became pupils of their Indian neighbors and learned slowly and painfully how to grow American crops and how to negotiate the American landscape. While we are accustomed to think of powerful and technologically advanced Europeans overwesterning American Indian cultures, the reality was more complicated. The devastating impact of Old World diseases did more to undermine native societies than European technology, and made ruthless Old World styles of warfare even more destructive.

Indian societies did not disappear. Rather, they adapted, and often the price they paid for survival was very high. The Europeans and Africans who came to America also adapted. None of their societies was merely a replica of the cultures from which they came. The experience of America was transforming for all participants, and even the Old World was changed by it in ways that participants may have only dimly realized.

ESSAYS

Traditionally historians have treated the events discussed here as the "discovery of the New World" by Europeans, implying passivity on the part of the American natives. The older view has implicitly seen the flow of culture as one-way, east to west, and has assumed that the main story is the European conquest. More recently historians have begun to emphasize that the confrontation was nothing less than a collision of biospheres, a bringing together of plants and animals from two formerly isolated worlds with enormous and entirely unforeseen consequences. This was an event that can occur only once in the history of our planet. Though the participants were only dimly aware of the great drama in which they played roles, the documents they left provide evidence for environmental historians such as Alfred Crosby of the University of Texas to reshape our understanding of its consequences. He does so in the first essay.

In the second essay, Nicholas Canny of the National University of Ireland, Galway, assesses the overall nature of European immigration to America in the colonial period and demonstrates that it extended and broadened a pattern of movement within Europe that proceeded alongside colonization of America. In the third essay, Colin Calloway of Dartmouth College stands on the western shore of the Atlantic and views the newcomers and their impact from that vantage point. He looks at the mixing of people from all over the Old World and their interaction with American Indian societies, and assesses both the ingredients in that mixing and the nature of the cultures and societies that resulted.

Colonization as a "Swarming"

ALFRED CROSBY

None of the major genetic groupings of humankind is as oddly distributed about the world as European, especially western European, whites. Almost all the peoples we call Mongoloids live in the single contiguous land mass of Asia. Black Africans are divided between three continents — their homeland and North and South America — but most of them were concentrated in their original latitudes, the tropics, facing each other across one ocean. European whites were all recently concentrated in Europe, but in the last few centuries have burst out, as energetically as if from a burning building, and have created vast settlements of their kind in the South Temperate Zone and North Temperate Zone (excepting Asia, a continent already thoroughly and irreversibly tenanted). In Canada and the United States together they amount to nearly 90 percent of the population; in Argentina and Uruguay together to over 55 percent; in Australia to 98 percent; and in New Zealand to 90 percent. The only regions in the Temperate Zones outside of Asia which do not have enormous majorities of European whites are Chile, with a population of two-thirds mixed Spanish and Indian stock, and South Africa, where blacks outnumber whites six to one. How odd that these two, so many thousands of miles from Europe, should be exceptions in not being predominately pure European.

European have conquered Canada, the United States, Argentina, Uruguay, Australia, and New Zealand not just militarily and economically and technologically — as they did India, Nigeria, Mexico, Peru, and other tropical lands, whose native people have long since expelled or interbred with and even absorbed the invaders. In the Temperate Zones lands listed above Europeans conquered and triumphed demographically. These, for the sake of convenience, we will call the Lands of the Demographic Takeover.

There is a long tradition of emphasizing the contrasts between Europeans and Americans — a tradition honored by such names as Henry James and Frederick Jackson Turner — but the vital question is really why Americans are so European. And why the Argentinians, the Uruguayans, the Australians, and the New Zealanders are so European in the obvious genetic sense.

The reasons for the relative failure of the European demographic takeover in the tropics are clear. In tropical Africa, until recently, Europeans died in droves of the fevers; in tropical America they died almost as fast as the same diseases, plus a few native American additions. Furthermore, in neither region did European agricultural techniques, crops, and animals prosper. Europeans did try to found colonies for settlement, rather than merely exploitation, but they failed or achieved only partial success in the hot lands. The Scots left their bones as monument to their short-lived colony at Darien at the turn of the eighteenth century. The English Puritans who skipped Massachusetts Bay Colony to go to Providence Island in the Caribbean Sea did not even achieve a permanent settlement, much less a Commonwealth of God. The Portuguese who went to northeastern Brazil created viable settlements, but only by perchning themselves on top of first a population of native Indian labors and then, when these faded away, a population of laborers imported from Africa. They did achieve a demographic takeover, but only by interbreeding with their servants. The Portuguese in Angola, who helped supply those servants, never had a breath of a chance to achieve a demographic takeover. There was much to repel and little to attract the mass of Europeans to the tropics, and so they stayed home or went to the lands where life was healthier, labor more rewarding, and where white immigrants, by their very number, encouraged more immigration.

In the cooler lands, the colonies of the Demographic Takeover, Europeans achieved very rapid population growth by means of immigration, by increased life
span, and by maintaining very high birthrates. Rarely has population expanded more rapidly than it did in the eighteenth and nineteenth centuries in these lands. It is these lands, especially the United States, that enabled Europeans and their overseas offspring to expand from something like 18 percent of the human species in 1650 to well over 30 percent in 1900. Today 670 million Europeans live in Europe, and 250 million or so other Europeans—genetically as European as any left behind in the Old World—live in the Lands of the Demographic Takeover, an ocean or so from home. What the Europeans have done with unprecedented success in the past few centuries can accurately be described by a term from agriculture: They have swarmed.

They swarmed to lands which were populated at the time of European arrival by peoples as physically capable of rapid increase as the Europeans, and yet who are now small minorities in their homelands and sometimes no more than relic populations. These population explosions among colonial Europeans of the past few centuries coincided with population crashes among the aborigines. If overseas Europeans have historically been less fatalistic and grim than their relatives in Europe, it is because they have viewed the histories of their nations as selectively. When he returned from his world voyage on the Beagle in the 1830s, Charles Darwin, as a biologist rather than a historian, wrote, “Wherever the European has trod, death seems to pursue the aboriginal.”

Any respectable theory which attempts to explain the Europeans’ demographic triumphs has to provide explanations for at least two phenomena. The first is the decimation and demoralization of the aboriginal populations of Canada, the United States, Argentina, and others. The obliterating defeat of these populations was not simply due to European technological superiority. The Europeans who settled in temperate South Africa seemingly had the same advantages as those who settled in Virginia and New South Wales, and yet how different was their fate. The Bantu-speaking peoples, who now overwhelmingly outnumber the whites in South Africa, were superior to their American, Australian, and New Zealand counterparts in that they possessed iron weapons, but how much more inferior to a musket or a rifle is a stone-pointed spear than an iron-pointed spear? The Bantu have prospered demographically not simply because of their numbers at the time of first contact with the whites, which were probably not greater per square mile than those of the Indians east of the Mississippi River. Rather, the Bantu have prospered because they survived military conquest, avoided the conquerors, or became their indispensable servants—and in the long run because they reproduced faster than the whites. In contrast, why did so few of the natives of the Lands of the Demographic Takeover survive?

Second, we must explain the stunning, even awesome success of European agriculture, that is, the European way of manipulating the environment in the Lands of the Demographic Takeover. The difficult progress of the European frontier in the Siberian taiga or the Brazilian cerrado or the South African veldt contrasts sharply with its easy, almost fluid advance in North America. Of course, the pioneers of North America would never have characterized their progress as easy: Their lives were filled with danger, deprivation, and unremitting labor; but as a group they always succeeded in taming whatever portion of North America they wanted within a few decades and usually a good deal less time. Many individuals among them failed—they were driven mad by blizzards and dust storms, lost their crops to locusts and their flocks to cougars and wolves, or lost their scalps to understandably inhospitable Indians—but as a group they always succeeded—and in terms of human generations, very quickly.

In attempting to explain these two phenomena, let us examine four categories of organisms deeply involved in European expansion: (1) human beings; (2) animals closely associated with human beings—both the desirable animals like horses and cattle and undesirable varmints like rats and mice; (3) pathogens or microorganisms that cause disease in humans; and (4) weeds. Is there a pattern in the histories of these groups which suggests an overall explanation for the phenomenon of the Demographic Takeover or which at least suggests fresh paths of inquiry?

Europe has exported something in excess of sixty million people in the past few hundred years. Great Britain alone exported over twenty million. The great masses of these white emigrants went to the United States, Argentina, Canada, Australia, Uruguay, and New Zealand. (Other areas to absorb comparable quantities of Europeans were Brazil and Russia east of the Urals. These would qualify as Lands of the Demographic Takeover except that large fractions of their populations are non-European.)

In stark contrast, very few aborigines of the Americas, Australia, or New Zealand ever went to Europe. Those who did often died not long after arrival. The fact that the flow of human migration was almost entirely from Europe to her colonies and not vice versa is not startling—or very enlightening. Europeans controlled overseas migration, and Europe needed to export, not import, labor. But this pattern of one-way migration is significant in that it reappears in other connections.

The vast expanses of forests, savannas, and steppes in the Lands of the Demographic Takeover were invaded by animals from the Old World, chiefly from Europe. Horses, cattle, sheep, goats, and pigs have for hundreds of years been among the most numerous of the quadrupeds of these lands, which were completely lacking in these species at the time of first contact with the Europeans. By 1600 enormous feral herds of horses and cattle surged over the pampas of the Rio de la Plata (today’s Argentina and Uruguay) and over the plains of northern Mexico. By the beginning of the seventeenth century packs of Old World dogs gone wild were among the predators of these herds.

In the forested country of British North America population explosions among imported animals were also spectacular, but only by European standards, not by those of Spanish America. In 1700 in Virginia feral hogs, said one witness, “swarm like verminae upon the Earth,” and young gentlemen were entertaining themselves by hunting wild horses of the inland counties. In Carolina the herds of cattle were “incredible, being from one to two thousand head in one Man’s Possession.” In the eighteenth and early nineteenth centuries the advancing European frontier from New England to the Gulf of Mexico was preceded into Indian territory by an advance guard of semwild herds of hogs and cattle tended, now and again, by semwild herdsmen, white and black.

The first English settlers landed in Botany Bay, Australia, in January of 1788 with livestock, most of it from the Cape of Good Hope. The pigs and poultry thrived; the cattle did well enough; the sheep, the future source of the colony’s good fortune, died fast. Within a few months two bulls and four cows strayed away. By
1804 the wild herds they founded numbered from three to five thousand head and were in possession of much of the best land between the settlements and the Blue Mountains. If they had ever found their way through the mountains to the grasslands beyond, the history of Australia in the first decades of the nineteenth century might have been one dominated by cattle rather than sheep. As it is, the colonial government wanted the land the wild bulls so ferociously defended, and considered the growing practice of convicts running away to live off the herds as a threat to the whole colony; so the adult cattle were shot and salted down and the calves captured and tamed. The English settlers imported wooly sheep from Europe and sought out the interior pastures for them. The animals multiplied rapidly, and when Darwin made his visit to New South Wales in 1836, there were about a million sheep there for him to see.

The arrival of Old World livestock probably affected New Zealand more radically than any other of the Lands of the Demographic Takeover. Cattle, horses, goats, pigs and—in this land of few or no large predators—even the usually timid sheep went wild. In New Zealand herds of feral farm animals were practicing the ways of their remote ancestors as late as the 1940s and no doubt still run free. Most of the sheep, though, stayed under human control, and within a decade of Great Britain's annexation of New Zealand in 1840, her new acquisition was home to a quarter million sheep. In 1974 New Zealand had over fifty-five million sheep, about twenty times more sheep than people.

In the Lands of the Demographic Takeover the European pioneers were accompanied and often preceded by a few members of the species Oryctolagus cuniculus (the scientific name for the protagonists of all the Peter Rabbis of literature) were released in southeast Australia. Despite massive efforts to stop them, they reproduced—true to their reputation—and spread rapidly all the way across Australia's southern half to the Indian Ocean. In 1950 the rabbit population of Australia was estimated at 500 million, and they were outcompeting the nation's most important domesticated animals, sheep, for the grasses and herbs. They have been brought under control, but only by means of artificially elevating an epidemic of myxomatosis, a lethal American rabbit disease. The story of rabbits and myxomatosis in New Zealand is similar.

Europe, in return for her varmints, has received muskrats and gray squirrels and little else from America, and nothing at all of significance from Australia or New Zealand, and we might well wonder if muskrats and squirrels really qualify as varmints. As with other classes of organisms, the exchange has been a one-way street.

None of Europe's emigrants were as immediately and colossally successful as its pathogens, the microorganisms that make human beings ill, cripple them, and kill them. Whenever and wherever Europeans crossed the oceans and settled, the pathogens they carried created prodigious epidemics of smallpox, measles, tuberculosis, influenza, and a number of other diseases. It was this factor, more than any other, that Darwin had in mind as he wrote of the Europeans' deadly tread.

The pathogens transmitted by the Europeans, unlike the Europeans themselves or most of their domesticated animals, did at least as well in the tropics as in the temperate Lands of the Demographic Takeover. Epidemics devastated Mexico, Peru, Brazil, Hawaii, and Tahiti soon after the Europeans made the first contact.
with aboriginal populations. Some of these populations were able to escape demographic defeat because their initial numbers were so large that a small fraction was still sufficient to maintain occupation of, if not living in, the land, and also because the mass of Europeans were never attracted to the tropical lands, not even if they were partially vacated. In the Lands of the Demographic Takeover the aboriginal populations were too sparse to rebound from the onslaught of disease or were inundated by European immigrants before they could recover.

The First Strike Force of the white immigrants to the Lands of the Demographic Takeover were epidemics. A few examples from scores of possible examples follow. Smallpox first arrived in the Rio de la Plata region in 1558 or 1560 and killed, according to one chronicler possibly more interested in effect than accuracy, "more than a hundred thousand Indians" of the heavy riverine population there. An epidemic of plague or typhus decimated the Indians of the New England coast immediately before the founding of Plymouth. Smallpox or something similar struck the aborigines of Australia’s Botany Bay in 1789, killed half, and rolled on into the interior. Some unidentified disease or diseases spread through the Maori tribes of the North Island of New Zealand in the 1790s, killing so many in a number of villages that the survivors were not able to bury the dead. After a series of such lethal and rapidly moving epidemics, then came the slow, unspectacular but thorough cripples and killers like venereal disease and tuberculosis. In conjunction with the large numbers of white settlers these diseases were enough to smother aboriginal chances of recovery. First the bitterness, then the mapping up.

The greatest of the killers in these lands was probably smallpox. The exception is New Zealand, the last of these lands to attract permanent European settlers. They came to New Zealand after the spread of vaccination in Europe, and so were poor carriers. As of the 1850s smallpox still had not come ashore, and by that time two-thirds of the Maori had been vaccinated. The tardy arrival of smallpox in these islands may have much to do with the fact that the Maori today comprise a larger percentage (9 percent) of their country’s population than that of any other aboriginal people in any European colony or former European colony in either Temperate Zone, save only South Africa.

American Indians bore the full brunt of smallpox, and its mark is on their history and folklore. The Kiowa of the southern plains of the United States have a legend in which a Kiowa man meets Smallpox on the plain, riding a horse. The man asks, "Where do you come from and what do you do and why are you here?" Smallpox answers, "I am one with the white men—they are my people as the Kiowas are yours. Sometimes I travel ahead of them and sometimes behind. But I am always in your companion and you will find me in their camps and their houses." "What can you do?" the Kiowa asks. "I bring death," Smallpox replies. "My breath causes children to wither like young plants in spring snow. I bring destruction. No matter how beautiful a woman is, once she has looked at me she becomes as ugly as death. And to men I bring not death alone, but the destruction of their children and the blighting of their wives. The strongest of warriors go down before me. No people who have looked on me will ever be the same."

In return for the barrage of diseases that Europeans directed overseas, they received little in return. Australia and New Zealand provided no new strains of pathogens to Europe—or none that attracted attention. And of America’s native dis-
animals than the native equivalents: Old World pathogens, sometimes carried by Old World varmints, wiped out vast numbers of aborigines, opening the way for the ad- 

cen of the European frontier, exposing more and more native peoples to more and 

more pathogens. The classic example of symbiosis between European colonists, their 

animals, and plants comes from New Zealand. Red clover, a good forage for sheep, 

could not seed itself and did not spread without being annually sown until the Euro-

peans imported the bumblebee. Then the plant and insect spread widely, the first pro-

viding the second with food, the second carrying pollen from blossom to blossom for 

the first, and the sheep eating the clover and compensating the human beings for their 

effort with mutton and wool.

There have been few such stories of the success in Europe of organisms from the 

lands of the Demographic Takeover, despite the obvious fact that for every ship that 

went from Europe to those lands, another traveled in the opposite direction. 

The demographic triumph of Europeans in the temperate colonies is one part of a 

biological and ecological takeover which could not have been accomplished by 

human beings alone, gunpowder notwithstanding. We must at least try to analyze 

the impact and success of all the immigrant organisms together—the European port-

manteau of often mutually supportive plants, animals, and microlife which in its en-


tirety can be accurately described as aggressive and opportunistic, an ecosystem 

simplified by ocean crossings and honed by thousands of years of competition in the 

unique environment created by the Old World Neolithic Revolution.

The human invaders and their descendants have consulted their egos, rather than 

ecologists, for explanations of their triumphs. But the human victims, the aborigines 

of the lands of the Demographic Takeover, knew better, knew they were only one of 

many species being displaced and replaced; knew they were victims of something 

more irresistible and awesome than the spread of capitalism or Christianity. One 

Maori, at the nadir of the history of his race, knew these things when he said, “As the 

clover killed off the fern, and the European dog the Maori dog—as the Maori rat was 
destroyed by the Pakeha (European) rat—so our people, also, will be gradually sup-

planted and exterminated by the Europeans.” The future was not quite so grim as he 

prophesied, but we must admire his grasp of the complexity and magnitude of the 

threat looming over his people and over the ecosystem of which they were part.

In Search of a Better Home?

NICHOLAS P. CANNY

One of the more piquant entries in the records of the General Court of Colonial Vir-

ginia is that concerning the case of Thomas Hall who claimed to be both man and 

woman. The issue came to court because Hall had taken to wearing women’s cloth-

ing when in search of sexual adventure, and because he had denied the findings of a 

series of self-appointed physical inspectors who had pronounced that he was “a per-

fect man”. The court ordered a further examination of his private, and satisfied

Nicholas Canny, “In Search of a Better Home? European Overseas Migration, 1500–1800”, in Nicholas 

Canny, ed., Europeans on the Move: Studies on European Migration, 1500–1800 (Oxford: Oxford Uni-