheses have gradually lost favor against the simplest hypothesis of all, namely that maize is derived from its only close wild relative, teosinte or Zea mexicana, which is native to Mexico and Central America. See Walton C. Galinat, “The Origin of Maize,” Annual Review of Genetics 5 (1971) 447-478 and J. M. J. de Wet and J. R. Harlan, “Origin of Maize: The Tripartite Hypothesis,” Euphytica 21 (1972) 271-279. The English name bean, the Spanish haba and frijol, and the Italian fagiolo were transferred from the broadbean and other Old World legumes to the American kidney, navy, and other beans. The earliest accounts generally noted that the American species were different in shape and color and tasted better than the European kinds. The name calabash or calabaza was transferred from the Old World bottle gourd to the related American gourds, squashes, and pumpkins and to the unrelated jicaro or tree calabash.

19. The peanut is an example. It was evidently derived from the wild *Arachis monticola* of northwest Argentina, according to Antonio Krapovickas, “Evolution of the Genus Arachis,” in Agricultural Genetics: Selected Topics, ed. Rom Moav (New York 1973) 135-151, and is abundantly recorded archaeologically in the New World tropics. Sixteenth-century explorers recognized it as a native crop there but it spread rapidly in the Old World tropics and soon came to be regarded as a native there.

20. Oviedo (n. 3 above) 239-243.


22. Hariot (n. 9 above) plate II.

23. Pedro de Cieza de León, Parte primera dela cronica del Perú (Seville 1553). Page citations are from the edition of the Instituto Colombiano de Cultura Hispánica, Revista Ximénez de Quesada 24 (Bogota 1971); present references are on pp. 151, 251-252, 307, 347-348.

24. Richard Hakluyt compiled a list of wild delicacies that had been reported from Florida northward in Divers voyages . . . (n. 5 above); see the edition by John W. Jones, Hakluyt Society 7 (London 1850) 140. Thomas Hariot listed more wild fruits and nuts in A Briefe and True Report of the New Found Land of Virginia (London 1588) fols. D1-2. Hariot may have been responsible for introducing the American persimmon, chestnut, black walnut, and red mulberry to England, according to Joseph Ewan, A Short History of Botany in the United States (New York 1969) 29. He is also credited with introducing the Virginia strawberry, although better strains were introduced from Virginia to England in the seventeenth century. In Europe, the Virginia species ultimately hybridized with a Chilean species that was introduced to France in 1714; the progeny gave rise to the modern commercial strawberry. No other wild American fruits have been as important in European cultivation. See Stephen Wilhelm, “The Garden Strawberry: A Study of its Origin,” American Scientist 62 (1974) 264-271.

25. Oviedo (n. 3 above) 250-277.

26. Acosta (n. 4 above) 184-186.

27. Thévet (n. 21 above) 119-120.

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31. Acosta (n. 4 above) 180.


33. William Dampier, *A New Voyage Round the World* (London 1697) with various editions and reprints; page citations are from the Dover edition (New York 1968), the remarks on cacao as booty being on pp. 50-53.


36. Patiño (n. 29 above) 2. 206.

37. Dampier (n. 33 above) 165.

38. Oviedo (n. 3 above) 253-254.


40. Dampier (n. 33 above) 160.

41. Thevet (n. 21 above) 116-117.

42. Sauer (n. 1 above) 98-99.

43. Martyr (n. 2 above) 152-153.

44. Acosta (n. 4 above) 191.


46. The taxonomy and relationships of the wild and cultivated species of cotton have only recently been clarified by field and laboratory research. It now seems evident that the American Indians domesticated two different wild, sea-dispersed, coastal species, *Gossypium hirsutum* of the Gulf of Mexico and *G. barbadense* of the Ecuador-Peru border region. The best recent summary is S. G. Stephens, “Geographical Distribution of Cultivated Cottons Relative to Probable Centers of Domestication in the New World,” in *Genes, Enzymes, and Populations*, ed. Adrian M. Srb (New York 1973) 239-254. Prehistoric and historic dispersals and evolution under domestication are an extremely complex and speculative story. In “The Use of Two Polymorphic Systems, Nectary Fringe Hairs and Corky Alleles, as Indicators of Phylogenetic Relationships in New World Cottons,” *Biota* 6 (1974) 194-201, Stephens suggests that there were various direct introductions from America to Africa and Asia during the seventeenth and eighteenth centuries. However, he believes the so-called Egyptian cottons may derive from varieties introduced in the eighteenth century from the Spanish Main to Spain, Italy, and the eastern Mediterranean.

47. Patiño (n. 29 above) 3. 110-130.


49. Oviedo (n. 3 above) 237-238.

50. Patiño (n. 29 above) 3. 27-33.

51. Oviedo (n. 3 above) 289-291.

52. The pre-Columbian pantropical distribution of this species, *Ceiba pentandra*, has been studied by Herbert Baker, *The Evolution of the Cultivated Kapok Tree: A Probable West African Product*, University of California, Berkeley, Institute of International Studies, Research Series 9 (1965) 185-216. He postulates natural oceanic drift dispersal from America to Africa followed by spread in cultivation to Asia.

53. Dampier (n. 33 above) 118.
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54. Nicolás Bautista Monardes, Dos libros, el uno que trata de todas las cosas que traen de nuestras Indias Occidentales, que sirven al uso de la medicina . . . (Seville 1569), soon after in other Spanish editions and in English, Italian, French, German, and Latin translations. Page citations are from John Frampton’s translation of the 1574 Seville edition, published as 
Byfull newes out of the new found Worlde (London 1577); the plants noted here are discussed in fols. 2-13, 16-18, 46-56, 79-82, 101-102, 107-109.

55. Monardes (n. 54 above) fols. 38-45.

56. Acosta (n. 4 above) 190.

57. Hariot (n. 24 above) fol. 82.

58. McManis (n. 6 above) 94-96.

59. The incomplete Madrid edition of 1790 was the first authentic version of Hernández’ work, but abridged and modified versions were published by Francisco Ximénez (Mexico 1615), Johannes Eusebio Nieremberg (Antwerp 1635), and Nardo Antonio Recchi (Rome 1649). Joannes de Laet drew on Hernández via Ximénez for his 
Nieuwe wereldt, ofte Beschrijvinghe van West-Indien . . . (Leiden 1625), soon translated into French and Latin. The complex bibliography of Hernández and a biography are presented in Germán Somolinos de Ardois, Obras completas de Francisco Hernández (Mexico 1960).


63. Oviedo (n. 3 above) 279, 286-288.

64. Acosta (n. 4 above) 193.

65. For example, Alexander Liddon Howard, A Manual of the Timbers of the World: Their Characteristics and Uses (ed. 3 London 1948) 306-307 notes that around 1640 English was­ sail bowls began to be made from West Indian lignum vitae instead of local woods; at the same time lignum vitae was used for Dutch marquetry.

66. Hariot (n. 24 above) fol. 82.

67. James Rosier, A true relation of the most prosperous voyage made this present yeere 1605, by Captaine George Waymouth . . . (London 1605) [unnumbered pages but 10, 28].

68. The story of white pines in American history is told in a popular but accurate way by Donald Culross Peattie, A Natural History of Trees of Eastern and Central North America (Boston 1950). Various acts of Parliament directed the Surveyor General of His or Her Majesty’s Woods and his deputies to mark trees suitable for masts with the Broad Arrow: see Parliamentary Papers, 1710 (London 1711) 387-388.

69. Oviedo (n. 3 above) 263-267.

70. Somolinos de Ardois (n. 59 above) 251.

71. Acosta (n. 4 above) 188.


73. Ewan (n. 24 above) 29.


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offered by P. J. Jarvis, "North American Plants and Horticultural Innovation in England, 1550-1700," *Geographical Review* 63 (1973) 477-499. Jarvis found that by 1800, English gardeners were growing over 300 species of hardy woody plants from eastern North America, more than from any other region.


78. A major motive of Kalm’s American travels was the collection of seeds of useful plants for introduction to Sweden. Shortly after returning home, he published a pamphlet offering free seeds of about 125 species; this has been republished in translation by Esther Louise Larsen, "Peter Kalm’s short account of the natural position, use, and care of some plants, of which the seeds were recently brought home from North America for the service of those who take pleasure in experimenting with the cultivation of the same in our climate," *Agricultural History* 13 (1939) 33-64. Kalm’s concept of useful plants included not only crops and other economic species but also sycamores for their splendid shade in summer, everlasting flowers for dry bouquets, horse-mint for attracting hummingbirds, and poison sumac for a curiosity in a corner of the garden.

79. A pioneer catalogue of these and other early expeditions and herbarium collections is the still indispensable work by Antoine Laségue, *Musée botanique de M. Benjamin Delessert* (Paris 1845; rpt. 1970).


81. An example of a California native overlooked by the early Spanish is the Monterey pine. It was finally introduced to Spain about 1850. According to a Spanish government atlas, *Mapa forestal de España* (Madrid 1966) 28-29, this species is now planted in forests covering 175,000 hectares of the Cantabrian region; planting expanded so rapidly that restrictions were imposed to preserve the area in cultivated cropland.


83. Cornut (n. 74 above).


87. Davies (n. 85 above) 154-196.


89. H. Lautensach, *Portugal auf Grund eigener Reisen und der Literatur, in Petermanns Mitteilungen, Ergänzungsheft 213* (1932) 97, 130; Orlando Ribeiro, *Portugal, o Mediterrâneo e o Atlântico, estudo geográfico* (Coimbra 1945) 95, 117, 121, 174-188.


91. Carl O. Sauer, “Maize into Europe,” in *Akten des 34. Internationalen Amerikanisten-kongresses, Wien, 1960*, International Congress of the Americanists, Proceedings, 1960 (Vienna 1962) 777-788. This paper suggests possible pre-Columbian arrival of maize in this region from the east, based partly on its attribution to the Turks by the Bavarian herbalist Fuchs in 1534. The Italian herbalist Mattioli established the presence of maize in South Tyrol by 1565; he believed it had been brought from the West Indies; see Finan (n.
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92. The problem is a knotty one because at least three species of American beans are involved and many varieties of squashes and pumpkins belonging to at least three *Cucurbita* species. Folk names for all these beans and cucurbits are highly ambiguous and, like those for maize, were in some cases borrowed from Old World crops. However, early arrival of the species has been documented from the great herbals, as noted by: Oakes Ames, *Economic Annuals and Human Cultures* (Cambridge, Mass. 1939) 59, 61, 85; Thomas W. Whitaker, “American Origin of the Cultivated Cucurbits,” *Missouri Botanical Garden, Annals* 34 (1947) 101-111; Erna Rice Eisendrath, “Portraits of Plants: A Limited Study of the ‘Icones’,” *Missouri Botanical Garden, Annals* 48 (1961) 291-327.

93. The complex story of the spread of tobacco planting and use has been vividly told by Berthold Laufer in several publications, including *Introduction of Tobacco into Europe*, Field Museum of Natural History, Anthropology Leaflet 19 (Chicago 1924).


97. Monardes (n. 54 above) fols. 20-21.


99. Acosta (n. 4 above) 178.


101. Monardes (n. 54 above) fol. 104.


103. Sermet (n. 102 above) 568.

104. Sermet (n. 102 above) 555, 566.
If we examine the pharmacopoeias of the early sixteenth century and glance at the lists of remedies they contain, we shall find that they do not differ essentially from those which were current throughout the whole of the Middle Ages. These had been based on the works of Galen, Pliny, Dioscorides and on the compilations derived from them. The only wind of change that had ruffled these stagnant waters had arisen during the course of the eleventh century, when Constantine the African had translated a series of medical works from the Arabic and thereby introduced new oriental drugs. Since the key texts studied and commented on in the medieval universities were those of Rhazes, Avicenna and Averroës, it followed that all physicians trained in the schools were impregnated with Arabic ideas on materia medica. As a result, European dependence on the Levant for its spices and drugs lasted for at least 400 years. Merchants' lists of imports during the fourteenth century show that no less than 280 different spices and drugs from these parts found their way into the West.1

When the renewed interest in classical texts of medicine developed during the Renaissance, an effort was made to return to the purely Greek tradition of Hippocrates and Galen and, in the sphere of therapeutics, to the herbal tradition of Dioscorides. Consequently, new translations of Dioscorides began to appear and extensive and learned
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commentaries were made upon them. The main endeavour appears to have concentrated on identifying the plants described by Dioscorides, so that drug sellers and pharmacists could be made aware of the errors they had long been committing by confusing one plant with another. This, for instance, was the chief purpose of Monardes in 1536 when he published at Seville his famous *Pharmacodylosis*. But they made the great mistake of thinking that the flora mentioned by Dioscorides, and which belonged to Greece, Asia Minor, and North Africa, were to be found in their entirety in northern Europe. During the first 40 years of the sixteenth century, therefore, very little progress was made from a practical point of view: the philological aspect predominated, and the books of naturalists, stuffed with antiquarian lore and dripping with useless erudition, brought nothing new to materia medica. It should be noted that most of these Renaissance botanists were physicians, whose chief preoccupation was to find new drugs for the medical profession.

During the centuries when Arab medicine had reigned supreme in Europe, Venice had been the chief emporium for the sale of drugs and spices, and it retained this stranglehold on the drug trade until the Portuguese discovered a trade route to the East Indies. Columbus' expedition across the Atlantic was a direct attempt to circumvent the Venetian monopoly and to challenge the growing importance of Portuguese trade in the Far East. But Columbus and his men were not scientists. They were adventurers pure and simple, and what they brought back from their explorations were goods which they calculated would enrich both themselves and their patrons. At the same time they described trees, gums, plants, roots, and oils, which could be of immense pharmacological importance; but since they could speak of them only in terms of what could be found in Europe, their information was inaccurate and misleading. When, eventually, they brought back specimens from overseas, they could provide little further explanation than that the Indians employed some of these trees and plants for curing various wounds and diseases. Wider knowledge of their discoveries was made available by other travellers, but while some, like Oviedo, were able to give accurate botanical descriptions, others contented themselves with merely giving the names of plants and trees. Some of these travellers stayed in more than one place in the Indies, and as the language changed from one region to another, they often recorded as three different plants one and the same plant, just because the native name was different. Bernabé Cobo complained of this even after a century of colonisation, and said that the same mistake occurred in geography. He had seen a map drawn up in Europe which gave three cities, Chuquiabo, Pueblo Nuevo, and La Paz, whereas in fact they were one and the same place with three different names. Confusion became further compounded when writers who had never travelled to the Indies
nor seen the trees and plants they were describing, recorded them in
their books on natural history and attempted to identify them with
plants from Dioscorides or with their native flora.

Let me give an example. When Columbus and his companions
returned from their voyage to the West Indies they brought with them
not only treasures of gold and precious stones, but also a terrible
disease, syphilis. The physicians and pharmacologists who had to deal
with it, relying on the ancient axiom that where a disease existed, there
in the same place God had created a remedy, sought a drug that would
cure the dreaded scourge. This, according to travellers, was the wood of
the guaiacum tree. The natives, so they said, suffered no less than the
sailors from syphilis, but it caused them no more inconvenience than did
measles in Europe. What the natives used to counteract the ill effects
of syphilis was something called guaiacum, a tree that grew on the
island of Hispaniola. By 1508 the Spaniards were using guaiac wood as a
drug on a large scale and by 1517 it had become a universal remedy.
Ulrich von Hutten was one of its most enthusiastic supporters, and his
book, describing his own cure, effectively stamped the drug as a certain
remedy. The Fugger, recognizing the economic possibilities of such a
product, entered into a compact with the king of Spain and in exchange
for a loan received the monopoly of importing guaiac into Europe. Their
wagons, loaded with this wood, rumbled over all the roads of the
Continent, and they made an immense fortune out of it. To promote its
use they even had books, seemingly translated from the Spanish, printed
to extol its virtues, and issued them as brochures. Meanwhile, Para-
celsus was decrying this wood as useless and of no more worth than the
wood of an apple tree. He pursued his own method of inunctions of
mercury, which apparently mitigated the symptoms of the disease. But
when it was discovered (by dissection) that sufferers from syphilis had
internal lesions, mercury was blamed as the cause, because whilst it
removed the outward sores, it drove the disease inwards toward the
sensitive parts of the body like the liver. As a result, the blood became
poisoned and infected the mouth, the brain, and other members. A great
controversy arose, of which it is not my place to speak, but the direct
consequence was a greater reliance on guaiac wood.

What is interesting is that by the second decade of the sixteenth
century it became evident that no one in Europe really knew what the
authentic guaiac wood was. Brassavolus said that there were three
different kinds being imported into Genoa, all of them of different colour
and consistency. Furthermore, no one could agree as to which part of
the tree was pharmacologically effective. Some physicians advocated
using the bark, some the pith, some the leaves, some the roots. In such
confusion it was only natural that substitutions would be made by both
physicians and druggists, and a great amount of cheating and deceit was
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riete. By the middle of the century some of the writers on botany were classing guaiac wood as a species of ebony, whilst Amatus Lusitanus was using boxwood as a substitute. Even as late as the eighteenth century, when guaiac wood was being used mainly as the material for wooden bowls, the shavings in the carpenter shops were being swept up, mixed with particles of other wood, and then sold to druggists and surgeons, who were completely ignorant of what guaiac wood really was.

A chink of light penetrated this abysmal darkness when Monardes of Seville published his book on the medicinal drugs imported from the New World. He had studied initially at Alcalá and was brought up in the old Dioscorides-Arab tradition. But his long sojourn at Seville, where the drug imports were unloaded, gave him firsthand experience of the newly discovered trees and plants, and it is said that he grew and observed them in his own botanical garden. He was the first to mention the anti-parasitical action of some drugs and the first to describe the pharmacological action of coca. His work made an immediate impact, and within a few years it was translated by John Frampton with the title Joyfull Newes out of the Newe Founde Worlde. Frampton was enthusiastic about the “singular and rare vertues of certayne Hearbes, Trees, Oyles, Plantes, Stones and Drugges of the Weast Indias...” and foresaw “wonderfull cures of sundry greate deseases, that otherwise then by these remedies, were incurable.” And he went on to say:

The excellencie of these Hearbes, Trees, Oyles, Plantes, Stones &c have been knowen to bee so precious a remedie for all manner of diseases and hurtes that they haue lefte off and forsaken very much the olde order and manner of Phisicke, which was used before that this was knowen, as thynges not of so present remedie for all manner of diseases, as these nowe late founde out, are: whyche by greate experience mad in Spayne, and other Countries, were throughly and effectuously prooued and experimented to woorke the effectes which are contayned in this Booke.

The claim that the old manner of treating diseases had now been superseded by the discovery of new drugs was perhaps a little premature. The physicians of the time still clung to the old idea, surviving from classical times, that the body was composed of four humours; that all medicines were graduated according to four degrees of heat, dryness, cold, and moisture; and that diseases were cured by contraries. If the physicians employed the new drugs (and Ulrich von Hutten stated that they did so only after they had discovered that there was much money to be extorted from patients by their use), they based their treatment on the old principles. They used pepper, ginger, or other heating spices and drugs in diseases where phlegm was supposed to be the peccant humour. They used aromatic wood, cinnamon, and things of a like
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nature, whose medicinal value we would now question, for dispelling cold and moist humours. And, in fact, though the ingredients in their medicines may have come from the Indies and therefore may have changed in name and species, their ideas about the basic treatment of disease had not changed at all.

Far from the new drugs superseding the old materia medica, the use of the really effective drugs was impeded. This was due mainly to the conservative attitude of the physicians, who opposed the use of drugs brought from abroad and with which they were unfamiliar. 21 Thomas Paynell, writing in 1533, said: "No man wolde lyghtly go unto a medicine, that came from so strange a place," 22 forgetting that during the whole of the Middle Ages physicians had been prescribing drugs that had been imported not merely from the Levant, but even from India and China. The underlying element was that they were unwilling, and perhaps fearful, of experimenting with drugs of whose qualities they knew next to nothing. It must be recalled that physicians of those days had no certain means of testing the efficacy of drugs. Galen himself had relied on colour, shape, touch, taste, and smell. 23 It was, at best, a very fallacious method, but since no other method was available, they had to accept it. In the thirteenth century Roger Bacon had already criticized physicians for their lack of knowledge about the effects of drugs, but he had to admit that experimentation on human beings was both dangerous and unethical. 24 Even with drugs that were in common use the dosage was often misunderstood or incorrectly stated in medical books, 25 and many patients died after their ministration. 26 With such experiences in mind prudent physicians abstained from employing or prescribing what they did not fully understand. By the beginning of the sixteenth century Brassavola and some of his colleagues had begun to test drugs on birds and dogs, gradually diminishing the doses of poisonous substances to the point where their effect was not fatal. 27 But not everyone was as enterprising as this. As a result, we look in vain through the official pharmacopoeias of such places as London, Augsburg, Rome, Bergamo, Naples, Cologne, and Amsterdam for a sign that the new drugs were being used on a large scale. 28 At the end of the sixteenth century and the beginning of the seventeenth, only guaiac wood, sassafras, tobacco, mechoacana and tacamahácha had been universally accepted.

But this was not all. Many of the drugs imported from the West Indies did not produce the results for which they were celebrated. The reason for this was not far to seek. The original trees, plants, roots and so forth were often gathered at great distances from the ports where they were to be loaded on to ships. Often they were gathered at the wrong season of the year, insufficiently dried, badly packed, and subject to the heat and humidity of the regions they had to pass through. Following
this there was the long voyage overseas, when they might become contaminated by sea water in rough weather, or kept in conditions that encouraged mildew. By the time the drugs arrived at the point of unloading they had lost most if not all of their remedial qualities. No one, however, not even the merchants and druggists to whom they were despatched, would know this. It was only when the drugs had been used in hospitals, to which they were benevolently sent by the sovereigns of Spain, that they were found to be completely useless and ineffective. Whether the original plant or herb was pharmacologically inactive, or whether it had lost its power through lack of proper management and control, few could tell. Whilst the merchants continued to extol the virtues of their wares and the druggists continued to make profits, the physicians gradually lost confidence and became more wary of the extravagant claims made. 29

This was the state of affairs up to the middle of the sixteenth century and a little beyond. In 1571 Philip II sent Francisco Hernández to Mexico to make a complete botanical survey on a scientific basis and to carry out experiments on medicinal plants. Hernández spent seven years on this task and returned to Seville with his manuscript describing 1,200 plants, most of them illustrated. Unfortunately the expense of printing this bulky material was too great, and it was not until the following century that an abridgement of it was published in Italy. 30 In the meantime the French botanist L’Ecluse was travelling to Spain, Portugal, England, and Austria seeking out specimens of the new exotic drugs and examining those that were brought into the port of Amsterdam. 31 He not only kept in touch with those who voyaged to the New World, but persuaded the owners of ships which brought back drugs to include in their crews physicians, surgeons, and expert druggists, who could accurately describe the habitat of plants and test their efficacy. 32 This was how he received from Francis Drake in 1579 a specimen of Winteranus, which had been employed on board ship to arrest an outbreak of scurvy. 33 From Morgan, Queen Elizabeth’s apothecary, he received a sample of sassafras, which had been sent from Florida, 34 and from two other London druggists, Richard Garth and James Gareth, he received another specimen which came from Virginia. 35 In 1601 he obtained some guaiac wood from Gareth and compared it with two other samples which were brought back from Trinidad, 36 but he was still not quite sure, when presented with some other aromatic wood, whether it was guaiac or not. 37 This shows the uncertainty that prevailed even in the minds of highly experienced and scientific botanists when they had to rely for information on people who had not travelled abroad, or who had actually been to the places where the plants grew but were unable to provide a really accurate and scientific description. In the same way,
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apparently not having experimented personally with some of the drugs, L’Écluse had to rely on others for information about their effects. He reported that tobacco was used in ointment for ulcers and that its leaves were chewed to relieve gout, and he quoted Charles Étienne as saying that it was good for asthma: in short, concludes L’Écluse, it is a panacea for all diseases. 38

Nothing illustrates the hesitancy, misunderstandings, and uncertainty among naturalists and physicians alike better than the story of Cinchona. About the date that William Harvey published his treatise on the circulation of the blood (a discovery that was to put an end to Galenic theories), Spanish missionaries were discovering the febrifuge qualities of cinchona bark. Owing to the fact that it was confused with Peruvian bark of the balsam tree because of the cheating of European merchants, a controversy arose regarding its effectiveness in treating fevers. 39 Honoré Fabri (1607-88), a Jesuit, affirmed that some thousand people in Rome alone had been cured of fever by the bark, 40 and he was immediately assailed by Vopiscus Fortunatus Plempius, professor of medicine at Louvain, a man who later attacked Harvey’s great discovery. 41 Into the polemic that followed it is not our business to probe, but it may be said that ignorance and popular prejudice played more part in it than the search for truth. In spite of opposition cinchona gradually found acceptance, and by 1658 advertisements were appearing in an English newspaper for the sale of “the excellent powder known by the name of the Jesuit’s powder” brought over from Holland by James Thompson, a merchant of Antwerp. 42 Though it was prescribed by Dr. Brady, professor of physic at Cambridge from 1659 onwards, 43 and was reported by Willis 44 to be in common use, the medical profession on the whole showed no great enthusiasm in adopting it; indeed they attributed many deaths to its inexpert administration. It was left to an apothecary’s apprentice, Robert Talbor, to give it the prominence it deserved. After using it with great success in Essex he moved to London, where he published a book called Pyretologia, a rational account of the cause and cure of agues in 1672. 45 This publication did not endear him to the medical profession, and after he had been appointed physician in ordinary to Charles II it was found necessary to issue an order from the king restraining the attacks on him made by the College of Physicians. After he had cured the king of a tertian fever, he went over to France where he successfully treated the Dauphin and other eminent people, with the result that he sold his treatment, consisting of doses of cinchona bark infused in wine, to Louis XIV for 2,000 louis d’or. 46 After Talbor’s death in 1681 his method of cure was published by Louis XIV’s surgeon, Nicolas de Blegny, 47 and immediately translated into English. 48 Though it would now appear that cinchona had gained a respectable
place in rational medicine, disputes about its efficacy in fevers continued right on into the eighteenth century, wringing from Ramazzini the admission that cinchona had brought about as great a revolution in the art of medicine as gunpowder had done in the art of war. This opinion can be readily accepted in view of its successful application in outbreaks of fever, which in previous centuries had decimated whole populations.

But hardly had the efficacy of cinchona been established when it was discovered that there was not one species but many, a discovery that gave rise to further controversies regarding the merits of the different species. The outcome was a series of expeditions organised from Europe, first under the French and later under the Spaniards, which in turn stimulated efforts by analysts to solve the problems involved. This was finally achieved by Caventou and Pelletier in 1820 when they succeeded in isolating the alkaloid quinine.

During all this time further endeavours were being made to enlarge the number of medicinal drugs from the New World. In many cases the plants and roots brought back were of no service to medicine whatsoever, like vanilla and cocoa, for which Blegny made such extravagant claims. In other cases roots and herbs were incorporated into European pharmacopoeias and later discarded in favour of more recent importations. But the net result was to stimulate investigation and develop a scientific approach to the whole field of therapeutics. Let two examples suffice. Towards the end of the eighteenth century when belief in the curative properties of guaiac wood was beginning to wane, Francisco Xavier Balmis experimented in Mexico with wild agave and begonia root and claimed that with them he had successfully treated cases of syphilis. In 1792 he returned to Spain and presented these plants to the king, and with his permission began to test them on patients at the hospital of San Juan de Dios in Madrid, at the hospital de la Pasión, and at the general hospital. In all, he dealt with 53 people. Because his claims of success were ridiculed by an associate, Bartolome Piñeira, he wrote a book describing in detail the case histories, the methods of controlled experiment, and the various effects of the drugs. Though the results of his treatment were more a figment of his imagination than a fact, they had the happy issue of spurring others to a closer and more critical examination of anything that was proposed as a curative agent.

About the same time Sesse, who had been appointed head of a botanical exploration whose purpose was to corroborate the findings of Hernández and to collect more specimens, decided to test the efficacy of certain drugs in cases of dysentery, liver disease, and yellow fever. After long arguments with the head of the hospital of San Andrés, who considered it unethical to experiment on patients, he was allowed to carry out a series of tests in two wards, and triumphantly showed that by discarding the humoral theories then in vogue he was able to achieve
remarkable results. But the circumstances in which these experiments were carried out furnish a vivid picture of the beliefs accepted by the medical profession after two centuries and more of drug importation from the New World. Sessé complained that thousands of useless and pernicious remedies, taken over from classical and medieval times, were still in use, all of which had gained credence through the blind credulity of the medical Faculties. Even in Mexico, he said, they were still using as remedies the skulls of human beings, the after-birth of women, the blood of mules and donkeys, and a myriad other obscenities.

As far as the northern hemisphere of the New World is concerned, it must be admitted that its contribution both to materia medica and to a change in medical practice was meagre. Although Gerarde in his Herball and Parkinson in his Theatrum botanicum list a number of drugs that were brought over to Europe from Virginia, Bermuda, and New England, they relied mainly on the work of Monardes for their information on new remedies. John Josselyn’s Account of Two Voyages to New England and his New England’s Rarities Discovered offered nothing new in the way of herbs and medicines, and it was not until the eighteenth century when John Tennent experimented with seneka or snake root in the treatment of pleurisy and pneumonia that anything valuable was discovered. This stimulated the writing of many dissertations, one of which came from the hand of Linnaeus.

All in all, while the number of drugs discovered in the New World was considerable and while their importation into Europe enriched numerous merchants and druggists, their influence on European medicine, except in the case of cinchona, was negligible. The reasons for this were mainly ignorance, conservatism, and lack of confidence on the part of the medical profession, and the exaggerated claims, sometimes wholly unfounded, made by unscientific travellers and unscrupulous practitioners.

NOTES

3. Nicolás Bautista Monardes, Diálogo llamado pharmacodylosis o declaración medicinal (Seville 1536). Since only two copies of this rare book exist, one in Madrid, the other in the Wellcome Historical Medical Library, it is necessary to point out that Monardes concerns himself solely with the drugs contained in the books of Dioscorides, Pliny, Mesue, and other Arabs. C. R. Boxer, Two Pioneers of Tropical Medicine: Garcia d’Orta and Nicolás Monardes (London 1963) 20 says: “It is interesting to note that in this book Monardes depreciates the therapeutic value of medicinal plants imported from the New World and considers them inferior to those found in the Iberian peninsula.” C. Lilian Temkin, Bulletin of the History of Medicine 37 (1963) 387 repeats the same statement. Both
of them have been grossly misled by Francisco Guerra, Nicolás Bautista Monardes: Su vida y su obra (Mexico 1961). At no point in the Pharmacodylosis does Monardes mention either the New World or any drug having its origin in the New World.

4. Amatus Lusitanus, In Dioscoridis Anazarbei de medica materia libros quinque (Lyon 1558); Hermolaus Barbarus, In Dioscoridem Corollariorum libri quinque (Cologne 1530); Valerius Cordus, In hoc volumine continetur... Annotationes in Pedacii Dioscoridis Anazarbei de medica materia libros V (Strasbourg 1561); Conrauds Gesner, Apparatus et delectus simplicium medicamentorum (Lyon 1542); Pietro Andrea Mattioli, Commentariori in libris sex Pedacii Dioscoridis Anazarbei de medica materia (Venice 1554). The errors of both physicians and pharmacists were pointed out by Manardus in his Epistolae medicinales in quibus multa recentiorum errata et antiquorum decreta reserantur (Ferrara 1521).

5. A good outline is provided by Francisco Guerra, “Drugs from the Indies and the Political Economy of the Sixteenth Century,” Analecta medico-historica 1 (1966) 29-54.

6. Martín de la Cruz and Juan Badiano, Libellus de medicinalibus Indorum herbis (rpt. Mexico 1964); Peter Martyr of Anghiera, Décadas del nuevo mundo, ed. Edmundo O’Gorman, trans. A. Millares Carlo (2 vols. Mexico 1964). Peter Martyr was in touch with all the great navigators of his time, and from 1488 onwards wrote 812 letters to them. There were no less than 37 editions of his book in the sixteenth century.

7. Gonzalo Fernández de Oviedo, Libro secondo delle Indie occidentali (Venice 1534). His Sumario was printed at Toledo in 1526, but the greater part of his Historia de las Indias occidentales remained in manuscript. See in this collection 1. 43 n. 4.


9. Ibid., 333: “Porque yo he visto mapa, hecho en Europa, en que la ciudad de Chuquiabo estaba puesta dos ó tres veces con distintos nombres. . . .”

10. Ulrich von Hutten, De Guaiaci medicina et morbo Gallico liber unus (Mainz 1519) cap. 5: “Ipsius insulae [Hispaniolae] omnes morbo Gallico aliquando laborant accolae, quemadmodum variolos nos.” This was translated by Thomas Paynell, Of the wood called Guaicam that healeth the Frenche Pockes and also helpeth the goute in the feete, the stoone, the palsey, lepree, dropsy, fallyng euyll, and other dyseses (London 1536).


12. Ibid., 322.

13. Antonius Musa Brassavolus, Examen omnium simplicium medicamentorum, quorum in officinis usus est (Rome 1536) fol. 75V.


15. Amatus Lusitanus, Curationum medicinalium Centuriae quatuor (Basel 1556) 209: “Est enim lignum Guaiacum, ex insulis noviter repertis advectum, idem quod buxum Europaei appellant, ut conferenti manifestum evadet.”


17. Nicolás Bautista Monardes, Dos libros. El uno trata de todas las cosas que traen de nuestras Indias occidentales, que sirven al uso de medicina, y como se ha de usar de la rayz del Mechoacan, purga excellentissima... (Seville 1565).

18. Guerra (n. 3 above).


20. Hutten (n. 10 above) Cap. X: “Valde existimo enim, lucro ibi consulere medicos, non hominum saluti... Convenisse ipsis puto cum mercatoribus in lucri partem ut admissantur. Itaque vidi ipse medicum quendam, si inductum et imperitum asinum hoc nomine dignamur, qui reclamavit Guaiaco, magna contentione, ut rei vanae et nullius momenti, et quam ementirent negotiatores haec posse. At paulopost idem ille vociferator ascitus in curationem divitis quiusdam atque iterum alterius, cum solvisset homini aurum, remque videret ingentis lucri... coepit primo mitior esse, et minus
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minusque saeire, deinde etiam laudare, ac magnis praecoonis extollere rem, quia, inquiens, nunc tandem expertus eius virtutem sum. Immo quia et tuum ibi lucrum invenisti asine."

21. Timothy Bright, *A treatise: wherein is declared the sufficiencie of English medicines for cure of all diseases, cured with medicine* (London 1580).

22. Paynell (n. 10 above) fol. 24.


26. Manardus (n. 4 above) fol. 1v: "Unde factum est, ut ea pro arbitrio quisque ad proprium dogma trahat, una pro alia regula, uno pro alio remedio, et saepe pro salubri mortiferum cum humanae vitae discrimine recepto."

27. Brassavolus (n. 13 above) fol. 82v.


29. See n. 21 above.


32. *Ibid.*, Preface. Later (358) he complains that in spite of promises, the druggists, surgeons, and physicians who went on expeditions failed him, even though they had been generously paid beforehand.


40. Antimius Conigius (Honoratus Faber), *Pulvis peruvianus febrifugus vindicatus* (Rome 1655).

41. Vopiscus Fortunatus Plempius, *Peruviani pulveris febrifugi defensor repulsus a Mel­ippo Protino belga* ([Louvain?] 1655).

42. Mercurius Politicus, comprising the sum of foreign intelligence, with the affairs now on foot in the three nations, for the information of the people (London 1658) nos. 422, 426, 439.


49. This remark deserves quotation in full. It occurs in Francesco Torti, *Ad criticam dissertationem de abusu Chiae Chinae mutinensibus medicis perpetam objecto*... a... B. Ramazzino (Modena 1715) 22-23: "Ac illam curandi methodum factam fuisse fateri oporpet quale, in re militari post inventum pulvere pyrium omnes norunt. Quemadmodum autem
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abjectis Catapultis, et Arietibus, solo tormentario pulvere terrae cubiculis inclusu et accenso alta propugnaculatu temporis momento solo aequantur, et Arces obsessae ad deditionem coguntur; sic valere jussis tot pharmaceutici presidiis, modico Quinquinae pulvere exhibito contumaciore Fbres vinctas dant manus."

50. Haggis (n. 39 above) 448 ff.


53. Annales de Chimie et de Physique 15 (1820) 292.


55. Francisco Xavier de Balmis, Demonstración de las . . . virtudes, nuevamente descubiertas en las raices de dos plantas de Nueva-Espaňa, especies de ágave y de begonia . . . (Madrid 1794). He claimed to have cured 323 people of venereal disease in the hospital of San Andrés in Mexico.

56. Ibid., 21.

57. Ibid., 93 ff.

58. Ibid., 25 ff.

59. Martín de Sessé y Lacasta, Wellcome MS Am. No. 43. He reports that he was sent by Charles III of Spain to corroborate the work of Hernández because the plants he described were not recognizable because of the loss of the illustrations. He was accompanied by expert artists, who depicted the 3,000 specimens which he collected in such detail “that for all time and in all parts of the world they could be identified without equivocation.”

60. Wellcome MS Am. No. 44. The Tesoro de Medicinas para diversas enfermedades contained in Wellcome MS Am. No. 101 and attributed to Gregorio López (1542-96), printed in Mexico in 1672 and 1674 and reprinted at Madrid (1789) does not contain a single drug from the Spanish colonies, not even cinchona for the treatment of fevers. It is full of folk remedies, such as putting an eagle’s claw on the left arm of a pregnant woman to help parturition.


63. (London 1674).

64. (London 1672; facsimile rpt. Berlin 1926).

65. John Tennent, An epistle to Dr. Richard Mead concerning epidemic diseases of Virginia, particularly a pleurisy and peripneumony, wherein is shown the surprising efficacy of the Seneca rattlesnake root . . . (Edinburgh 1738).

The Problem
of Syphilis

by Francisco Guerra

Since 1517 the discovery of America has been associated with the spread of syphilis to Europe, though the thesis that the venereal disease had its provenance in the New World remains the most controversial issue in medical history. Despite much argument, this problem has been unique inasmuch as the Renaissance's claim that syphilis was a new disease has lasted into recent times.

According to one view the Spaniards acquired syphilis from the American Indians at Hispaniola and brought the disease back to Spain in 1493. Then Italians and Frenchmen were contaminated by the Spaniards during the wars in Italy in 1495. As a result syphilis soon spread all over Europe and other continents. The other view is that syphilis was already present in the ancient world, but it was only about 1500 A.D. that it was properly diagnosed in Europe. Ackerknecht agrees with most authors that "from the evidence at hand it seems that the question cannot be resolved. Neither the literary documents nor the available bone material indicates a conclusive answer."1

The issue need no longer be discussed in terms of literary evidence or palaeopathological findings, however. New understanding about the evolution of treponematoses has made obsolete the traditional setting for the discussion of the role of America in the history of syphilis.


**THE NATURE OF SYPHILIS**

Syphilis was the name given by Fracastoro in 1530 to a venereal disease, which the Spaniards had named *bubas* at about the time of the Discovery. The fact that syphilis is but one of the four human treponematoses may explain a long list of confusions about the disease. Hackett says that venereal syphilis is caused by *Treponema pallidum*; that endemic—that is, non-venereal—syphilis is also caused by *T. pallidum*; that yaws (also called framboesia or pian) is caused by *T. pertenue*; and that pinta or carate is caused by *T. carateum*. Hudson, however, believes that there is just one treponematosis, the same treponema being the cause of four clinical pictures of one disease only, and that by adaptation each area of the world ended by having the type of treponematosis suited to its environmental conditions. *Pinta*, which occurs only in America, represents the earliest stage in the evolution and can be dated back to about 10,000 B.C. At present *yaws* appears in moist and hot climates, such as Central Africa and the West and East Indies, and produces succulent skin lesions. *Endemic syphilis*—treponarid—is found in the hot arid areas of Northern and Southern Africa, Arabia, Siberia, and Central Australia, and produces dry skin lesions. Finally *venereal syphilis* developed and now exists in areas with an urban society, where the other treponematoses are absent.

Turner has indicated that the treponemas of these four diseases are morphologically indistinguishable: they all have the same serological tests, though they produce different pathological processes, and they respond equally well to the same treatment. The four human treponematoses, furthermore, progress in a similar fashion from an early stage of primary and secondary lesions to a latent stage ending with tertiary lesions.

**THE DIAGNOSIS OF SYPHILIS IN THE LITERATURE**

Venereal syphilis was found to be a treponematosis only in 1905; the treponemal nature of pinta was not established until 1938. It follows that none of the authors in the endless publications gathered by Proksch was aware of the true nature of syphilis and related treponematoses; in fact, some of these diseases are confused even today. It must also be added that the role of America in the history of syphilis has never been studied in relevant primary sources by those with first-hand experience in the four clinical patterns of human treponematoses. *Pinta* was extant only in America at the time of Columbus’ discovery in 1492; it affects mainly the skin, but not the bones, and may be confused with vitiligo; due to its striking appearance, however, it never passes unnoticed. Endemic or non-venereal syphilis, on the contrary, does not show primary lesions as do the other treponematoses; it occurs from childhood without venereal transmission and has more subdued symptoms. Differ-
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ential diagnosis in early literature must therefore have focused on venereal syphilis and yaws. Primary lesions are frequent in both. With syphilis they appear in the genitalia as a papule which evolves into a chancre, typically hard and painless, with adenitis or a bubo lasting one to two months. The primary lesion in yaws appears mostly in exposed parts—legs, arms, or face; the papules grow into a papilloma which untreated lasts two to nine months. The secondary lesions in syphilis are skin eruptions (syphilides) without papillomata, sometimes alopecia and lesions in every organ, including the bones. In yaws the papillomata are extensive and all over the body, and there may be palmar and plantar papillomas, hyperkeratosis and fissures, and osteo-periostitis. It is precisely this syndrome of skin gummata, hyperkeratosis, fissures, juxta-articular nodes, and bone lesions, so frequent in tertiary yaws while rare in venereal syphilis, which can greatly assist in the interpretation of early texts.

THE PALAEOPATHOLOGY OF SYphilis

Although Virchow's caries sicca is accepted as pathogenic of treponematoses, different criteria still exist in respect to certain bone deformities in archaeological remains, because there is no definite serological test to confirm them. Møller-Christensen, as previously Williams, maintains that in Europe no syphilitic bones dated before 1500 A.D. have been found; while in America, Tello and Williams and more recently Weiss have found several specimens of pre-Columbian syphilitic bones among the well preserved Peruvian burial grounds. On the other hand, Vorberg considered certain human bones found in Europe with a pre-Columbian dating syphilitic, and Rokhlin has reported syphilitic bone lesions dated 3000-2000 B.C. in the Trans-Baikal area of Siberia. These conflicting views on the existence or non-existence of syphilitic pre-Columbian bones in Europe have much less relevance if we take into account the origin of American man and prehistoric geography. The population of America was the result of Old World migrations across the Bering Strait, commonly assigned to the period from ca. 15,000 B.C. to ca. 6500 B.C. We must also remember that Europe was joined to Africa in prehistoric times, and suffered repeated invasions by Trans-Ural cultures; and there were Arabic migrations into Spain from the eighth to the fifteenth centuries as well.

THE AMERICAN LITERATURE OF SYphilis

The philological search by Montejo y Robledo shows that every American aboriginal language, including Nahuatl, Maya, Carib, Arawak, Quechua, Aymara, Guarani, and Araucanian, some of them recorded quite early or shortly after the Conquest, contained aboriginal words to designate bubas, that is, venereal syphilis. In Mexico, for
instance, the Nahuatl terms used to designate different types of skin lesions characteristic of bubas antedate those in Spanish.

Accounts of the Discovery and Conquest frequently mention a skin disease, bubas, among the Indians, and these accounts should be accepted as reliable evidence. On Columbus' orders, Fr. Ramón Pané wrote the earliest account in 1496 at Hispaniola, but it was published (in Italian) only in 1571. There are chronicles by Fernández de Oviedo (1526-35), Motolinia (1541), Las Casas (1542), López de Gomara (1552-53), Hernández, and many more. The General History of the Things of New Spain, written in Mexico by Sahagún about 1565, deserves special notice because with his usual skill he reported the Aztec treatment for bubas and gave a precise account of the social status of bubosos. Sahagún even described the hierarchy of Nancatzin, the god with bubas, and many related matters. Sticker has also reviewed this point.

PRE-COLUMBIAN LITERATURE ON SYPHILIS

It would be difficult to expand Sudhoff's survey of European manuscripts and printed books describing syphilis before the opening of the New World, or to add to Hildebrand's syphilitic syndromes in medieval literature. Most of the recipes for the treatment of chronic skin infections contained mercury—introduced long before by Arab practitioners—and were effective presumably because the lesions were syphilitic. In Sudhoff's view, venereal syphilis existed in European antiquity and prehistoric times. There are, however, three items unknown to Sudhoff which deserve mention because they confirm his view. Early Spanish authors on bubas quoted Pliny's Natural History, where mentagra is mentioned. Book xxvi, Chapter 1 of this work (first translated into Spanish by Huerta) explains how an epidemic of mentagra, resembling syphilis, was imported into Rome from Asia during the rule of Tiberius Claudius. The interesting point about this edition is that the section on mentagra is entirely devoted to a discussion on bubas.

The two other documents come from the hands of Renaissance scholars. The Sylva in scabiem, written about 1475 by Angelo Poliziano (1450-94) and recently published and annotated by Del Guerra, described his own fatal illness, lues or morbo gallico. The other is an epistle to Ario lusitano grecas literas Salmanticae profitenti, valetudinario, by Peter Martyr of Anghiera (1455-1526), dated 9 April 1489, which gives a good description of the disease suffered by Arias, a professor at the University of Salamanca. Here Peter Martyr states that the disease was called bubas by the Spaniards, morbo gallico by the Italians and elephantiasis by some physicians.

POST-COLUMBIAN LITERATURE ON SYPHILIS

The texts on the history of syphilis after the discovery of America are legion and have been discussed at length by Bloch, a great supporter of
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its American origin. The earliest statement propounding an American origin is in Oviedo's *Natural History of the Indies": ". . . Your Majesty may rest assured that this horrible disease came from the Indies. Although it is quite common among the natives, it is not so dangerous there as it is here in Europe. . . . Bubas first appeared in Spain after Admiral Christopher Columbus discovered the Indies and returned home." Later Oviedo enlarged this story in his *General History of the Indies*, which influenced many subsequent accounts.

It would be tedious to list authors between 1495 and 1500 who mention *bubas* or similar diseases with other names, since Sudhoff has already done this. But in order to clarify America's role we must note two Spanish texts in the vernacular. First, the poem on *bubas* by López de Villalobos leaves no doubt that the disease was first diagnosed while the Spanish monarchs Ferdinand and Isabella were in Madrid in 1494, and that it was new and extremely contagious. It started with a hard and painless ulcer on the penis, was followed by adenitis, skin disorders, pain in the joints and bones—mostly at dawn—and could be cured by mercury unction. Villalobos indeed described venereal syphilis, but noted that it was similar to Avicenna's *sahfati*; he did not mention an American origin. Second, evidence that can resolve the issue of America's involvement in the history of syphilis can be found in a truly magnificent Renaissance book, mentioned by many, read by a few, which has been studied by Curieses del Agua. This is the *Treatise against the Serpentine Malady* by Ruy Díaz de Isla. He was a Spanish surgeon practising at the All Saints Hospital in Lisbon, who declared he had treated over 20,000 patients with *bubas*, including some from Columbus' crew, and had suffered the disease himself. Every line in his work deserves attention because it allows us to establish a calendar of the disease and its epidemiology. At the same time, his clinical observations are so detailed and accurate that they disclose the true nature of the epidemic once and for all. Díaz de Isla confirms that *bubas* came from Hispaniola with Columbus' men; that the disease was very contagious, common, and benign among the Indians, but severe among the Spaniards. He treated the first cases to arrive, witnessed the spread of the disease and suggested that (by 1539) about one million had been infected in Europe. Indeed, it is his clinical insight which helps most here, for he wrote that *bubas* proceeded in three stages, the first with *botores*—that is, papillomas—usually cured without treatment in a few months or within a year. The second stage included painful joints, thickening of the skin on the palms and plantar areas where fissures may appear. About 15 years later the pains in the bones, erosion of the palate, and spontaneous fractures announce the end of the illness. The third stage produces continuous headaches, blindness, alterations in the pulse, and fatigue. Inter alia, Díaz de Isla noted that venereal contagion could be avoided by personal hygiene, but that there was also non-
venereal transmission; he noted further that in certain cases *bubas* had disappeared after other illnesses with high fever; he argued for the control of prostitutes, and against the dangers of nursing by *bubosos*; and he maintained that mercury was the only effective treatment. Everything he wrote stands today.

**CONCLUSION**

The clinical accuracy in Díaz de Isla clarifies most of the vexed story about America, but in turn raises new problems. He describes not one disease—syphilis—but three. When he mentions urethral discharge and orchitis, he is referring to gonorrhea, distinguished from syphilis in 1793 by Bell. Díaz de Isla accurately describes every stage of syphilis, including neurosyphilis; but what is more important, in explaining the epidemiological character of *bubas*, Díaz de Isla also describes yaws in detail: the non-venereal transmission, the florid primary lesion on exposed parts of the body, the *botores* like hemorrhoids or papillomas, the longer evolution of the primary stage, the typical thickening of the skin, bleeding fissures, spontaneous fractures of the bones, gangosa, and other symptoms.

To summarize: (1) Pinta, yaws, venereal syphilis, and possibly endemic syphilis existed in America prior to Columbus' discovery. (2) Venereal syphilis and yaws were brought back to Spain and Portugal by the discoverers. (3) The clinical syndrome of *bubas* indicates that there were among the discoverers two treponematoses involved, syphilis and yaws. (4) It is believed nowadays that human treponematoses arose in prehistoric times from animal infection in Africa which evolved into *pinta* and was carried by Asian migrations into America. (5) Therefore endemic and venereal syphilis existed in prehistoric Europe and arose from mutants of yaws in tropical Africa.

**NOTES**

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9. J. C. Tello, La antigüedad de la sífilis en el Perú (Lima 1909) and Williams (n. 8 above).


13. Bonifacio Montejo y Robledo, Las bubas proceden de América, Memoria leída el 27 de septiembre de 1881 ante el Congreso de Americanistas reunido en Madrid (Madrid 1883).

14. Ramón Pané, Scrittura . . . delle antichità de gl’Indianì . . ., in Fernando Colombo, Historie . . . (Venice 1571); Gonzalo Fernández de Oviedo, La historia general de las Indias (Seville 1535) and Sumario de la natural y general historia de las Indias (Toledo 1526); Toribio de Benavente Molinía, Historia de los indios de la Nueva España, ed. Edmundo O’Gorman (Mexico 1969); Bartolomé de Las Casas, Historia de las Indias, ed. A. Millares Carlo, intro. Lewis Hanke (3 vols. Mexico 1951); Francisco López de Gómara, Historia general de las Indias (Saragossa 1552-53); Francisco Hernández, Keram medicarum Novae Hispanicæ thesaurus (Rome 1628); Fray Bernardino de Sahagún, Historia general de las cosas de Nueva España, ed. Miguel Acosta Saignes (3 vols. Mexico 1946).


22. Oviedo, Sumario (n. 14 above).

23. Oviedo, La historia general (n. 14 above) fol. 93.

24. Francisco López de Villalobos, El Sumario de la medicina, con un tratado sobre las pestiferas bubas (Salamanca 1498).


26. Ruy Díaz de Isla, Tractado contra el mal serpintino que vulgarmente en España es llamado bubas (Seville 1539) and Tractado llamado fructo de todos los [Sanctos: contra el mal serpintino venido dela ysla Española . . . (Seville [1542]).

27. Ibid., fol. 6.

28. Ibid., fol. 15.

29. Ibid., fol. 18.

30. Ibid., fol. 11 and 18v.

31. Ibid., passim.
What the New World Gave the Economy of the Old

by Earl J. Hamilton

In the opening sentence of his *Histoire philosophique et politique*,¹ the Abbé Raynal declared that “there has been no event as important for the human race in general and for the people of Europe in particular as the discovery of the New World and the passage to the Indies by the Cape of Good Hope.”² In the opening sentence of his discussion of these discoveries, Adam Smith copied the opening sentence of Raynal,³ with little alteration and no acknowledgment.⁴ But the ingenious author of an essay written in 1788 which won the prize offered by the French Academy for the best answer to the question of “how America has influenced the trade, politics, and morals of Europe”⁵ probed much deeper than did Raynal or Smith.

After explaining how extremely complex the problem is and pointing out that the more one learns about it, the more he realizes how much more he needs to know,⁶ the anonymous author said: “America has enhanced Europe’s vanity, softness and luxury, contributed to its comfort, furnished it subsistence and supplied it raw materials.” But, he asks, if the men Europe has furnished for navigation and for the direction of America’s development, and the immense sums it has spent on ports, arsenals, and fleets—if so many men and so many resources—had been used for clearing, draining, and planting land, and for constructing roads, bridges, dikes, causeways, and canals, would not

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Europe find in its own bosom the most important objects it draws from the other world or their equivalents?⁷

This is a most impressive perception of what should be done and of how resources should be allocated if there were no New World. Yet, let us see what have been the most important objects America has furnished Europe, and ask ourselves whether any amount of effort and any kind of ingenuity could have drawn these things, or satisfactory substitutes, from the bosom of Europe itself.

POTATOES

When Pizarro and his soldiers conquered Peru (1531-35), potatoes, which had originated in what is now Peru and Bolivia, had been cultivated on their high tablelands for more than 4,000 years.⁸ They had spread southward to Chile and northward to Colombia but had not reached any part of North America. Naturally, the Spanish conquerors tried potatoes as food and sent specimens to Spain, where presumably they went into gardens and into the hands of herbalists. No one knows when or where their cultivation or consumption began in Europe.⁹ But by 1576 the Hospital de la Sangre at Seville, where trade with the Hispanic colonies was concentrated, was feeding potatoes to patients,¹⁰ and they may have been grown and consumed in Spain long before this date.

Sir Walter Raleigh is said to have sent tubers, brought from America, to his Irish estate at Youghal in 1586 for experimental cultivation.¹¹ But inasmuch as Spanish and Irish intellectuals and businessmen had close ties, and trade between Spain and Ireland was brisk, potatoes could well have reached Ireland from Spain long before. Owing to extreme poverty and also to the fact that potatoes would yield far more than any alternative crop, they probably took hold rapidly, whenever they arrived. Ireland was the first country in Europe where they became a major food crop, and by the third quarter of the eighteenth century they were the principal food of the masses. In 1780 Arthur Young, usually a very accurate observer, estimated that on the average throughout Ireland a poor family ate about 3.5 kilograms of potatoes a day per person,¹² which means it could have eaten little else. Population increased up to the limit set by the high productivity of the potato. Consequently the terrible late potato blight of 1845-46 and fear of a recurrence cut the population of Ireland—through death and emigration—by about 30 percent in the next six years.¹³ Blind dependence on this single crop thus led to one of the worst disasters in modern times. But up to this point the potato had proved beneficial. The people of Ireland had gained the difference between the labor, land, capital, and management required to produce their potatoes and the inputs needed to grow the same amount of food of comparable quality in some other
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way. Furthermore, the people of Ireland must have liked potatoes better than any attainable substitute. Adam Smith thought there was another advantage. He argued that the common people in Scotland, who are fed with oatmeal, are in general neither so strong nor so handsome as the same rank of people in England, who are fed with wheaten bread. They neither work so well nor look so well. But it seems to be otherwise with potatoes. The chairmen, porters, and coal-heavers in London, and those unfortunate women who live by prostitution, the strongest men and the most beautiful women perhaps in the British dominions, are said to be . . . from the lowest rank of people in Ireland, who are generally fed with this root. No food can afford a more decisive proof of its nourishing quality, or of its being peculiarly suitable to the health of the human constitution.

But the heavy muscular work done by these men must have been a major cause of their strength; and the climate of Ireland favors a good complexion, an important factor in the beauty of women.

Let us return to the diffusion of potatoes in Europe. In 1619 they were bought (at 1s. per pound, a very high price) for the British queen’s household; and the elite began eating them and recommending them to the working class, who “were the last to become acquainted with this valuable root.” Finally the acute scarcity of wheat at the beginning of the nineteenth century drove the common people in Great Britain and on the Continent to substitute potatoes for bread. In fact, in the Netherlands potatoes had become “important as a food in the eighteenth century,” and “the weavers in the Dutch town of Almelo ate potatoes twice a day in 1781.” But in no other country did potatoes become a staple as quickly as they did in Ireland, and no country has been hurt so much by excessive dependence upon them. Since they are productive, nourishing, and easy to digest, and keep much longer in storage than any other major vegetable, they are now heavily consumed by the masses, as evidenced by the fact that the USSR, Poland, and East Germany account for nearly half the world’s production and consumption. Good when baked, boiled, roasted, fried, mashed or cut up into salads, stews, or casseroles, they are a major ingredient in the French cuisine, probably the best in the western world.

In Europe potatoes have been also an important food for animals since the beginning of field cultivation. Cattle, sheep, pigs, horses, and poultry fed upon them have been raised with lower inputs than would have been possible if a New World with potatoes had not been discovered. On the eve of the Second World War the portion of the crop consumed by farm animals ranged from about 20 percent in Belgium and Switzerland to 35 percent in France, more than 40 percent in Germany, and more than 50 percent in Denmark and Ireland. Potatoes have also been employed extensively in manufacturing alcohol, flour, and vodka.
When estimating the impact not only of potatoes but of all products and resources of the New World and the Old, one should consider the entire span from the discovery of America to recent times. Owing to the slow recognition of the vegetative and the culinary possibilities of potatoes, Europeans did not benefit greatly from them during the Renaissance. However, the extraordinary nutritional value of these tubers and their high yield without intensive cultivation—even on land too infertile for grain—released land, labor, management, and capital for industrial application and thus were factors in the Industrial Revolution of 1760-1830. Inasmuch as they have been more generally and more heavily consumed, potatoes have been still more instrumental in the far greater revolution of industry during the last 125 years. Their production and consumption in greater quantity by weight than any of the world's seven other staple foods—millet, barley, oats, rice, rye, maize, and wheat—affords strong proof of their utility. Potatoes are certainly one of the greatest gifts of the New World to the economy of the Old.

SWEET POTATOES

Sweet potatoes also originated in the New World, where they have been and still are a leading food. They produce enormous yields on land too poor for most other crops, do not require intensive cultivation, and are one of the easiest of all foods to clean and cook. They are an inexpensive and excellent source of carbohydrates and are rich in essential vitamins. An easy way to meet the needs in nutrient-deficient areas would be to extend the use of sweet potatoes in both the tropics and warm segments of the temperate zones. But inasmuch as few Europeans have ever learned how good sweet potatoes really are, they have not benefited greatly from them.

MAIZE

Maize originated in Mexico and Central America; and it played a significant role in the development of Mayan, Aztec, and Incan culture, as barley and wheat had done in the birth of civilization in the Old World. When America was discovered, maize was growing from Argentina to Canada. And "all of the principal commercial types of maize recognized today, dent, flint, flour, pop, and sweet, were already in existence." The earliest settlers in most American colonies had to eat maize products in some form or other to stay alive. In fact, it is highly questionable whether England could have gained a foothold and colonized any portion of America when it did if maize had not been here. This cereal was carried to Spain from the West Indies and soon after from Peru, and it spread from there to other countries in Europe. In 1530 Gonzalo Fernández de Oviedo, the first and perhaps the best chronicler of the Indies, saw maize growing well on a private estate and at the
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Atocha monastery in Madrid. In Avila, one of the coldest cities in Spain, he found it growing as well as on Hispaniola; and he said that in many places in Andalusia maize “has it made.” It was “grown in ever greater amounts from the sixteenth century on.” The Portuguese took it to Africa, India, and China. At the end of the nineteenth century maize was grown in most parts of the world with suitable soil and climate; but it accounted for only a small part of the area in cereals in France, Great Britain, Russia, Belgium, Germany, and Austria-Hungary, while it constituted more than half the cereal acreage of the United States.

Except through imports of maize and maize-fed meat, particularly from the United States, Europe was not benefiting greatly from it. But now its superior productivity and versatility have gained recognition. In the 50 years from 1913 to 1963 the area in maize in what is now the USSR rose sixteenfold. By 1923 about one-fourth as much was produced in the rest of the world as in the United States, but by 1961 the acreage in the entire New World was considerably below that of the Old. This increase in the Old World has a sound basis.

In the tropics, subtropics, and warmer portions of the temperate zones, under favorable conditions of soil and moisture, maize will yield two to three times more than any other cereal. It is one of the best of all foods for man or beast, and some 200 different products are made from it. One of them is corn oil, which the Academy of Medicine of the USSR rates best of all fats from the standpoint of cholesterol. Furthermore, there are strong reasons to believe that through improvements in high-yielding hybrid and high-protein (lysine) maize, both of which are still in their infancy, its benefits to the masses in the less developed areas of the Old World and the New will be even greater in the future. Maize seems highly responsive to improvement through both pure and applied science, and is undoubtedly one of the greatest gifts of the New World to the economy of the Old.

MAIZE AND POTATOES VS. WHEAT AND RICE

Potatoes and maize are the only additions to the world’s supply of staple foods in either medieval or modern times. The only two other staple foods that as a pair rival potatoes and maize in importance are wheat and rice. It would be a catastrophe to lose any one of the four. But in my opinion, the world would be better off without wheat and rice than without potatoes and maize. Since so many more, and so much better, things can be made out of potatoes, they would be a better substitute for rice than rice could be for them. The quantity and the variety of rye bread on grocery and bakery shelves in wheat-rich countries suggest that it would be a good replacement for wheaten bread. In fact, many people in these countries now pay a substantial premium in order to eat rye bread. Besides, flour from dried potatoes
makes good bread. Barley and oats are also satisfactory substitutes for wheat for many purposes. There is, however, no substitute for sweet corn or popcorn. And how could one make hominy, hot tamales, or tacos without maize? Or afford to fatten livestock? We now have a high-lysine maize that is richer in protein than milk and nearly as rich as meat. Think of what this can mean to hundreds of millions of protein-starved people. No genes have been found in either wheat or rice that can have any effect on their existing protein content.33

It is true that in 1969-70, the last harvest year before the recent price explosion, the combined pecuniary value of the world output of wheat and rice was a little more than double that of potatoes and maize. But this may only mean that consumers’ surplus (simply stated, the difference between what we pay for something and what we would pay if we had to) is greater on high-yielding maize and potatoes than on low-yielding wheat and rice, and for many reasons maize and potatoes cost less to produce. Until the close of the eighteenth century a wheat harvest of ten times the seed required to grow it (a costly input in cereal production) was high,34 while a harvest to yield ratio of 70 to one was not above average for maize.35 Since potato eyes with little “flesh” propagate readily, the cost of potato seed is extremely low. At least in Ireland and Scotland as early as the eighteenth century low-till “lazy beds” were widely used in growing potatoes, and at present in the United States, maize and potatoes are the chosen crops for low-till and no-till cultivation.36

We must remember, however, that wheat not only makes fine bread but good desserts and innumerable other dainties, and that in 1941 nutritious and easily digestible rice supplied about one-third of the people in the world something like half their food, with the proportion reaching 75 percent in southeast Asia.37 But polished rice is notoriously poor in vitamins, and rice is one of the most labor-intensive of all food crops. Furthermore, the health hazard to laborers growing lowland rice substantially raises its cost of production. One must not forget that potatoes will produce on a given area more than twice as much food as either wheat or rice, or that a diet of only potatoes—eaten with the peel—and milk will sustain life and health, which neither wheaten bread nor rice (plus milk) will do. In 1822 Henry Phillips said “for the lower classes” potatoes are “now the greatest blessing that the soil produces—forming flour without a mill, and bread without an oven. . . .” He also said, “the lower classes of Irish subsist almost entirely on this nutritious root, and I do not know a stronger or more healthy people in the world.”38

Nevertheless, since what consumers are willing to pay for commodities is the best single measure of their utility, my distinguished friend and colleague T. W. Schultz is probably right in telling me that
wheat, on which the world spent 50 percent more than on maize in 1969-70, and which yielded the world seven percent more calories, is the king of staple foods. But maize, which gave 19 percent more calories than rice and has a high-protein type unique among cereals, carries no health hazard in production and is being very rapidly improved, clearly ranks second. No rational method of comparison could place any other staple food above potatoes for fourth place. So America (specifically Latin America) gave the world two new staple foods that unmistakably deserve second and fourth places among our eight leaders.

**Tomatoes**

Tomatoes, which rank next to potatoes as a vegetable (at least in the western world) originated in Latin America; and apparently the name is Aztec. Like potatoes, sweet potatoes and maize, tomatoes entered Europe through Spain; and by the end of the sixteenth century, they were under cultivation in Spain, Italy, and England. It seems that, at least experimentally, tomatoes were eaten at Seville some two centuries before they were commonly used as food. The accounts of the Hospital de la Sangre record a purchase of four pounds of tomatoes on 20 July 1608 and of two pounds on August 17th. Inclusion of the tomato purchases in the kitchen accounts rather than in pharmaceutical accounts, the quantities bought, and the simultaneous purchase of cucumbers “for salad” leaves little doubt that the tomatoes went into the salad and were served to patients. But the fact that the second purchase was only half as large as the first and the failure to serve tomatoes regularly after August 17th, which must have been the height of the season, suggest that the tomato-cucumber salad did not generate insatiable demand.

Tomatoes are low in protein, carbohydrates, and calories but high in vitamins, particularly vitamin C. Fresh or processed they have a strong taste appeal. Catsup and chili sauce are leading condiments. Green tomato pickles, tomato juice, and tomato sauce are consumed in very large quantities. Because of their high acidity, tomatoes are easily canned, and they are a leading component of soups and salads in America and Europe. Fresh or processed, they readily impart their flavor to other dishes. Throughout the civilized world food would be more monotonous and less savory without them.

**Cacao**

Cacao, from which cocoa butter and all forms of chocolate are made, originated in the American tropics. Cortés and his soldiers found in Mexico a highly prized cold drink, called chocolatl, made from crushed cacao beans, peppers, and spices. Spaniards added sugar and kept the formula secret for almost 100 years. About 1700 the English further
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improved chocolate by adding milk. Because cacao trees turned out only about three pounds or less of beans each per year and required meticulous care, the beans were scarce enough to serve satisfactorily as money in the early days of colonization in Nicaragua and to some extent on Hispaniola, where gold was available. The high cost of producing cacao and very high import duties made chocolate an expensive luxury in England until 1853, when under free trade the duty was slashed to one penny per pound. Preparation of milk chocolate in bars for eating developed in the second half of the nineteenth century. Nuts and dried fruit were soon added, and sale in neatly wrapped bars followed.

In fact, during the first quarter of the present century the output of chocolate quadrupled; and by far the greatest increase in production occurred on the Gold Coast, in British Africa. There was also a marked increase in Indonesia. England, Switzerland, and the Netherlands became leaders in manufacturing chocolate candy and bars, the chief products of cacao. The tropics of both worlds have profited as producers of cacao, and many countries in the temperate zones have benefited as manufacturers, distributors, and consumers of chocolate.

Cassava

Cassava is believed to have originated in Brazil and to have spread from there to Africa, the East Indies, and the Malay Peninsula. In the tropics it supplies a high percentage of the caloric intake of poor families. For 200 to 225 million people it is their daily bread. In the Common Market, where it is used almost entirely as food for livestock, the compounded annual rate of increase in its use is 13 percent. 41 Since cassava can be, and is, grown on poor soils, has effective protection against many pests through its hydrocyanic acid and against weeds by its canopy of leaves, and because it will outyield any alternative crop in the tropics, it will probably provide one of the best means of not only maintaining the present nutritional levels in the tropics in the face of a rapidly rising population, but of raising this level in the numerous deficiency areas. The strong possibility that in future decades a critical shortage of carbohydrates may be more probable than a shortage of protein enhances the potential importance of this product of the New World.

Cinchona Trees

Cinchona trees, from the bark of which quinine is the chief but by no means the only medical derivative, originated in dense forests in the mountainous regions of Colombia, Ecuador, Peru, and Bolivia. The Corregidor of Loja (now in southern Ecuador) was treated with cinchona bark about 1630; and because of this treatment, eight years later the countess of Chinchón, wife of the viceroy of Peru, was cured of a
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severe attack of malarial fever by the quinine in cinchona bark. Appropriately the tree was named for her. For about 300 years cinchona bark and then quinine—finally isolated about 1820—were used almost exclusively against malaria, with splendid results. Dwindling supplies of cinchona bark in South America and rapid growth of world population led to an acute shortage of quinine during and immediately after the First World War. “Mainly by the interest and influence of Lady Canning when her husband was Viceroy,” cinchona trees were planted in India, which is now the leading source of cinchona bark. So for a second time, a titled lady whose husband was a viceroy played a vital role in the availability of quinine, about which a competent scholar has said: “Probably no [other] one drug has done so much for alleviation of the pains of the human race.”

TOBACCO

There can be no doubt as to the American origin of tobacco, for it was cultivated in almost every place discovered, explored, or settled from Brazil to Canada; and it was shared with the intruders, whom the Indians gladly taught how to smoke it. Europeans saw it first, in the form of very crude cigars, in Cuba, where curiously the best tobacco in the world has been grown and some of the finest cigars have been made. Two members of the crew of Columbus on his first voyage caught the first glimpse. Columbus took tobacco on his return to Spain, and his sailors doubtless took some too, along with rudimentary knowledge of how to smoke it. Except for precious metals, no other American product was ever so joyfully accepted by Europeans.

Priority in introducing tobacco into France is controversial. André Thevet claimed in 1575 that he had brought tobacco seed from Brazil about 1556 and cultivated it at Angoulême before Jean Nicot, in Lisbon as ambassador from France in 1558-60, had sent tobacco and seed to Francis II and the Queen Mother. This claim has been denied by partisans of Nicot, whose name has survived in nicotiana. Yet Thevet brought from Brazil nicotiana tabacum, the kind universally used today; and Nicot, whose seed originally came from Florida, sent to France nicotiana rustica, a sort now little grown outside of Turkey. The weed may have been carried to England from the West Indies by John Hawkins about 1565 and by Sir Francis Drake about five years later. There is a legend that Sir Walter Raleigh introduced tobacco into England from America about 1585, and James I’s insistence that tobacco was not brought to England by “King, great Conqueror, nor learned Doctor of Physicke” was aimed at Sir Walter and thus lends credence to the legend—it also casts doubt on the role of Sir Francis Drake, whose victory over the Invincible Armada undoubtedly made him a “great Conqueror.” Spanish soldiers of Charles V carried tobacco to Germany,
and probably to Italy, early in the sixteenth century. And there are strong reasons to believe it reached both France and England through nameless soldiers, sailors, and travelers long before it did through Thevet, Nicot, Hawkins, or Raleigh. Portuguese mariners took tobacco to the coasts of Africa and Asia in the sixteenth century, and it quickly spread through the inland areas.49

In view of the harmful effects of tobacco, it is ironic that the introduction of tobacco in significant amounts into Spain and from there into other countries of Western Europe largely stemmed from its use as medicine. This was chiefly due to the pen of an outstanding Spanish physician. In 1571 Dr. Nicolás Monardes, a Sevillan physician and naturalist, published a book on medicinal plants coming into Spain from America,50 in which he made claims for the preventive and therapeutic power of tobacco that not only took the medical world by storm but influenced medical thought and practice for nearly a century. Though only the first chapter of 26 folios was on tobacco, and the second chapter of 32 folios was on sassafras, to which he also attributed incredible power, the book by Monardes was generally known as a treatise on tobacco.

Drawing on Indian lore, tales from returning colonists and his own fertile imagination, Monardes claimed that tobacco had cured or could cure: headache, migraine headache, rheumatism, pains in any part of the body, stomachache, asthma, shortness of breath, obstructions in the chest or intestines, gas pains, colic in children or adults, poisonous bites and stings, abscesses, carbuncles, tumors, fresh wounds, old sores, burns, chilblains, ringworm of the scalp and dropsy.51 Tobacco would also kill or expel worms, stop bleeding, and counteract poisons—even those deadly ones used by Carib Indians on their arrowheads that were destined to baffle medical science for generations. By slowly chewing little balls of tobacco Indians could walk for three or four days through desolate country without liquids or food and not suffer from thirst or hunger, and pellets of tobacco inserted in dental caries would kill the pain and stop the decay.52

Dissemination of Monardes’ work on tobacco was not impeded by political or linguistic frontiers. In 1572 J. Gohory published at Paris his Instructions sur l’herbe petun, which is really a severe condensation of Monardes’ chapter on tobacco translated into French. An Italian translation of Monardes on medical use of bezoar stone and black salsify, published in Venice in 1576, directed attention to Monardes, whose work on tobacco could be read in Spanish by educated Italians. In 1577 the 1574 edition of Monardes’ work on tobacco and other drugs from America was “Englished,” as he put it, by John Frampton, with the engaging title Joyfull Newes out of the Newe Founde Worlde; it was published in London, and there were new editions in 1580 and 1596. The
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design and printing were excellent, and Frampton’s prose style was much livelier and more readable than the original or any other translation. In their first edition (1570) of L’agriculture et la maison rustique, Dr. Charles Étienne and Dr. Jean Liebault only related the few cures of ulcers, skin diseases, and one wound that Nicot claimed for tobacco, and said that tobacco ointment would be useful in treating wounds, and smoke would clear up congestion in the head. But, clearly drawing upon Monardes, Dr. Liebault, the surviving author, greatly expanded the therapeutic claims for tobacco in the 1602 edition. In 1623 Olivier de Serres presented a list of ailments that tobacco would cure resembling the catalogue by Monardes. Medical tracts in Great Britain in the last quarter of the sixteenth century and in 1601-02 repeated and enlarged Monardes’ claims for tobacco by adding gout and syphilis, and by even saying it would keep a man awake and put him to sleep, sharpen his appetite, and suppress his hunger!

These exaggerated claims incited A Counterblaste to Tobacco by James I in 1604, the most famous broadside against the narcotic until the last two decades. Attacking swiftly, in his preface James said: “There cannot be a more base, and yet hurtfull, corruption in a Countrey than is the vile use (or rather abuse) of taking tobacco in this Kingdome.” Against the argument “that the whole people would not have” liked tobacco so much if it had not been good for them, the king said that was only the “foolish affectation of a noveltie.” James I also said many men had smoked themselves to death, and history leaves no doubt that he was right. He maintained it was patently absurd to claim tobacco would cure all sorts of diseases and to ignore its bad side effects, which every drug has. Prescriptions of medicine must be adjusted to age, condition, and specific ailments. Yet it was alleged that tobacco would cure all sorts of diseases (“as never any drugge could do before”). If tobacco were good for one disease, should it be used for all diseases by all men at all times? If one ate the best nourishment as often as tobacco is taken, it would make his body feeble and his spirits dull. “The Indians themselves offer no price for a slave to be sold whom they find to be a great tobacco taker.” Some members of the English gentry were ruining themselves economically by spending £300 or £400 a year “upon this precious stinke.” The king pointed out that nonsmokers were being injured by unavoidable inhalation of tobacco smoke—something we have recognized only in the last few years. He also complained that human breath was being fouled by this “stinking smoke” and that it was a great injustice for a husband to force his wife to spoil her own breath by smoking herself or to “resolve to live in a perpetuall stinking torment.”

In the final paragraph of the Counterblaste King James asks: “Have you not reason then to bee ashamed, and to forbeare this filthie noveltie, so basely grounded, so foolishly received, and so grossely mistaken? In

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your abuse thereof sinning against God, harming your selves both in persons and goods. . . ." And in his final sentence James I characterizes smoking as: "A custome lothsome to the eye, hatefull to the Nose, harmefull to the braine, dangerous to the Lungs and in the blacke stinking fume thereof, neerest resembling the horrible Stigian smoke of the pit that is bottomlesse." *Long live the king!*

Skillful as he was with his pen, James I did not confine his war on tobacco to rhetoric. Despite dire need for revenue, on 17 October 1604 he raised the customs duty on tobacco from 2d. per pound to 6s. 10d., or by 4,000 percent, for the explicit purpose of keeping out all imports except the tiny amount needed by people "of the better sort" who could be trusted to use it in moderation.55

Charles I also opposed tobacco, and Cromwell disliked it too; but it was so firmly entrenched by this time that he tempered his opposition to avoid driving people into royalism. In 1613 Louis XIII restricted sales of tobacco in France to apothecaries, but no ruler was powerful enough to check its progress. Even a death penalty failed to work in Russia and in Persia, where the sultan sometimes executed offenders with his own hand.56

By 1660 many physicians and some educated laymen realized that tobacco had precious little, if any, medicinal value.57 Yet during the Great Plague of 1665 some people used snuff against it, and every day the school boys at Eton were forced to smoke tobacco to ward it off. One lad said never in his life had he been whipped so hard as he was for not smoking.58 This regimen must have lasted long enough to make some tobacco addicts at a very tender age.

In the second half of the seventeenth century use of tobacco increased phenomenally, and by the end of this period governmental opposition had ceased almost everywhere. From shortly after its foundation to the Revolution, Virginia was a tobacco colony, and Maryland was nearly so. English imports of tobacco from Virginia rose from 2,300 pounds in 1615-16 to 14,395,635 pounds in 1689, or 6,000-fold. Though much less sensationally, the trend of tobacco imports into England continued upward until the end of the colonial period. Processing these imports for domestic consumption and for re-export employed thousands of English workers. London also benefited from manufacturing pipes for England and other countries.59 About 1630 Englishmen began teaching the Dutch how to make pipes, and by 1750 there were 374 masters and 7,000 workers engaged in pipe-making in Gouda.60

Other aspects of commerce enjoyed a similar expansion. Though prohibited by the Navigation Acts of 1660 and 1663, trade between the Clyde and the tobacco colonies "was well established in the early years of the Restoration and by the last decade of the century had become quite extensive." Glasgow enjoyed a near monopoly of the Scottish
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imports of tobacco and an enormous share of the exports. Investment of capital accumulated in the flourishing tobacco trade was an important factor in the industrial development of Scotland. The manufacture of coarse cloth for slaves and of agricultural tools, and the building of ships to carry them to Virginia and Maryland and bring back tobacco, contributed strongly to the economic growth and welfare of Glasgow.61

Use of the new narcotic was rapidly becoming commonplace. In 1631 an English writer said that “at this day [tobacco is] commonly used by most men and many women,”62 and in 1788 the author of the French Academy’s prize-winning essay said that tobacco was a necessity even for paupers.63 These authors exaggerated the prevalence of tobacco, though it was certainly the most widely used of all narcotics; for the only forms common at that time were cigars, pipe tobacco, chewing tobacco, and snuff. Cigars were handmade and too expensive for popular use, and none of the others appealed strongly enough to “hook” a large part of the population anywhere. But little paper-wrapped cigars called cigarillos, or cigarettes in French and English, were destined to revolutionize production, consumption, and mortality.

Tobacco was the very worst gift of the New World to the Old.

MISCELLANEOUS

Many other products of the New World have also influenced the economy of the Old. Peanuts have been important in the New World for roasting and eating out of hand, for oil, for peanut butter, and for ingredients of many different kinds of candy. They are rich in protein and in B vitamins. Yet they have been produced and consumed in much smaller volume in the Old World than in the New. But despite the dismal failure of the British groundnut scheme in Africa, peanuts may some day be economical providers of much needed oil, protein, and vitamins in many areas of Africa, Asia, and southern Europe. Though significant for a relatively short period, American dye woods have hardly been major contributors to the Old World’s economy. Peppers and squash have been important vegetables in the Old World, as well as in the New. In fact, the zucchini type of summer squash, developed in Italy, has largely displaced native varieties in the United States. Turkeys, cranberries, and blueberries have been highly esteemed in the United States but little used in other countries. Coca leaves, a product of South America from which cocaine in various forms has been extracted, have been very effective in preventing pain in dentistry and surgery; but they have also played a leading role in drug addiction. Vanilla, which originally came from an orchid in the American tropics, is one of the most important of all flavors in the western world.

The only important beans of Old World origin are the broad bean (vicia faba), which has never been popular outside Europe, and the
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soybean, which is an important food in Southeast Asia and a leading raw material in most industrial countries, but is now chiefly produced in North and South America, where advanced technology keeps the cost of production far lower than in its original home. The common, garden, kidney, or haricot bean (*Phaseolus vulgaris*), which originated in the American tropics, is grown in bush and climbing forms in the temperate zones throughout the world. So are lima beans, which originated among the Incas on the Peruvian coast, as the name implies. Healthful, nourishing, and heavily consumed, both garden and lima beans are eaten fresh, frozen, canned, and dry. They are one of the most important vegetables in the New World and Old.

Oviedo, who deserves high rank as an amateur pomologist, said he had never seen or tasted any other fruit anywhere that was as beautiful, fragrant, juicy, or delicious as the bush-ripened pineapples he had eaten on Hispaniola, and that no fruit in the renowned orchards of the king of Naples, the duke of Milan, or the duke of Ferrara on an island in the Po River rivaled pineapples. Believing they would grow well in Andalusia, and possibly as far north as Madrid, he tried to carry to Spain pineapples as samples and “crowns,” as a means for propagation; but both rotted in transit. History has confirmed Oviedo’s enthusiasm for pineapples, for they are now the world’s second most important tropical fruit. When canned, preserved, or processed into juice, pineapples are also delicious; and they have been used considerably in European salads and desserts. Avocados and papayas, though very good, can be grown in very few places in Europe; and they have not kept or processed well enough to be transported and sold there on a large scale. Except for extensive use of papaya extract to tenderize meat, neither of these fruits has benefited Europe very much.

In view of the number and the exquisite quality of the fruits and of the great variety of useful plants that originated in the New World, this area, particularly in southern Mexico and the northern mountains of South America, was surely one of history’s finest natural seedbeds. The fertile soil, extensive pasture land, benign and varied climate, and rich mineral deposits of America, to which we now turn, have also strengthened the economy and enriched the lives of Europeans.

RESOURCES

The vast dimensions of unoccupied land in America profoundly impressed Europeans during the period of exploration, and this notion persisted for centuries along with the expectation that the space would be filled slowly. Writing of the English colonies on the North American mainland in 1767, when settlement beyond the Alleghenies was sparse, Arthur Young told “the people of England” that “we should remember, that our continental plantations are spread forth over such a prodi-
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giously extensive country, now at their command, that were it a quarter
peopled, it would form the most potent empire upon earth—An empire,
to which our European dominions would form, on comparison, but a
pitiful province." On the next page Young concluded that "it will take
many centuries to half people the whole." Nine years later, while
speaking of colonial objection to taxation by England because of their
distance from the seat of government, Adam Smith disagreed sharply on
the future rate of growth:

The distance of America from the seat of government . . . the natives of that
country might flatter themselves, with some appearance of reason too,
would not be of very long continuance. Such has hitherto been the rapid
progress of that country in wealth, population and improvement, that in
the course of little more than a century, perhaps, the produce of American
might exceed that of British taxation. The seat of the empire would then
naturally remove itself to that part of the empire which contributed most to
the general defence and support of the whole.

But inasmuch as there were no natives in the New World, as in the
East Indies, who both could and would produce significant quantities of
commodities salable in the Old World, the land in America had to be
settled by Europeans before it could make much impact on Europe.
Fortunately, however, the land itself was a powerful factor in solving the
problem: the possibility of acquiring land in the New World was a
principal attraction to immigrants from Europe. Some immigrants came
to America in search of religious and political freedom, but their number
has been exaggerated. It was easier to induce settlers to go from Spain to
America, where there would seemingly be unlimited land but no differ­
ence in religion and little difference in political liberty, than it was to
induce them to go from any other country in Europe. Though there was
little political or religious freedom in France, to get Frenchmen to go to
America was like pulling teeth.

An anonymous book on Considerations on the Nature of the Sugar Trade
(1763), written by someone thoroughly familiar with life in colonial
America, said people had gone to America either through force or to
make their fortunes. Though not the only reasons, these were the
important ones. Before 1783 the adults who came to the New World from
France and England seeking fortunes were only a small fraction of those
forced to come because of misdeeds or because they were regarded as
vagrants or burdens on society. Many others came from Europe as offi­
cials, soldiers, traders—even Hessian mercenaries—and remained.

The area of land in the New World suitable for arable agriculture is
about six times greater than in Europe. Much of it is fertile, and most of it
has adequate rainfall. Abundant and low-cost production of Old World
plants in the New World has brought substantial benefits back to the
Old. Wheat has been exported to the Old World on a large scale from the
mid-Atlantic region and the midwest of the United States, Argentina, and Canada. Rice was not grown in South Carolina before about 1695, but by 1711 it was regularly sold at Paris, Marseille, Toulouse, and Bordeaux as Carolina rice (*riz de la Caroline*). It is still exported from the United States to Europe. For more than 200 years the mid-Atlantic colonies and the succeeding states exported beef and pork to Europe on a large scale, and Argentina has been a formidable exporter of beef, particularly to Great Britain.

But the most important of all these exports from the United States to Europe has been cotton, which was perfectly adapted to the soil and climate of the southern states. Before 1860 European cotton mills received about seven-eighths of their cotton from the United States. In fact, the cheap and abundant cotton we supplied Great Britain was a major factor in the Industrial Revolution, for without it the great textile inventions which were a vital element in the revolutionary changes in industry would have been far less effective. The dependence of Great Britain upon American cotton was so great that it came very close to intervening in our Civil War on the side of the Confederacy.

America also altered the history of sugar. When America was discovered, sugar was so scarce that it was generally sold by apothecaries and so expensive that only the well-to-do could afford it. By order of Ferdinand the Catholic, sugar cane was brought to Hispaniola by Columbus on his second voyage, and more came early in the sixteenth century. Oviedo tells us that, though syrup had been made from sugar cane long before, the first sugar mill on Hispaniola, a small one using horses for power, was built about 1509 (by internal evidence) and that the owner brought sugar makers from the Canary Islands (whence the sugar cane came). The climate was ideal, the soil was fertile, and water and firewood were abundant. So the first mill prospered, and others were built in rapid succession. By 1547 there were 20 large mills, presumably powered by water, and four small mills using horses. A typical sugar mill and its plantation used from 80 to 120 Negroes, who I suppose were slaves. Before sugar mills began operating, ships were returning to Spain in ballast. By mid-century they were carrying sugar exceeding their entire outward cargoes. Cuba, Jamaica, and Mexico were also producing sugar, and Spain was at least self-sufficient. Cultivation of sugar cane began in Brazil early in the sixteenth century. Sugar was shipped from there to Lisbon in 1526, and by 1540 sugar mills were under construction in widely dispersed areas. By 1553 Mexico was producing enough to supply its own market and export a surplus to Spain and Peru. Beginning in the seventeenth century, English plantations on the Barbados and Jamaica, and French plantations on Martinique and Guadeloupe, were extremely successful in producing sugar.

No other product from the New World, except tobacco and the
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precious metals, was so eagerly sought by Europeans as sugar, and no other plant from the Old World found such a favorable environment in the New as sugar cane. In the last 400 years no other area has been found anywhere in the world that can compete effectively with the West Indies in producing raw sugar. The real cost of production in Cuba is almost incredibly low, and some other islands in the West Indies may have similar advantages. It fell in price relative to other commodities, and consumption kept pace with the expanding supply. Increased consumption of tea and coffee (after 1650) and a smaller, but significant, increase in the consumption of chocolate also resulted from the abundance and low relative price of sugar. But most unfortunately, the notion that the cheapest way to cultivate it was by gangs of slaves greatly increased the cruel African slave trade and the number of Negro slaves in the West Indies. The extraordinary success of Mexico in producing sugar with free labor suggests that slavery was not essential, and I seriously doubt that it was even economically advantageous.

Europeans drank little coffee before the middle of the seventeenth century, when coffee houses appeared in Constantinople and Venice. Other shops followed quickly in London and other English cities, and consumption spread into other European countries, despite initial opposition nearly everywhere and outright prohibition by some governments. In the beginning, coffee, which was found in Ethiopia about the fifteenth century, was grown principally in southern Arabia and was very limited in supply. But having found it would grow in Java, the Dutch sent plants to Surinam in 1718, and the British sent them to Jamaica the same year. Production spread quickly into other areas in tropical America, but did best in Brazil, which now grows more than half of the world’s output. Colombia ranks second, while Venezuela, Salvador, Guatemala, and Haiti are large producers. Only a small portion of the world’s coffee is grown outside Latin America, and nearly all countries in Europe consume it in considerable quantities. Though it is mildly addictive and harmful to health when heavily consumed, there is considerable evidence that coffee in moderation is not injurious. So the satisfaction from its use, less the cost of obtaining it, is a clear gain. The New World has benefited the Old by providing it with excellent and inexpensive coffee. In fact, it has been difficult to keep it from being so inexpensive in bountiful years that the growers in the New World are ruined.

Rich mineral deposits in America have been key factors in economic growth and welfare not only in the Old World but everywhere. Brazil has the largest manganese deposits known to exist. English, French, and Dutch Guiana are rich in bauxite. Venezuela ranks next to the Near East in proven reserves of petroleum, and Mexico and Canada have reserves far beyond their own needs. The United States has substantial reserves
but far less than it requires. The Mesabi Range had one of the finest and best located deposits of iron ore that has ever been available. Products of this ore and of coal, of which the United States had and still has by far the largest reserves known anywhere, have been exported to the Old World in great quantities, mostly in the form of steel and machinery. Chile and Venezuela also have considerable iron ore, and Bolivia is a leader in tin mining. Guatemala and the Dominican Republic have promising nickel mines, and Canada is supreme in high-purity nickel, one of the most important metals in advanced technology. It is an essential ingredient of austenitic stainless steel, and it enhances the low-temperature capability of constructional steel. It also toughens, strengthens, and increases the heat resistance of some special alloys. Bolivia, Chile, Mexico, and Peru have rich copper mines; and Chile is the world’s only source of natural nitrate of soda. Canada has important uranium mines.

Most of the world’s emeralds come from Colombia. Guano is available only on Pacific islands belonging to Peru and Ecuador. Forests in North America supplied Great Britain with much-needed lumber for construction, as well as masts, timber, and tar for shipbuilding, during the colonial period and many decades thereafter; Latin America has sent many kinds of fine wood to Europe. America has also supplied Europe with hides at low cost and in large quantity for shoes, gloves, jackets, furniture, and the like; furs from Canada and the United States have adorned the European rich. The influence on Europe of precious metals from America will be discussed in a later section.

Of all the resources of the New World, the most immediately exploitable and one of the most beneficial to Europe for centuries was the lowly cod on the Newfoundland Banks, the coast of Labrador, and the Gulf of Saint Lawrence, “For no other part of the world has ever been so rich in edible fish,” particularly codfish. John Cabot, the discoverer (1497), and Gaspar Corte Real, the rediscoverer (1500), reported that waters around Newfoundland were teeming with codfish. In fact, “Cabot took plenty of codfish simply by letting down and drawing up weighted baskets”; and on 18 June 1534 the crew of one of Cartier’s ships, obviously not ideally equipped for fishing, caught more than a hundred big codfish on the west coast of Newfoundland “in less than an hour.” By 1504 vessels from Portugal and France were fishing for cod in Newfoundland waters and curing the catch on shore. They were soon joined by Spanish vessels and later by English. Portuguese dominance of the lucrative spice trade with the East Indies diverted Portugal from the Newfoundland fishery, and Spanish participation was minimal after her naval losses near the end of the sixteenth century. The French and the English continued, competing in fishing, diplomatic maneuvering, and armed conflicts, in which rights to fish and to land for curing fish
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were important issues. Capitalists in both countries financed their fishing and there were notable improvements in seamanship, the size and strength of vessels, and the arts and artifacts of navigation. New England entered the fray in the seventeenth century and became the leader in the eighteenth.82

Protein was critically short in most places in Europe during the first three centuries of modern times. Fish was the cheapest form of animal protein, and dried cod was the cheapest form of edible fish in most places, except possibly fishing ports and their nearby hinterlands. Cod had the great advantage of being easy to flake and to cure by salting or drying. When cured, it kept well and would stand shipment over great distances even in the tropics or in Mediterranean countries during the summer.83 Dried cod was heavily consumed in Europe, particularly in Catholic countries, and by the poor everywhere.

Unlike herring, tuna, sardines, and salmon, which have to be taken with restraint to prevent their extinction, the codfish off the northeastern shores of the United States and Canada have been non-depletable. The combination of plentiful food, favorable climate, and extraordinary fecundity (a female weighing 51 pounds lays nearly 9 million eggs a year)84 enables codfish to multiply as fast as man can catch them. The role of fishing rights, curing rights, and fishing ports in diplomatic negotiations and peace treaties affecting the habitat of the cod85 shows how important this great and inexhaustible resource was to the leading countries of Western Europe during the first three centuries following the discovery of America.

PRECIOUS METALS

The greatest impact of the New World upon the Old during the Renaissance was made by the enormous influx of precious metals from the New World, particularly from the mines of Mexico and Peru.86 This inflow awakened the flagging interest in the New World as nothing else could have done. Financial support for voyages of exploration was much easier to obtain; sailors and settlers were much easier to recruit.87 A smouldering desire for colonies in other countries was intensified. Because of the age-old overestimation of gold and silver, optimism among business leaders and political rulers increased, and the downward trend of commodity prices that had persisted throughout the fifteenth century came to an end.

A preponderance of silver over gold in the imports from the New World made silver the virtual monetary standard in most countries of Western Europe and drastically raised the bimetallic ratio of gold to silver. The influx of precious metals generated a rise of commodity prices that, in amplitude, duration, and area affected, exceeded anything the western world had ever known. Whether the term Price Revolution used
by Georg Wiebe in the title of his *Geschichte der preisrevolution des XVI. und XVII. Jahrhunderts* accurately describes the price rise has been seriously questioned, because in terms of twentieth-century price inflation it seems like almost perfect stability. But whether a change is revolutionary depends on what has gone before, not on what comes after. For example, industrial change in Great Britain in 1760-1830, the classic period and leading country in the Industrial Revolution, was infinitesimal in comparison with the industrial innovations in almost any advanced country in the present century. Nevertheless, the industrial transformation of 1760-1830 is properly called the *Industrial Revolution*.

The Price Revolution began in Spain, the country that received all the gold and silver that came into Europe legally from Hispanic America in the first century and a half after the Discovery. The rise in prices commenced at the beginning of the sixteenth century in Andalusia, where the royal and private bullion came, where most of it was coined, and where a large part of it went into circulation. Reflecting a far greater rise in the first 50 years, prices more than quintupled in Andalusia, more than quadrupled in New Castile—the region in closest economic contact with Andalusia—and rose 3½-fold in Old Castile-León and in Valencia during the sixteenth century. On the average the price levels in the four regions for which I have made index numbers for Spain rose slightly more than fourfold in the sixteenth century.

From the price and wage data compiled by Thorold Rogers for England and the questionable price and wage series collected by Vicomte d’Avenel for France, Georg Wiebe computed decennial index numbers of prices and wages in England and quarter-century indices (the best he could do from the scant and heterogeneous data) of prices and wages for France, using 1451-1500 as a base.

From the index numbers of the price averages for the four Spanish regions for which we have data, thus giving us indices for Spain, I have computed decennial index numbers for comparison with Wiebe’s English indices and 25-year indices for comparison with his questionable French indices. In every quarter of the sixteenth century the increase in prices over the preceding one was greater in Spain than in France. In the last quarter-century French prices were only 2.2 times their first-quarter level while Spanish prices were 2½ times higher. Instead of declining, as in France, Spanish prices in 1601-25 were more than three times higher than in 1501-25. Since the 25-year French prices rose nearly as much from the first to the fourth quarter of the sixteenth century as ten-year English prices did from the first to the tenth decade, the price upheaval seems to have been greater in France than in England. The ten-year average of Spanish prices rose 85 percent from 1501-10 to 1551-60 while the decennial English prices were rising 40 percent. Decennial Spanish prices peaked in 1601-10—the decade after decennial...
imports of gold and silver from America reached their zenith—at 3.4 times the 1501-10 level. The ten-year averages in England reached their apex 40 years later at 3.5 times the 1501-10 level. The trend of silver prices was downward in Spain and roughly horizontal in France and England in the second half of the seventeenth century, when gold and silver imports from the New World were too low to meet the demand for art and industry and to provide enough money to outstrip the increase in production of goods.

An important benefit of the influx of specie into Europe was facilitation of a shift from barter in various forms to a money economy in Germany, Russia, and even more economically developed countries. Partial payments of wages in kind in advanced countries declined notably during the Price Revolution, and feudal dues were increasingly converted into monetary payments. A shift from subsistence farming to commercial agriculture, aided by the increased money supply, raised agricultural output through specialization and more intensive cultivation. It also widened the market for industrial products.

A salient factor in European economic development was the increase in profits resulting from a great lag of wages behind rising prices in England and France, and probably in Germany, during the Price Revolution. While the 25-year average of French prices in terms of silver was rising about 120 percent from the first to the fourth quarter of the sixteenth century, the 25-year average of wages was rising only about 23 percent. While decennial index numbers of prices in terms of silver were rising 136 percent in England from the first to the tenth decade in the sixteenth century, wages were rising only 31 percent. Inasmuch as on the average two-thirds of the cost of an article bought by a consumer represented direct and embodied labor, and this cost was rising less than a third as much as the price of the article, profits were necessarily inflated. In 1626-50 quarter-century indices of prices in France were again about 120 percent above the 1501-25 level while wages were only 38 percent higher. By 1643-52 decennial prices in England were 248 percent higher than in 1501-10, and wages were only 84 percent higher. With this generation of profits, there is small wonder that John Locke said “if we look back, we shall find, that England never throve so well, nor was there ever brought in to England so great an increase of Wealth since, as in Queen Elizabeth’s and King James I. and King Charles I. time.” And Professor John U. Nef has characterized the great advances in England in 1540-1640 as an early Industrial Revolution.

According to d’Avenel’s data, both prices and wages in France moved horizontally in the last two quarters of the seventeenth century. Decennial prices also moved horizontally in England in the second half of the seventeenth century while wages were rising substantially. Yet at
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the close of the century the gap between wages and prices opened in the sixteenth century remained abysmal.

Profit inflation in France and England from the lag of wages behind rising prices increased the incomes of capitalists and thus stimulated capital formation. This came when knowledge of business risks and willingness to take them were low, and propensity to spend high incomes on luxuries or to invest them in conventional real estate was high. Hence the inducement to invest savings in productive enterprise afforded by the high rate of profits was extremely advantageous. Furthermore, the continuous rise in prices sped up the investment of savings. More capital became available for the utilization of costly technological innovations and for agriculture, mining, housing for a growing population, colonization, canals, highways, fisheries, and the merchant marine. Employment of labor for the purpose of making a profit—that is, capitalism—increased. Feudalism and the guild system receded. Both the rate of progress and the rise of capitalism seem to have been considerably greater in England than in France. France’s wars against Charles V and Philip II, the bitter conflict between Huguenots and Catholics, and the civil disorder during the minorities of Louis XIII and XIV account for much of the difference. At the beginning of the sixteenth century the French economy was far more advanced than the English. Hence much of the progress in England consisted of imitating and trying to catch up with her neighbor. But I do not mean to say that France was not still ahead of England economically at the end of the sixteenth century. We must remember too that the wage-lag stimulus may have been less in France; for the French price and wage series are too crude and incomplete to be taken at complete face value.

In Spain, where the Price Revolution was most violent, wages almost kept pace with prices until about 1570 and forged ahead after this date. The leading industrial cities of Castile grew rapidly in the sixteenth century, but far less material progress was achieved than in England or France; and decadence began near the end of the sixteenth century, soon after wages had moved ahead of prices. The scant data we have for Florence indicate that wages did not lag far behind prices; the great center of art, industry, science, and finance could not maintain her economic leadership.

Though price-wage data presented graphically by Dr. M. J. Elsas for Augsburg, Würzburg and Munich include the prices of only one or two grains and the wages of only one or two grades of labor, it seems that in all three of these cities wages lagged behind prices about as much as in England from the beginning of the sixteenth century until some time during the Thirty Years’ War. During the Thirty Years’ War wages rose and prices fell sharply, and the price-wage ratio remained decidedly unfavorable to capitalistic enterprise for a generation or two. When
wages were lagging behind rising prices, the Fugger of Augsburg were probably richer and more powerful than any other capitalists in Europe. Southern Germany was a hotbed of capitalism and was on the frontier of technological progress, particularly in mining and textiles. The Thirty Years’ War initiated a long period of retrogression, and the rising economic individualism gave way to renascent feudalism and state control. The sharp rise in the ratio of wages to prices may have been the medium through which decimation of the population and destruction of property in Germany during the Thirty Years’ War hampered economic development.

It would be ridiculous to argue that the great lag of wages behind prices during the Price Revolution was solely responsible for economic development or the rise of modern capitalism. The emergence of national states certainly played an important role; so did pure and applied science and many other factors. Much as I admire Max Weber as a scholar, I believe that he and his numerous followers have exaggerated the influence of Protestantism on the rise of modern capitalism and on economic growth. But I have no serious doubts about other commonly accepted factors.

The discovery of America and of a passage to the East Indies by the Cape of Good Hope, singled out by the Abbé Raynal as the greatest events in the history of the world, were complementary. For hundreds of years the drainage of specie to the East Indies to pay for the small amounts of spices that could be brought to Western Europe by long and costly routes over both land and sea had been a major monetary problem, because specie that flowed to the Far East was not coined and put into circulation but hoarded or used for ornamentation. Hence that specie did not raise prices and reverse the flow, as in the West. By decreasing the cost of spices, the all-water route to the East Indies would have depleted the money supply to such an extent that the consequent fall in prices would not have been tolerated. If money had not been either marked up in denominational value or debased at frequent intervals, which would have generated confusion and distress, deflation would have had serious consequence. This problem was averted by the huge imports of silver from Mexico and Peru which provided the best of all media for trading with the East Indies. So Europeans could benefit from cloves to aid in preserving meat and from other spices as condiments in far greater quantities than would have been possible without the two great discoveries.

The great success of the Dutch East India Company, whose dividends averaged 18 percent from 1602 to about 1797, was a pillar of strength in the Dutch economy. The profitability of the English East India Company was similar. “We learn from Macaulay’s History that during the twenty years succeeding the Restoration, the value of the
annual imports from Bengal alone rose from £8,000 to £300,000, and that the gains of the Company from their monopoly of the import of East Indian produce were almost incredible.102 Though joint-stock companies antedate the English and Dutch East India Companies, the fabulous dividends paid by these two concerns fomented their progress and diffusion. "It was these great successful companies which made the device of share capital generally known and popular; from them it was taken over by all the continental states of Europe."103 The profits from the East India trade must have contributed powerfully to capital formation and hence to the rise of modern capitalism and to economic development. But without the enormous imports of silver from the New World, a balance of payments problem with the Far East, similar to that of industrialized nations with the oil-rich Arab countries of the Near East at present, could have generated prosperity in the East and engendered economic stagnation or decline in the West.

CONCLUSIONS

America was discovered, explored, and settled because powerful Europeans believed there would be a net gain. Although there have been serious disadvantages, Europe has gained, and the gain has been substantial.

Yet the contribution of American fauna to the economy of the Old World has been modest. For example, turkeys, which have never been popular outside this hemisphere, may have made the greatest impact of the American animals produced in the Old World. Despite intensive experimental breeding of farm animals, the only new breed we have supplied Europe has been Santa Gertrudis beef cattle, and they are largely a combination of British shorthorns and Indian brahmans. Furthermore, they have reached Europe too recently for anyone to tell how useful they may be. The beaver, mink, seal, otter, and other wild fur-bearing animals have protected Europeans and Asians from severe cold and have adorned their rich. Vicuna fur has also been highly esteemed in the Old World. But by far the most important American animal to Europe has been the inexhaustible codfish of the Gulf of Saint Lawrence, the Grand Banks, and the coasts of New England, Labrador, and Newfoundland. Often called the beef of the sea, and rightly so, codfish has been the cheapest and, when cooked well, one of the best sources of protein for the European poor. Also highly beneficial have been beef, pork, and poultry products of Old World origin produced at low cost in this hemisphere.

Fortunately, the great strength of the American flora has more than offset the weakness of the fauna. Probably the two most important plants that have originated in the New World are maize and potatoes. For these are the only additions to the world's staple foods since ancient
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times, and it is hard to see how maize could be ranked lower than second or potatoes lower than fourth among the eight staples. Maize is still less highly esteemed in Europe than wheat, to which I concede first place; but maize has made sensational progress in Europe in the last 60 years, and I believe it is destined to surpass wheat some day. Furthermore, we must not forget that wheat has made no headway against maize as the leading food of the native races in Mexico and on the Pacific coast of South America, its ancestral homes. Potatoes are the leading vegetable in the world; and tomatoes, which also originated in Latin America, rank second. Cassava, another product of Latin America, supplies the daily bread for more than two hundred million people in the tropics all around the globe. Pineapples, the second ranking tropical fruit, originated in tropical America, as did cacao, from which cocoa butter and chocolate are made, and vanilla, which is perhaps Europe’s most popular flavoring extract. Except for broad beans, both the green beans and the lima beans grown in Europe are products of this hemisphere. Bananas, the most important of all tropical fruits, were carried from Spain to Hispaniola in 1516 and (according to Oviedo, grown without any cost!) spread rapidly onto other islands in the Caribbean and onto the Pacific coast of South America. And those areas have supplied Europe with most of its bananas for the last 400 years. Sugar cane was also taken from Spain (that is, the Canary Islands) by order of Ferdinand the Catholic on the second voyage of Columbus to Hispaniola, and it found such a favorable environment in the West Indies that the price of sugar dropped and consumption rose phenomenally. Coffee is another Old World product that Spain carried to the New World, where Brazil alone produces more than half, and Latin America nearly all, of the world supply. Moreover, it is a favorite beverage in Europe.

The anonymous author of the *Discours* said one important effect was to move peasants from fields into workshops, and shortly after he wrote they were moving into factories. This shift of manpower, which was an essential factor in the industrialization of Europe, was made possible by a dependable supply of food from the New World at low cost and by increased output of European farms, particularly in Great Britain and the Netherlands, resulting from agricultural improvements and better farming.

The precious metals attracted far more attention during the Renaissance than any other product of the New World, and this interest was not altogether misplaced. For gold rushes to, and in, the New World began in the sixteenth century, not in the nineteenth. Because of the bounty they seized, Cortés and Pizarro were key figures in the exploration, settlement, and early development of America. After the conquest of Mexico and Peru, Spaniards were much more willing to emigrate, and
financial support for colonization was much easier to obtain. Spanish rulers and businessmen felt stronger and faced the future with greater confidence. These sentiments were further strengthened by the huge stream of silver that poured into Spain after the discovery of the rich mines at Zacatecas, Guanajuato and Potosí and the introduction of the mercury-amalgam process of silver mining in the middle of the sixteenth century. Because of the money illusion, the larger balances of money held by Spaniards (and, with a little lag, by other Europeans) and the rising trend of commodity prices generated optimism and fired imagination.

Since there was chronic unemployment and underemployment when the specie imports from the New World began, the larger stock of money increased employment and output before prices rose very much; and this raised the level of national income. In some countries, particularly England and France, and apparently in Germany, money wages lagged behind rising prices and thus inflated profits, stimulated capital formation, increased the incentive to invest, and induced economic growth. In some other countries, and regions within countries, the increased money supply eased the transition from subsistence farming and relatively self-sufficient households to commercial farming and work for hire, which led to highly beneficial division of labor and further increased national income. This shift also lessened the pressure of the rising money supply on the price level, because the quantity of goods exchanged against money rose. The cruel effect of the wage-lag was lessened by the increase in employment, but in some countries there was a substantial drop in real wages, which were already low relative to needs. But the people as a whole gained immediately, and succeeding generations of wage earners were liberally rewarded for the sacrifice sustained by their ancestors.

Finally, the greatest gift of the New World to the economy of the Old was intangible. It was the enormous increase in the number of people in the world with Western culture, science, technology and civilization: they had learning, originality, and imagination making them no less capable than inhabitants of the Old World in hatching new ideas, achieving scientific discoveries, making inventions, and extending the boundary of knowledge. Contact with another race having vastly different values, customs, and institutions in an entirely new environment also benefited the people of the Old World by making them re-examine their own values, customs, institutions, and environment.
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APPENDIX: SYPHILIS

Our problem is whether syphilis virulent, widespread, and abundant enough to affect economic life existed in pre-Columbian America; if so, whether it was brought to Europe from the New World; and whether syphilis of this type existed in the Old World before Columbus returned from his first or second voyage. The existence or non-existence in the Old World of some syphilis germs somewhere at some time before 1493 (a subject debated by medical historians during the last hundred years), though obviously significant in medical history, has no bearing on the impact of the New World on the economy of the Old.

Oviedo, who spent about half of his adult life in America, reared a family on Hispaniola and was benevolently disposed toward Indians and Spaniards (though not toward many public servants) said that not only did syphilis exist in the New World long before white men came but that very few Indians had not had syphilis, "one of the most hopeless of all diseases." Bartolomé de Las Casas, whose admirable friendship with Indians began in 1500, asked natives on many occasions whether there was syphilis in pre-Columbian America and was told that it had been there longer than anyone could remember. Las Casas said it was carried to Europe on the first voyage of Columbus, and Oviedo put it on the second. Dr. Ruy Díaz de Isla, perhaps the first great authority on syphilis in Europe, whose clinical description leaves no doubt that he knew it when he saw it, says that at Barcelona—whither the Admiral went by sea to report his success to Ferdinand and Isabella—he treated members of the first crew of Columbus and many other sufferers for syphilis, that it came from Hispaniola, and that it was not known in Spain or discussed in books on medicine before that time. He also said that from Barcelona syphilis spread all over Europe and to all known and accessible parts of the universe.

In 1493 Díaz de Isla was 31 years old. It seems reasonable to assume that for six or seven years he had practiced medicine at Seville, a flourishing river port, to which ocean-going vessels came with crews not noted for chastity. If there had been syphilis in Europe he would have had many cases in Seville and would have remembered them during the ten years between 1495 and 1521 that he spent as a syphilis specialist in the Hospital de Todos los Santos in Lisbon, where he wrote his great monograph on syphilis "from the first letter to the last" while associated with other syphilis specialists. Another distinguished Sevillan physician, Dr. Nicolás Monardes, said that the Indian captives on the first voyage of Columbus were the carriers of syphilis to the Old World, "first of all from Santo Domingo." Still another distinguished Andalusian physician practicing in Mexico said in 1591 that syphilis originated in America, that there was no province or country in the world with as
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much syphilis as Mexico, and that there was no syphilis in Europe until "that cursed disease went from here."\(^{113}\)

The extraordinary amount of syphilis in Seville and Lisbon, the gateways to and from America, and the leadership of Spanish and Portuguese physicians in knowledge and therapy of syphilis\(^{114}\) suggest American origin. So does the fact that there was no name for syphilis in Europe before 1493, while a hundred or more Indian nations or tribes in the New World had specific names for it. The lack of literature on syphilis in Europe before 1493 and the sudden flood of it in the next decade or so point in the same direction.

Let us revert to two earlier eyewitnesses of the emergence of syphilis in Europe. Oviedo had lived or traveled in Spain, France, Naples, and Sicily; and he said he had been in England, Germany, Holland, and Flanders. It stands to reason that one with eyes and ears so sensitive to news would have remembered and reported syphilis in some of these places, instead of saying there was none in Europe, if it had been there and virulent. And if there, but not virulent, why did it suddenly become so after 1493? In his magnificent history of Italy, written about 1535-40, Guicciardini said that syphilis was unknown "in this hemisphere" until brought from the Indies by Columbus about the time (1495) Charles VIII marched into Naples. It is hard to believe there could have been enough active syphilis in Europe prior to the discovery of America to affect the economy without Guicciardini’s finding evidence of it. He characterized syphilis as a calamity of the greatest magnitude and said it killed or permanently crippled many men and women.\(^{115}\) Writing before 1521, Diaz de Isla ventured the assertion that "there is not a village in all Europe with a hundred inhabitants in which ten persons have not died [of syphilis] and a third of the people have not been infected."\(^{116}\)

Syphilis from the New World shortened productive lives, reduced the number of days worked in active years, required costly medical treatment, and physically harmed not only the victims but often their children, and sometimes their grandchildren, as well.\(^{117}\) Next to tobacco, it was the most harmful gift of the New World to the Old.

NOTES

I am indebted to my distinguished former colleague and lifelong friend John Tate Lanning, my colleague and friend T. W. Schultz, and—above all—my wife Gladys Dallas Hamilton for reading, criticizing, and improving this paper. Dr. William Whiteside, Farm Adviser in Cook County, has kindly supplied data on world yields and calories per kilogram of agricultural staples. The mistakes are all mine.

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4. This failure was frequent in Smith's time. In fact, the Abbé Raynal was himself notorious for plagiarism even for his day. See Charles Coquelin and Gilbert U. Guillaumin, *Dictionnaire de l'économie politique* (2 vols. Paris 1853) 2. 493.
10. Hospital de la Sangre, *Libros de recibos y gastos*, legajo 455. Prices of potatoes occurred frequently enough in 1601-50 for them to be included in my index numbers for Andalusia. (Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* [Cambridge, Mass. 1934] 358-369). Lacunae were troublesome only near the end of this period, not at the beginning. But I could find no potato prices in New Castile, Old Castile-León or Valencia abundant, continuous, and reliable enough to go into my index numbers for 1601-50.
13. My colleague and friend Emmett Larkin kindly supplied the information from which I computed this figure. Cf. Bosson (n. 11 above) 44-45.
14. Because of the fondness of Irish immigrants for potatoes, they are still called *Irish potatoes* in many parts of the United States.
15. Adam Smith (n. 3 above) 1. 161-162.
18. "Potatoes . . . form one of the side-dish luxuries of the wealthy; and perhaps are the most wholesome of all their dainties!" (Phillips [n. 11 above] 2. 96).
25. Slicher van Bath (n. 17 above) 176.
29. Hasselbach (n. 27 above) 13.
30. Cf. Slicher van Bath (n. 17 above) 177.
31. Hasselbach (n. 27 above) 20-21.
32. For example, by selection, in 50 generations the oil content of maize was raised from 4.7 percent to 15.36 percent by maize scientists in Illinois. Mangelsdorf (n. 22 above) 40.


35. In 1540 Oviedo harvested 155 fanegas of maize from one fanega planted on his estate on Hispaniola, 3½ leagues from Santo Domingo City (Oviedo [n. 24 above] 1. 266); in 1591 Juan de Cárdenas said that in Mexico from one fanega one harvests 100 or 200, “and these without much work but easily and untiringly, not waiting almost a year for it, as one does for wheat.” Maize is harvested in three or at most four months after it is planted, and sometimes within 50 days (Juan de Cárdenas, Primera parte de los problemas y secretos maravillosos de las Indias [Mexico 1591] fol. 140).

36. See, for example, “No-Till Unit Does the Job,” Prairie Farmer 147 (1 March 1975) 31.


38. Phillips (n. 11 above) 2.86, 95.


40. Libros de recibos y gastos (n. 10 above) legajo 459.


42. Linnaeus took the “h” out of Chinchón to make cinchona. Dr. John Tate Lanning kindly supplied this information.

43. Harold Good, Plants and Human Economics (Cambridge 1933) 150.


46. Charles Estienne and Jean Liebault, L’agriculture et la maison rustique (Paris 1570) fols. 79, 81. Dr. Charles Etienne (modernized spelling) died while writing this book, and his son-in-law Dr. Jean Liebault wrote a substantial portion while completing it, as the preface discloses. So I am ascribing joint authorship to him, as he did to his late father-in-law in revised editions. The Missouri Botanical Gardens, Saint Louis, kindly and quickly made this rare edition accessible.


49. C. M. MacInnes, The Early English Tobacco Trade (London 1926) 1-3.

50. Nicolás Bautista Monardes, Segunda parte del libro de las cosas que se traen de nuestras Indias Occidentales, que siruen al uso de medicina. Do[n]de se trata del tabaco y de la sassafras . . . (Seville 1571).

51. Ibid., fols. 6-11.

52. Ibid., fols. 12-25.

53. Estienne and Liebault (n. 46 above) 79-81; (Paris 1602) 123-127.

54. Olivier de Serres, Théatre de l’agriculture et mesnage des champs (Rouen 1623) 572-573, 866.

55. The Workes of his Most High and Mighty Prince, James, King of Great Britain (London 1616) 224.

56. MacInnes (n. 49 above) 24-26; Berthold Laufer, Introduction of Tobacco into Europe, Field Museum of Natural History, Anthropology Leaflet 19 (Chicago 1924) 62-63.


58. Laufer (n. 56 above) 44-45.

59. MacInnes (n. 49 above) 150-152.


62. Cf. MacInnes (n. 49 above) 47-48; Laufer (n. 56 above) 16-17.
What the New World Gave the Economy of the Old

63. *Discours* (n. 5 above) 24.
64. Oviedo (n. 24 above) 1. 280-284.
66. Adam Smith (n. 3 above) 2. 124.
70. Juan Carlos Pareira Pinto, *La caña de azúcar en la economía y la sociedad brasileña* (Buenos Aires 1968) 4-5.
71. Morison (n. 44 above) 2.105; Ramiro Guerra y Sánchez, *La industria azucarera de Cuba* (Havana 1940) 7; *Considerations* (n. 67 above) 7.
72. Oviedo (n. 24 above) 1.118-122.
75. Cf. *Considerations* (n. 67 above) 10 ff.
76. Humboldt (n. 74 above) 3.7-8.
77. Concerning nickel I have been advised by my former student and life-long friend Herbert Allen, Chairman of the Board of Directors of Cameron Iron Works and of the Board of Trustees of Rice University.
78. Morison (n. 47 above) 470; Ramiro Guerra y Sánchez, *La industria azucarera de Cuba* (Havana 1940) 7; *Considerations* (n. 67 above) 7.
80. Morison (n. 47 above) 356, 359. See also 364, 369.
81. Innis (n. 79 above) 38-39.
82. *Discours* (n. 5 above) 24. See the excellent account of codfishing off the coasts of Newfoundland, Nova Scotia, and New England and of the impact of codfish on economic life, in Harold A. Innis, *The Codfisheries*, cited in n. 79 above. It is a masterpiece in economic history.
83. Cf. Innis (n. 79 above) 51.
85. *Discours* (n. 5 above) 58 ff.
86. For an account of the legal imports of gold and silver, the proportion between the two, the portions that came from different areas in Hispanic America, and the amounts belonging to the crown and to private owners, based on the manuscript records of the men who handled the treasure from the American mines to the House of Trade in Seville, see Earl J. Hamilton (n. 10 above) 3-72.
87. The direct influence of American gold and silver on Spanish life is shown by the use Cervantes made of treasure and treasure fleets in *Rinconete y Cortadillo* and *El celoso estraemeio*, two of his *Novelas ejemplares*, which contain the best descriptions I know of Spanish life and customs.
88. Earl J. Hamilton (n. 10 above) 202-203.
91. Since the French archives, particularly the Archives de l'Assistance Publique at Paris, the Archives Départementales des Bouches du Rhône and the Archives Communales at Marseille have account books and other records with good price and wage data extending back into the Middle Ages, and since France has been a world leader in intellectual curiosity, culture, and research for the last thousand years, it is strange that no comprehensive and trustworthy price and wage data for France during the Price Revolution are available.
Science and Trade

93. Earl J. Hamilton (n. 10 above) Appendix 8.
94. Jean François Melon, *Essai politique sur le commerce* (Amsterdam 1735) 193-194. Apparently this is a reimp[
100. For that matter, so have his predecessors, including John Law of Lauriston, John Stuart Mill, and Jules Michelet. The latter was one of the worst offenders among predece[
104. Oviedo (n. 24 above) 1. 292.
105. *Discours* (n. 5 above) 78 ff.
106. Cf. Slicher van Bath (n. 34 above) 262-356.
107. For a masterly review of this literature, see Samuel E. Morison (n. 44 above) 2. 193-218. It is interesting to note that he ends his survey as follows: "So the preponderance of evidence seems to point to America as the original home of the Sinister Shepherd" [meaning syphilis] (p. 214).
110. Ruy Díaz de Isla, *Tractado contra el mal serpentino que vulgarmente en España es llamado bubas* (Seville 1539) fols. ii-iii, iii-iiii. The Huntington Library has kindly and quickly made this extremely rare edition accessible.
111. Owing to his successful experience with treating syphilis beginning in 1493, Díaz de Isla may have been called to Lisbon near the beginning of the reign of Emanuel the Fortunate (1495-1521); but if he had been, he probably would have published his book earlier. My guess is that he was there and wrote his book about 1510 to 1520. He was in this hospital again in 1524 and 1528; and in the latter year he made the final corrections on his manuscript (Ibid., fols. ii, iii).
112. Nicolás Bautista Monardes, *Dos libros, el uno que trata de todas las cosas que traen de nuestras Indias Occidentales, que siruen al uso de medicina...* (Seville 1569) fols. iii-iv.
113. Cárdenas (n. 35 above) fols. 190, 197-198.
Part XI

EPILOGUE
For a long time the discovery of America has been counted as one of the three major turns in the development of Western civilization. Let us stress the word "Western": the original inhabitants, had they been consulted, might well have called it the greatest catastrophe in their history. To some of my fellow medievalists, who would contend that modernity began as early as the surge of European civilization from the ruins of the Roman empire, and to some of my post-Enlightenment colleagues, who would deny that modern history began before the French and the Industrial Revolutions, our conference has opposed a formidable documentation to show how truly revolutionary was the impact of 1492. It is indeed a great relief to have a precise, clear-cut, indisputable date to begin an age. Nobody can tell just when the Roman Empire gave up the ghost; the Industrial Revolution was a gradual process without sharp beginning or end; the French Revolution had at least one forerunner whose bicentennial we are invited to celebrate; but the New World came into sight exactly on 12 October 1492. That Columbus did not recognize its identity, just as the Vikings had not suspected its importance, makes no great difference: once he got there, America emerged from isolation and has had to be reckoned with ever since. By welding a second hemisphere onto the first, he doubled the white man's chances. Never had such an ample opportunity been offered since the creation of Eve from Adam's rib.

Yet we must acknowledge that the precision of the date is deceptive.
Epilogue

Adam, we are told, knew Eve only after he lost the bliss of the Earthly Paradise, and the first fruit of that knowledge was named Cain. Likewise, Europe's appreciation of America did not follow immediately the thrill of discovery, but came gradually, after a number of false starts. From our conference, the impact of the New World on the Old emerges as a tangled pattern of understanding and misunderstanding, enjoying and loathing. While I shall not presume to sum up what so many eminent scholars have said, I shall venture a few observations.

As an economic historian, I submit that in the discovery, the opportunity was ample but the timing was bad. The New World was found either too early or too late—too late to be taken in the stride of high medieval prosperity, too early to hook onto the high early modern growth. Sixteenth-century Europe was full of ideas, but had no longer or not yet the demographic surplus, the political solidity, the religious tranquility, the personal freedom which were required for massive exploitation of an uncalled-for, enormous continent. The East Indies and China, brought again within reach, were more than was needed to occupy whatever energies could be spared for expansion; a whole New World in addition was simply too much. The seamen were so admirably ready that in less than 40 years they almost completed the reconnaissance and circled the earth. The politicians and strategists were not. It is no wonder that eventually the best benefits were reaped not by the major political and economic powers which dominated the European scene of the sixteenth century, but by peripheral nations which had not committed their energy to the struggle for hegemony and market control in the first Age of Discoveries.

Indeed, for a moment it looked as if Europe would reject the unsolicited gift of 1492. As the wild expectations of the discoverer failed to materialize, as it became evident that the new land was not exactly the golden and spicy paradise of the Orient, "this affair of the Indies fell into such ill repute" (infamia is the word used by Columbus) that the Catholic kings had to offer pardons to condemned criminals on the sole pledge that they work for a term in Hispaniola. The Italians, who had more navigational experience than the Castilians and more liquid capital than the Portuguese, wanted trade, not land; when Columbus offered a share of his profits to Genoa's mighty Banco di San Giorgio, the administrators showed no eagerness to join the enterprise. The Portuguese had bitten off more than they could chew in developing the eastern route to the Indies; snubbed by the Venetians and indebted to the Germans, they did not care to promote a competing western route. The Castilians thirsted for power, for land, above all for gold. Eventually they got both what they wanted and what they had not bargained for: inflation. The humbler treasures of America—the maize, the potato, the tomato—were not as keenly or as promptly appreciated; in the flush of discovery
only one of the many existing commodities, rare and expensive brazil-wood, had the honor of giving its name to a large slice of the New World.

Precious metals and slave labor were to establish America as an attractive business proposition; the idea that productivity is the finest gold and one's own work the basic source of wealth did not really break through until Adam Smith's *Wealth of Nations*, published the same year as the Declaration of Independence. As late as 1763, France and England had no clear notion of whether it was more advantageous to hold on to tiny Guadeloupe with its slave-grown sugar or to huge Canada with its hard-won furs and its reserves of uninviting wilderness. Still later, it took the combined efforts of Parmentier, Franklin, and Louis XVI to persuade the French to add *pommes frites* to their steaks. A drive to get rich quickly, to cut corners, to hit the jackpot, normally goes together with exploration and colonization—not surprisingly, for exceptional risks and discomforts seldom compete with home opportunities without some hope of exceptional rewards. It detracts nothing from the glory of the adventurers, technicians, and intellectuals who in the sixteenth century and later did so much with so little, adapting their material and mental tools to every new challenge.

Most appropriately, our conference has stressed the positive impact of Discovery. In the epilogue, however, a short list of failings may be as fitting as the list of liabilities in the balance sheet of a very successful enterprise. I propose to be rigorous, like the *advocatus diaboli* in a process of canonization.

I shall not linger on the obvious sins, the cruel exploitation of human resources and the reckless waste of natural resources, grievous though they may be: our age—with its genocide, starvation, and pollution—has no right to pass judgment on the *conquistadores*. Still we ought to note that the record of the ancient Romans and the medieval Chinese in absorbing conquered natives as equal partners and bearers of a fully shared culture has rarely been matched by Westerners over the last thousand years. Intolerance, that unfortunate by-product of mono­theism, cannot be the only explanation, since conversion was not always a sufficient passport for the natives, and the early calls for acculturation were seldom implemented. True, the cultural gap between colonizers and colonized was greater in America than within the Old World, but the Picts met by the Roman legions also spoke unintelligibly and wallowed in blue-painted nakedness; yet the Romans called them barbarians, not unredeemable monsters, as many Westerners would call the American Indians. In classic culture a monster was usually a fabulous figure whom nobody had actually seen; the arrogance of assuming that a man of another race may be congenitally unfit ever to become one of us is, I am afraid, essentially a modern phenomenon. It is
at any rate a manifestation of individualism, self-confidence, imagination—the very qualities that make the Renaissance fascinating.

Yet how to explain the many lags between discovery and its intellectual impact? Inertia is a human feature as profound as curiosity and not incompatible with it. No doubt the artists, the scientists, the men of letters, and the thinkers of the Renaissance were more curious and receptive to innovation than their medieval predecessors, but the word “novelty” still had its pejorative undertone. It could still mean “disorder,” “rebellion,” “heresy.” Indeed the religious reformers of the age maintained they merely wished to restore the primitive, incorrupt form of Christianity. To challenge tradition and authority, the best appeal was to an even earlier tradition and authority: the Bible against the Decretals, Cicero against Dante, Vitruvius against the architecture called “modern” by Filarete (and “Gothic” by us), Galen against Avicenna. Hence, what a pity that the New World should be so blatantly new, so inconsistent with established knowledge and belief! And this was only a beginning. Fifty years later, Copernicus on his deathbed released another subversive doctrine. From time immemorial, a Eurasia-centered earth and an earth-centered universe had provided a cozy and plausible cocoon for mankind, approved by Scripture as well as classical philosophy. By exploding the oecumene and degrading the planet, Columbus and Copernicus seemed to inflict a double humiliation on man.

Happily the New World was a tangible, undeniable reality. Full of pagans but accessible to Christian missionaries, America was not irretrievably godless. No sooner was the discovery known than Rodrigo Borgia, not otherwise outstanding for his religious zeal, claimed jurisdiction over the new territories and, under prodding, assigned them to his Spanish countrymen. But political Europe was too involved in its own affairs to redirect priorities to its peripheral acquisitions; intellectual Europe was too steeped in the Greco-Roman and Judeo-Christian classics to deflect at once its attention to a newcomer mentioned by neither. No matter: to make America and the Americans more readily attractive, fantasy ran ahead of reality, with myths ranging from the Golden Age to the Gilded Man: at first monstrous, the Indian was beautified as an Arcadian nude, a Patagonian giant, or just another sort of Chinese. Time would show the merits of plain reality, and the New World lost nothing by being appreciated and absorbed slowly, like good wine.

After presenting his argument, the devil’s advocate is expected to yield and rejoice in the triumph of the new saint. Some scholars have qualms about the fact that so much that was old went into the interpretation and organization of the New World. I submit that antiquity and
the Middle Ages lived in the Renaissance for the same reason that the Renaissance lives in the present. Our experience is cumulative. Other scholars doubt the existence of a direct link between Renaissance and Discovery. I submit that no direct link is required to establish a connection between two great simultaneous achievements. History is always total, and what matters is that the same men with the same brains and eyes could observe the Sistine Chapel and the shrines of Montezuma.

One may regret that the sophisticated charms of China and India overshadowed the barbarian splendor of Mexico and Peru and that the American adventure did not find a Camões to sing its epics, but there is great charm in the early fictions of the Brave New World. Girolamo Fracastoro, the genius who found a way to make poetry out of syphilis, paid tribute to discovery in words that may conclude my remarks: "Although a cruel tempest rages and the conjunction of the stars has been wicked, yet not wholly has the clemency of the gods been removed from us. If this century has seen a new disease, the ravages of war, the sack of cities, floods and droughts, yet it has also been able to navigate oceans denied to antiquity, and has reached . . . a whole world different from ours."
Index of dates

Containing only dates mentioned within the two volumes, this index is not a systematic chronological chart. The synchronicities may draw attention to connections that might otherwise be missed, as well as to the differing rate of historical change in particular areas; and both the inclusions and the omissions may cast an interesting light on current historiography.

Since the subject headings are broad, it is advisable to look for complex topics under more than one heading. Dates covering an extended time-span are entered at the first (or nearest) date: “1489-1571 Venice holds Cyprus,” at 1480. Only specific dates appear; references to “the early fifteenth century” and so on have not been included. The number(s) in parentheses after each entry refers to the page(s) on which the date appears. More complete references may be found in the Index of names and subjects.

The dates themselves remain, of course, the responsibility of the individual authors.
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