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An Icy Conquest

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A Cold Welcome: The Little Ice Age and Europe's Encounter with North America

by Sam White

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"We are starved! We are starved!" the sixty skeletal members of the English colony of Jamestown cried out in desperation as two ships arrived with provisions in June 1610. Of the roughly 240 people who were in Jamestown at the start of the winter of 1609–1610, they were the only ones left alive. They suffered from exhaustion, starvation, and malnutrition as well as from a strange sickness that "caused all our skinns to peelee off, from head to foote, as if we had beene flayed."

Zooarchaeological evidence shows that during those pitiless months of "starving time" they turned to eating dogs, cats, rats, mice, venomous snakes, and other famine foods: mushrooms, toadstools, "or what els we founde growing upon the grounde that would fill either mouth or belly." Some of the settlers reportedly ingested excrement and chewed the leather of their boots. Recent discoveries of human skeletons confirm the revelation of the colony's president, George Percy, that they also resorted to cannibalism: "Some adventuring to seeke releife in the woods, dyed as they sought it, and weare eaten by others who found them dead." When one man confessed under torture to having murdered and eaten his wife, Percy ordered his execution.



Sarin Image/Granger

Captain John Smith taken captive by the Powhatan Native Americans; color engraving from Captain Smith's *Generall Historie of Virginia*, 1624

That happened a mere three years after the first adventurous group of Englishmen arrived in Jamestown. From the beginning, it was a struggle for subsistence. Most of the settlers fell ill only a few weeks after landfall in May 1607. One colonist recalled that "scarse ten amongst us coulde either goe, or well stand, such extreame weaknes and sicknes oppressed us." The corn withered in the summer drought, and as the flow of the James River waned in the unrelenting heat, salt water encroached from the sea, depriving the settlers of their main source of fresh water. Nor was divine assistance forthcoming. The Quiyoughcohannock Indians, scarcely better off, beseeched the Englishmen to intercede and ask their powerful God for supernatural intervention. But when the colonists' prayers seemed to bring only more suffering instead of rain to Jamestown, the natives concluded that the Christian god must be a vindictive one, and their relations with the colonists deteriorated.

By September 1607, half the colony's members were dead. "Our men were destroyed with cruell diseases as Swellings, Flixes, Burning Fevers, and by warres, and some departed suddenly," Percy later recalled, "but for the most part they died of meere famine." The next winter months would prove equally deadly. "It got so very cold and the frost so sharp that I and many others suffered frozen feet," another witness wrote, adding that the cold was so severe that "the river at our fort froze almost all the way across."

Fresh groups of colonists arrived in 1608 and 1609, but steady attrition and the "starving time" of 1609–1610 pushed the settlement to the brink. In June 1610, when the two ships arrived with provisions for the emaciated survivors, it seemed too late. Jamestown's leaders announced to the settlers that they would all return to England by way of Newfoundland. "There was a general acclamation, and shoute of joy," one person remembered. They set sail on June

17, but the next day, when they reached the small settlement on Mulberry Island along the James River just a few miles away, they sighted another boat, working its way up the river with news that an English relief fleet was on its way with more settlers and enough provisions to last a year. That chance encounter saved the colony of Jamestown. "God would not have it so abandoned," one settler wrote. The following winter proved less harsh, and by 1614 colonists had begun lucrative exports of tobacco. In 1619 the Virginia House of Burgesses would hold its first assembly in Jamestown.

The brutal story of Jamestown scarcely fits the pageant of success that students are often taught in the condensed version of early American history that starts in 1492 when Columbus sailed the ocean blue and then jumps to the Pilgrims' safe landing at Plymouth Rock in 1620 and their peaceful celebration of the first Thanksgiving the following year. But in his deeply researched and exciting new book, *A Cold Welcome*, the historian Sam White focuses on the true stories of the English, Spanish, and French colonial expeditions in North America. He tells strange and surprising tales of drought, famine, bitterly cold winters, desperation, and death, while anchoring his research in the methods and results of the science of climate change and historical climatology. In doing so, he erases what C.P. Snow, the British physicist and author of *The Two Cultures*, considered the damaging cultural barrier and "mutual incomprehension" estranging humanists and scientists from one another.¹ "Historians can, and must, embrace this science," White counsels.

He weaves an intricate, complex tapestry as he examines the effects both of climate—meteorological conditions over relatively long periods of time—and of weather—the conditions of the atmosphere over a short term—on vulnerable colonists in North America in the late sixteenth and early seventeenth centuries. The half-century that led up to the founding of permanent settlements saw, as White notes, "one of the steepest declines in Northern Hemisphere temperatures in perhaps thousands of years."

His fresh account of the climatic forces shaping the colonization of North America differs significantly from long-standing interpretations of those early calamities. Edmund S. Morgan's classic *American Slavery, American Freedom: The Ordeal of Colonial Virginia* (1975) contains a lengthy assessment of the reasons why the Jamestown colonists experienced their "Lord of the Flies" fate. Morgan faults the poor organization and direction of the colony but most of all points to sociological and psychological factors, especially the indolence of the colonists and the large number of "gentlemen" among them who were averse to descending to ordinary labor. "He that will not worke, shall not eate," John Smith warned them to little avail.² *A Cold Welcome* does not replace these well-grounded interpretations but rather supplements them by shining a spotlight on a wholly different dimension: the timing of these colonial enterprises, which ensnared them in what came to be known as the Little Ice Age.

As climatologists define it, the Little Ice Age was a long-term cooling of the Northern Hemisphere between 1300 and 1850. They locate maximum cooling in the early seventeenth century, just when European settlers were attempting to establish colonies in North America. To reconstruct past climate, scientists use indicators called climate "proxies," such as ice cores, tree rings, and lake-bottom sediments that they analyze for indications of past temperatures and precipitation. In addition, zooarchaeologists examine animal bones to see what settlers ate, while bioarchaeologists study human skeletons to probe health and nutrition.

Climate proxies also provide important evidence of volcanic activity. Between the 1580s and 1600 large tropical volcanic eruptions spewed dust and sulfates high into the atmosphere, dimming sunlight, cooling Earth's surface, and causing oscillations in atmospheric and oceanic circulation. Eruptions in Colima, Mexico, in 1586, in Nevado del Ruiz in present-day Colombia in 1595, and especially the huge Huaynaputina eruption in the Peruvian Andes in 1600 helped produce shockingly cold decades.

Even before colonists departed from Europe, their lack of reliable information about the extremes of weather in the Little Ice Age was compounded by fatal misconceptions linking geographical latitudes with climate. Educated in the work of the classical Greek geographer Ptolemy, for whom climate and latitude were synonymous, Europeans assumed that they would find a relatively mild climate in North America, since Britain lies latitudinally north of the continental United States and Paris north of Quebec, while Spain lines up with New Mexico. The confusion sowed by those misleading notions would doom many of their enterprises.

During those harrowing decades, European countries—England and Spain in particular—also suffered from freezing winters, cold, wet summers, intense rain, flooding, ruined crops, famine, outbreaks of disease, plague, and spikes in mortality. In the mid-1590s, William Shakespeare found poetry in the capricious climate of the age:

*And thorough this distemperature we see
The seasons alter: hoary-headed frosts
Fall in the fresh lap of the crimson rose,
...The spring, the summer,
The chiding autumn, angry winter, change
Their wonted liveries, and the mazèd world
...now knows not which is which.*

Economic and demographic factors, worsened by climate-related disasters, White argues, influenced the colonial ambitions of European nations: “The Little Ice Age came at a particular moment and in a particular way that helped to undermine Spain’s commitment to North American colonization but to reinforce England’s.” He suggests that a pervasive sense of overcrowding in England, worsened by an influx of poverty-stricken famine refugees into London, helped the planners and promoters of American colonies secure private investment and gather public support by depicting North America as an opportune overseas outlet for the surplus population. In Spain, meanwhile, a decline in imperial revenue, heavy military expenses, and disillusionment with the nation’s fragile settlements in North America, along with weather-related hardships and a general sense of crisis in the empire, led King Philip III to pull back on Spain’s North American claims, opening the way for the English and the French to establish their own colonies there and ultimately allowing for a decisive shift of power in the North Atlantic world.

Spain’s expeditions in the early sixteenth century to La Florida—today’s southeastern United States—resulted in lost lives and lost investments. Explorers and colonists expected to find a familiar Mediterranean climate in La Florida: hot, dry summers and cool, wet winters. Instead they encountered wet summers, storms, hurricanes, and freezing winters. “We were farming people in Spain,” wrote one bitterly disillusioned settler in Santa Elena, now Parris Island in South Carolina. “Here we are lost, old, weary, and full of sickness.” In 1587, the few remaining colonists in Santa Elena left for St. Augustine. Frustrated, Philip III was anxious to abandon La Florida and focus instead on New Spain—the territory encompassing the Caribbean and what is now Mexico. In 1608, however, he yielded to Franciscan missionaries who urged him to maintain the settlement in St. Augustine and not abandon the Indians who had been converted to Christianity.

The Spanish colony of New Mexico received a reprieve at the same time and for the same reason: the Franciscans convinced the viceroy of the need to minister to the more than seven thousand Indians who had been baptized. Ever since the colonists’ first arrival in 1540, the barren desert landscape had tested their endurance. In 1598 they set up a base about thirty miles north of present-day Santa Fe, built houses and a church, and dug irrigation channels for crops. But neither they nor the Pueblo Indians, born to that climate, were immune to the hazards of New Mexico’s Little Ice Age.

The nadir came in 1601 following the Huaynaputina eruption, when both colonists and natives found themselves unprepared, physically and psychologically, for one of the coldest and driest periods of the past millennium. During the long freezing winter months, fields of cotton and corn were destroyed, livestock perished in the snow, and even the Rio Grande froze over. Summer was no less discouraging. One witness reported that the four months of summer heat were “almost worse than the cold in winter; and so the saying there is, winter for eight months and hell for four.”

The New Mexico colony all but collapsed at the end of 1601. Gradually, though, the drought came to an end, the winters became less unforgiving, and in 1608 the colonists and missionaries were granted land to set up a new town



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called Santa Fe, making it, White comments, “an almost exact contemporary of Jamestown.”

In 1609, just when Spanish colonists were securing their settlement in Santa Fe and English colonists starved in Jamestown, the French explorer Samuel de Champlain established a settlement on low ground near the edge of the St. Lawrence River; it had good soil, streams, fresh water, and the protective shelter of high cliffs. He called the colony Quebec, a name derived from the Algonquin word *kébec*, meaning “where the river narrows.”

Champlain was by then painfully familiar with the climate and geography of the region. He and the explorers Pierre Dugua and François Gravé had already experienced the challenges of establishing settlements in Canada. Their first attempt to set up a colony on the island of St. Croix in the Bay of Fundy failed during the devastating winter of 1604–1605. “The cold is harsher and more excessive than in France and much longer,” Champlain discovered. In the summer of 1605, he and Dugua led the St. Croix colonists who hadn’t died of malnutrition and scurvy to a new site, Port Royal on Nova Scotia. Though the first winter in Port Royal was also deadly, the second one, Champlain noted, “was not so long as in preceding years.” The settlers on Port Royal chanced upon more fresh food, including berries, and suffered fewer instances of scurvy; Champlain’s beneficial creation of a social club, the Order of Good Cheer, also boosted morale. But just when the settlement began to thrive, King Henry IV abruptly canceled the fur trade monopoly that made Port Royal economically viable.

In the end, St. Croix and Port Royal contributed to the eventual success of the French in Canada, for Champlain was able to apply to Quebec what he had learned from the mistakes on St. Croix and the accomplishments in Port Royal. He grasped the importance of constructing storehouses with cellars to insulate food and drink from the winter cold and of locating dwellings around a compact central courtyard for defense against storms as well as Indian attacks. White also praises Champlain for having sought out Native Americans for their local knowledge, though the Frenchman could neither abide nor understand their consumption of raw organ meat—pancreas, kidney, tongue—one of the few sources of ascorbic acid that protected them from scurvy during the frigid winter months.

After decades of failed European expeditions and aborted settlements in North America, England, Spain, and France finally had their first enduring colonies in Jamestown, St. Augustine, Santa Fe, and Quebec in the early seventeenth century. At great cost in lives, money, and hopes and expectations, these colonies not only overcame the rigors and ravages of the Little Ice Age but would come to define much of the cultural heritage of the continent.

White remarks that, in undertaking this intriguing study, he was “conscious of the challenges posed by climate change” today. Indeed, he acknowledges that he wrote *A Cold Welcome* “from the vantage point of global warming” and that he saw in the colonial period “an era that addresses concerns of the present.” It was “another age when America spoke many languages and when its future, its environment, and its place in the world were all uncertain. It was another age when climatic change and extremes threatened lives and settlements.” But while the Europeans who traveled to North America in the sixteenth and seventeenth centuries were not responsible for the Little Ice Age, today the responsibility for the global climate lies largely with humanity.

The earliest North American colonies survived the Little Ice Age by the skin of their teeth, but as White points out, other longer-established colonies in the North Atlantic did not. Vikings first settled Greenland in the tenth century. They raised sheep, goats, and cattle, hunted seal and walrus, and had sporadic commerce with the Scandinavian mainland, yet by the mid-1400s nothing more was heard from them. Between 1605 and 1607, Denmark’s King Christian IV sent out three expeditions to find the colonies. His ships struggled through storms, frigid waters, “ilandes of ice,” and “ice piled upon ice so high,” as one contemporary chronicler wrote, “that it resembled great cliffs.” What the sailors finally discovered was a frozen, treeless land sparsely populated by Inuit natives. The Viking families, communities, and churches had vanished long before, victims of climatic change they could neither adapt to nor control.

1 C.P. Snow, *The Two Cultures* (1959; Cambridge University Press, 1998), p. 4. ↵

2 Edmund S. Morgan, *American Slavery, American Freedom: The Ordeal of Colonial Virginia* (Norton, 1975), pp. 75, 78. ↵