Green Mountain Merinos: From New England to New South Wales in the Nineteenth Century

Despite distinctive and divergent pastoral industries and the geographical distance separating the two places, Australia and Vermont were drawn into the same orbit in the late nineteenth century thanks to their mutual dependence on the merino breed.

By Rebecca J. H. Woods

The modern Holstein-Friesian dairy cow, immortalized in the iconography of Ben & Jerry's ice cream, is probably the animal most closely associated with the State of Vermont, in the minds both of many residents and most visitors. Dairy has long been queen in Vermont, and the cow its emblem. But in the nineteenth century the dairy cow had a serious rival in the "Improved Spanish Merino," as the state's breed society, the Vermont Merino Breeders Association, wished their cherished breed to be known—or more simply, the Vermont merino sheep. Vermont merinos were "sheep of strong and marked characteristics," with unusually wrinkled hides and oily wool that distinguished them not only from other breeds of sheep like the Lincoln Longwool, Cotswold, or Southdown (all popular in Vermont in the nineteenth century), but from other merinos bred elsewhere and for different ends.[1] In the mid-nineteenth century, they were known far and wide, sought after by breeders from the American West, where the Vermonts were valued tools for "grading up" the frontier flocks that

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Verso of the title page of Spanish Merino Sheep, Their Importation from Spain, Introduction into Vermont and Improvement since Introduced. A List of Stock Rams with Their Pedigrees and a Register of Pure Bred Flocks of Improved Spanish Merino Sheep. *volume 1, published by the Vermont Merino Sheep Breeders' Association, 1879.*

fed the eastern seaboard's woolen industry, to Germany, where their propensity for growing heavy fleeces was used to increase the yield of local, light-wooled merinos. They reached their peak of global popularity in the late nineteenth century after sweeping wins at Philadelphia's Centennial Exhibition (1876) and other major agricultural shows in the US and abroad.[2]

But beauty, they say, is in the eye of the beholder, and this is no less true for sheep than it is for anything else. Thus where Vermonters looked at their sheep and saw a "stylish[ness] in…general appearance," others ("over-fastidious persons," in local estimation) perceived unsightly creatures "dripping with grease."[3] This comment appeared in 1878 in an Australian newspaper, the *Sydney Mail and New South Wales Advertiser*, in reference to the gift of a pair of Vermont merinos.[4] The animals, a ram and a ewe, arrived in December or November 1877, after having made their way overland from Vermont to San Francisco in preparation for their Pacific voyage, but were not available for public viewing until the following May, when they were released from a period of four months' quarantine. The pair were then exhibited at the Metropolitan Intercolonial Exhibition in Sydney, where they "attracted considerable attention," not all of it favorable.[5] The ewe was impeccable—"a remarkably fine sheep of the best type of merino"—but the ram, reported the *Sydney Morning Herald*, "was not equal to his mate." Where she was "well framed" and "well covered," he was "very inferior."[6] Though he "might prove useful to any breeder that wants a cross which would increase the length of staple and weight" of fleece, council members at the June 5 meeting of the New South Wales Agricultural Society protested "that the Vermont Society had sent them a white elephant," and that the pair of Vermonts were "so much trash."[7] The very wrinkles and oil so prized by Vermont

breeders were sticking points for some colonial breeders, who generally preferred a lighter, drier, and finer fleece.

Even though many doubted their suitability for Australia's extreme heat, dry climate, and "vertical sun," so different from the economic and climatic conditions to which they were bred, the gift of the Vermont merinos was an opportunity to undertake experimental cross-breeding with colonial flocks, and the New South Wales Agricultural Society was keen to place them with a sheepman who would make full, conscientious, and consistent reports on their progress. Eventually a local of Mudgee—an inland region known for some of the best colonial merino flocks—was chosen for the honor. Within a year, however, the Vermont ram had met an early and accidental end, putting an end, as well, to any possible breeding experiments.[8] And just a few years later, it seemed as though the Vermonts' original detractors had been right all along. At the 1883 Mudgee sale, the lowest prices realized for any sheep were those fetched by the offspring of this pair—one guinea each, according to later recollection, compared to a high of 500 guineas for the famous ram, Reformer, and regular sales in the range of seven to twelve guineas.[9] Only one conclusion seemed possible. The Vermont experiment, initiated by the unasked-for largess of the Vermont State Agriculture Society, had failed: "Despite good care"—a debatable claim given the premature death of the Vermont ram—"the American sheep never thrive on Mudgee soil."[10]

However, this verdict proved to be too hasty. With just a few years of hindsight, it became apparent that the early 1880s—the very moment at which the *Sydney Mail and New South Wales Advertiser* proclaimed the Vermonts a failure—marked, instead, the time "when the importation of American sheep began in earnest."[11] Like stockmen in California and breeders in Germany, Australian sheepmen were caught up in the craze for what one breed expert called the "Vermont invasion."[12] By 1890, it was clear to Australian observers that "American blood had come to stay, and meant to leave its mark on a number of our best studs."[13] The earlier and quick judgment against Vermont merinos—that they were unsuited to local conditions and failed to thrive in Australia's climate—oversimplified what was in fact a complex and evolving interconnection between the ovine industries of Vermont and Australia.

The sheep cultures of these two places were as different as their climatic conditions. Where Vermont merino breeding was intensive, preoccupied with the reproduction of "blood"—that is, breeding stock—and productive of an oily, wrinkly, medium-fine fleece, the Australian merino economy was extensive, preoccupied with wool production, and productive of (for most of its history) a smooth-bodied, dry, and extra-

fine fleece. Despite these distinctive and divergent pastoral industries and the geographical distance separating the two places, Australia and Vermont were drawn into the same orbit in the late nineteenth century thanks to their mutual dependence on the merino breed. For both Australia and Vermont, their intertwined ovine economies were the consequence of a great ovine diaspora that had begun, in fact, in the previous century in Spain.

An "extraordinary exodus"

Merino sheep are originally from Spain, where over the course of the early modern period they developed a reputation throughout Europe for their extraordinarily fine, white wool.[14] Their fleece, habitually referred to as a "golden" one, was the envy of all of Europe—a necessary raw material for any fine-wooled manufacture. Constant demand for this article across industrial northern Europe and in Great Britain ensured that the sheep constituted a significant source of income for the Spanish crown, who oversaw every aspect of their management through an arcane and secretive body known as the Mesta.[15] Merino sheep are a remarkably plastic type, prone to the expression of various characteristics under altered conditions, yet able to retain a core of recognizability and relatedness across circumstances.[16] More of a class than a singular breed of sheep, in Spain merinos were of two types: *estancias*, or stationary flocks, fed and tended the year round in the fertile lowlands of Iberia; or *transhumantes*, itinerant flocks driven by the tens of thousands from their lowland winter pastures to high alpine summer grounds each year.[17] Both *estancias* and *transhumantes* were further divided into still vast flocks known as *cabanas*, the property of Spain's great monasteries and nobility.[18] Woolen manufacturers across Europe prized the *transhumantes* above all for their fine wool, and the annual pilgrimages to and from high ground came to be synonymous with the article as well as its means of its production.

The Spanish crown rightly recognized that maintaining its lucrative monopoly over Europe's supply of superfine wool meant retaining absolute control over the animals themselves. As a form of living capital, these sheep were valued not only as wool-growing individuals, but for their reproductive potential—their ability to impart their characteristics to their offspring.[19] Live sheep were therefore jealously guarded, and rarely if ever seen outside the Iberian Peninsula until the late eighteenth century, when they began to circulate in very small numbers as diplomatic capital among the royalty of Europe.[20] A generous gift of 100 rams and 200 ewes, for instance, bestowed on the Prince of Saxony, founded the largest and most esteemed flock of merinos outside of

Spain, and in 1786 Louis XVI of France acquired a sizable stock with which to establish a flock at Rambouillet outside of Paris that soon attained considerable celebrity as exceptionally fine studs.[21] By the 1790s, then, France, several of the German principalities, as well as Sweden and even Great Britain (which resorted to smuggling and something close to diplomatic extortion in order to get its hands on Spanish merinos) contained the seeds of what would become well-known national flocks.[22] None of these merinos, whether gifted or smuggled, were sufficiently numerous, though, to make much of a dent in Europe's dependence on Spain for fine wool. If Spain no longer had an absolute monopoly over the production and distribution of merino wool, it still had the market cornered.

This all changed, however, during the first and second decades of the nineteenth century, when the fate of the merino swerved onto a new course as increasing political disruption and outright war on the continent transformed the relatively orderly procession of sheep leaving Spain into a veritable stampede. As the compilers of the first *Register* of the Vermont Merino Sheep Breeder's Association put it, Bonaparte's 1809 invasion of Spain unleashed an "extraordinary exodus of most of the celebrated Cabanas of Merino sheep from Spain."[23] The Napoleonic Wars laid waste to the great sheep walks of the *transhumantes* as well as to the flocks themselves (not to mention their stationary brethren, the *estancias*). Reports of armies feasting upon the flocks that grew the golden fleece began to circulate widely, and those placed to undertake rescue missions—motivated by national interest far more than by any sense of sympathy for the animals—began to act accordingly.[24] French officers and generals drove a reported 200,000 merinos into France, while other thousands were shipped to England and the United States (a series of American consuls at Lisbon orchestrated these extractions), "and the once famous cabanas were extinguished forever," grieved the authors of the 1892 *Special Report on the History and Present Condition of the Sheep Industry of the United States*.[25]

Perhaps no nation benefited more immediately from these conditions than the United States. War in Europe, it turned out, was a great if not a lasting boon to the American wool industry. Prior to 1810, merino sheep were so rare in America as to be a curiosity. Indeed, so unfamiliar were they that the recipient of the very first imported merinos, Andrew Cragie of Cambridge, Massachusetts, who was given a pair in 1798, "not appreciating their value for breeding purposes, killed and ate them for mutton."[26] Such unfamiliarity was compounded by the breed's strange appearance. Because of the high lanolin content in their wool, merino sheep attract dirt and scrub to the surface of their fleeces, so that they "looked as black as muddy hogs," as one old-timer

Spanish Merino Stock Rams, bred and owned by E. E. Stickney, East Shoreham, VT. Engraving by Luther A. Webster. Luther A. Webster Collection, MS Size C, Vermont Historical Society.

who remembered seeing his first merinos in the 1810s later recalled.[27] The unusual appearance of the breed, especially its copious darkened fleece, "was a great contrast to that of other sheep," contributing to the mingled confusion and curiosity that early merinos met with in the United States.[28]

Until the second decade of the nineteenth century, sheep farming in New England had been mostly a haphazard affair. While it was an advanced art in places like Great Britain and Germany, where distinctive types had been developed for various ends—wool, meat, even (in some cases) milk—through careful selection by the latter half of the eighteenth century, conditions in the American colonies and the Early Republic, when settlement was relatively thin in many places and the land not yet fully "subdued" for agriculture, were considerably less suited to specialized breeding.[29] In such circumstances, sheep become particularly useful as a frontier animal—they are a "frontier crop," in the words of an early-twentieth-century historian[30]—sometimes referred to by environmental historians as the "shock troops" of colonization.[31] As hardy creatures capable (in most cases) of foraging far and wide for their feed, they physically occupied the vast tracts of land that Euro-

pean colonists claimed for themselves, while with their hoofs and their dung, they began the difficult process of preparing it for tillage.[32] In this sense, the American colonies of the seventeenth and eighteenth centuries were little different than Australia, New Zealand, Patagonia, Mexico, or the rest of British North America.

And even as settlement in the Northeast progressed through the eighteenth century, little attention to selective breeding for either meat or wool—in the latter case, this had much to do with the restrictive tariffs emplaced by the British upon colonial manufactures—produced a "stock of common sheep" there, "known as 'native sheep.'"[33] These "native" sheep were found all over the farms of New England and the mid-Atlantic at the turn of the nineteenth century, where "Every farmer had a certain number of them, sufficient to furnish him with wool for domestic uses," but little incentive existed to encourage the kind of selective breeding that was fast making British breeds the envy of other nations. Domestic "manufactures had not arisen," according to the Bureau of Animal Industry's 1892 report, and wool "would not bear exportation…[being] scarcely marketable in large quantities."[34]

Even where the desire to "improve" flocks and their wool (or flesh) existed, well-defined breeds were difficult to obtain in America before and after the Revolution. This was a cause for some consternation. "A better breed of sheep is what we want," wrote one Connecticut farmer in 1763. The Cotswold, for instance—a long-wooled English breed—would suit, but such sheep "can not be obtained," he lamented, "or at least without great difficulty; for wool and live sheep are contraband goods [in England], which all strangers are prohibited from carrying out on pain of having their right hand cut off."[35] Merinos were hardly easier to obtain forty years later. After Cragie consumed the first ill-fated pair in 1793, the French emigré E. I. du Pont managed, thanks to his natal connections and after great effort, to secure the importation of several rams from the Rambouillet stud in 1801.[36] The Atlantic voyage, though, "was long and boisterous, in consequence of which three of the [four] sheep died, and it was [only] with the greatest difficulty that Mr. Dupont preserved the fourth."[37] The following year yielded sundry other merinos, but only one episode of real substance: David Humphreys, then ambassador to Lisbon, extracted seventy-five rams and twenty-five ewes by way of Portugal, with only nine animals lost en route.[38]

It is difficult, though, to establish a population from only a few individuals, or even a few hundred. Such a small founding population limits genetic diversity, making the gene pool, as it were, a shallow one. And a breed will grow only slowly from these scant beginnings, all the more so when purity of blood remains a prize to be guarded and cher-

ished (as was the case with merinos in the early-nineteenth-century America).[39] On the other hand, the effect of a few hundred merinos can be felt far and wide if they are used to "grade up" existing stock, to exert a leavening influence on the "common stock" of "native sheep."[40] Although Humphreys's flock was kept pure, it was also used for this latter purpose. The Vermont Merino Sheep Breeders' Association found in 1879 "ample evidence that the sheep imported by Colonel Humphreys were rapidly disseminated and made great improvements in the flocks in the states where they were taken."[41] This meant that eight years later, most of the "merino" sheep in America were actually the half-bred offspring of Humphreys's, Dupont's, and others' early imports.

This situation changed swiftly and dramatically over the course of a two-year period in 1810-11, when an estimated 20,000 merinos were imported to the eastern seaboard and New England—almost half of them reaching New York State in a matter of only eight months.[42] This initiated a speculative frenzy for merino sheep in which an enthusiastic brand of patriotism fused with self-interest to drive up the price of these animals. Buyers paid high prices for them—as much as $1,000 for rams in some cases, and regularly between $300 and $500 dollars.[43] They were willing to part with such princely sums because they held these sheep to be "enemies to British monopoly," and therefore allies in the ongoing effort to establish true economic independence from the former mother country.[44] Competition from American trade was held to be essential for a favorable outcome to the Napoleonic Wars—one in which Britain was defeated, or at least her power curbed—as well as the only solution to American dependence on British articles of trade. "[I]t is only by American industries," claimed E. I. du Pont, "that England can be fought."[45] And merino sheep were the necessary first step on the path to building an independent domestic industry.

Farm and factory proceeded in lockstep during this period, as historian Steven Stoll has demonstrated.[46] The ability to manufacture salable goods from merino wool was essential if investors were to get a return on their "four-legged speculation," and merino growers like Humphreys and du Pont themselves became early millowners.[47] A number of factories sprang up during this period, especially in Delaware and Massachusetts; and while they thrived during wartime, the resumption of regular trade patterns during peacetime challenged this nascent industry, especially in Delaware. Toppling Britain from her place of pride in the global trade in manufactured goods was no simple matter.[48] Britain's domestic industry was well established. As the first modern industrial powerhouse—Great Britain was famously the seat of the Industrial Revolution—its systems of procurement, manufactur-

ing, and distribution were efficient and well entrenched. British manufacturing was, moreover, supported by a vast empire at both ends: Colonial places from New Zealand to India, Lower Canada to East Africa, produced raw materials for British manufacture and later served as markets for the finished goods.

With respect to wool production, Britain had (or would very soon have) at its command the vast sheep walks of Australia. The establishment of the merino breed mirrored the naturalization of sheep in Australia more broadly. The first sheep were introduced to the great southern continent in 1788, but only twenty-eight survived. By 1810, however, the colony's flock stood at more than 33,000 sheep.[49] Similarly, merinos were first introduced in 1796, and by the 1820s these were well established as a "stud flock" serving the colony of New South Wales.[50] Although the Australian ecosystem had evolved without any endemic ovines, within only a few decades of European "discovery" and subsequent settlement, the island continent boasted a booming sheep industry in which the merino constituted the backbone of colonial flocks and the basis for its profits.[51] As an extremophile breed, merinos flourish in very hot or very cold conditions, but tend to languish in temperate climates. In Australia, where the hot, dry climate of most of the continent contributed to the production of a very fine-wooled type of merino, the breed thrived beyond expectation. Herded in vast flocks that soon surpassed in numbers their Spanish ancestors, these colonial sheep provided fleeces in the quantities necessary to fuel British industry.[52]

Charles Kerry, Flock of merino rams, with post and rail fencing in the background, Australia, ca. 1886, nla.obj-149690798, National Library of Australia.

The "natural home" of the Merino

Even if the nascent American wool industry failed to shake the foundations of Britain's global trade supremacy, this episode had a lasting impact on the sheep industry of the United States, ultimately redrawing the geography, biology, and political economy of wool production and sheep breeding across the United States and beyond its borders.[53] With the 1810 merino imports, it became possible to grow quality wool in America—first in the East, and subsequently in the West as American occupation of the continent pushed toward the Pacific.[54] And, importantly, it also became possible to weave this material into consumer goods in the numerous mills and factories scattered throughout New England and the Mid-Atlantic.[55] Vermont played a critical role in the development of this industry.[56] By the third quarter of the nineteenth century, it had become a lynchpin in the American wool industry, operating as a stud stock depot, supplying breeding rams and ewes to sheep farmers not just in the American West, but as far away as the British colonies of Australia and New Zealand.[57]

At first, though, like the rest of northern New England, Vermont was a wool-producing state.[58] The breed's precise arrival in the Green Mountain State is shrouded in the mists of time: The Vermont Merino Sheep Breeders' Association could find "no certain record of the first introduction of Merino sheep into our state" when they tried to retrace the history of the breed in Vermont, although they were certain that some of Humphreys's merinos were brought to Vermont prior to 1810.[59] But the association between the State of Vermont and the erstwhile Spanish breed, which would be so strong by the mid-nineteenth century, began for certain and in earnest with that "extraordinary exodus" of Iberian sheep.[60] By 1811, the elements necessary to elevate the state to a merino stud stock depot were in place. This year marked the arrival of William Jarvis's flock. Like Humphreys, Jarvis had been an American consul to Portugal, and like his predecessor, he orchestrated some of the most significant of the 1810-11 American importations; he was responsible for the successful transfer of nearly four thousand merinos. In 1811, Jarvis moved his personal flock of four hundred merinos across the Connecticut River from Claremont, New Hampshire, to Weathersfield, Vermont.[61]

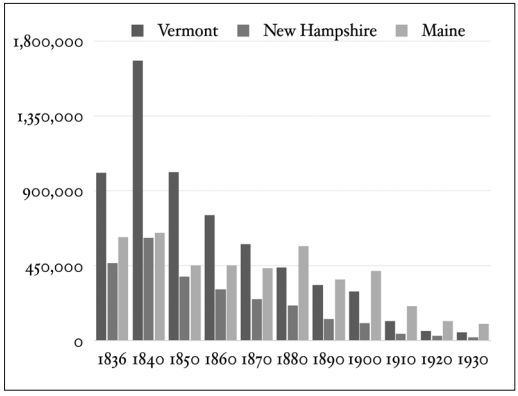
The first phase of Vermont's merino history was devoted to wool growing.[62] During the second quarter of the nineteenth century, as the wool trade was booming (the price of wool rose from thirty-six cents per pound in 1827 to fifty-seven cents per pound in 1835, for instance), Vermont sheepmen, like those of Maine, New Hampshire, and Connecticut, encouraged the propagation of those ovine spoils of war for wool to sell

to the mills and factories that had begun to dot the rivers and cataracts of southern New England. Vermont boasted thirty-three of its own mills in 1836, and by mid-century, more than 150.[63] While a great number of merino men made efforts to keep the blood of their flocks pure, an even greater number crossed their "native" "common stock" with the newcomers, thereby increasing both the quality and the quantity of their fleeces. For instance, we know that merino sheep constituted only a small percentage of the total number of sheep in the region in 1809. Out of that total of many hundreds of thousands, if not a million or more, there were at the most several thousand merino sheep and their grades (that is, their mixed-breed offspring)—the most that could be produced in that time from a founding population of only several hundred. By 1840, the peak of the New England wool industry, the percentage of merino sheep and their grades had risen to 70 percent (leaving 29 percent as unimproved "native" sheep, and less than 1 percent as English mutton breeds).[64] Out of the four million sheep in all of New England, that represents approximately 2.8 million merinos in total—an approximately tenfold increase in thirty years.

Merinos were not just numerous by this time, though: They were also thriving in their new home. As in Australia, where the original lack of ovine species came to seem a "curious fact" to European observers in light of how well sheep thrived there, the Green Mountain State, too, seemed preternaturally suited to raising merinos, although for precisely the opposite conditions as in Australia.[65] Here, the "high latitude and mountainous conformation" of the state, and the long, deep cold of winter together "brought out the heavier wool characteristic" latent in the erstwhile Spanish sheep, transforming them not, as was the case in Australia, into the bearers of superfine, dry fleeces, but into a type bearing a remarkably heavy, and heavily yolked, fleece.[66] In turn, under the feet of merino sheep, the state of Vermont also thrived. Much of the state's land is marginal from an agricultural perspective, or at least from one in which arable farming is normative.[67] The hilly, rocky, and often thin-soiled acres of the Green Mountain State were ill-suited to the production of grain crops at scale (especially before the advent of artificial fertilizers in the 1890s), but well-appointed for sheep husbandry.[68] For the same reasons that sheep make a good "frontier crop" (their hardiness, their collective independence), they also helped to make these not-so-productive lands profitable. The total value of Vermont's wool clip in 1830, for instance, brought in approximately 1.2 million dollars.[69] At an average of thirty-six cents per pound, this figure represents over three million pounds of wool.[70]

After about 1840, though, the global wool market—always volatile—

began to falter. Even though wool production in New England enjoyed a "brief Indian summer" in the 1860s when demand for wool rose in consequence of the Civil War's impact on the production of cotton, the decline was permanent.[71] The number of sheep fell precipitously across the eastern states under the combined weight of competition from the West and other global producers, especially Australia.[72]



Number of sheep in New England, 1836-1930. Compiled from Harold F. Wilson, "The Rise and Decline of the Sheep Industry in Northern New England," Agricultural History, *9 (January 1, 1935): 12-40.*

In Vermont, this decline was mitigated, much more so than could be said for its peers, by the state's growing reputation as a source of merino bloodstock, and this had to do with more than just a "mountainous conformation" and cold winters. These only "seconded the skill, enterprise, and good judgment of her breeders," which were as or more important than the state's geographical endowments.[73] "Vermont is the natural home of the merino sheep," proclaimed a member of the State Board of Agriculture in 1889, "her soil, climate and men are perfectly adapted to produce the ideal sheep."[74] It was the skill and enthusiasm of local inhabitants for *breeding* merinos that had enabled the breed to reach its "acme of improvement" in Vermont.[75] That pinnacle of perfection was a distinctive animal: "short legged, large boned, round ribbed" and bearing a "dense, even, heavy fleece, without jar or hair"[76] of "strong, lustrous and elastic fibre; with…beautiful soft crimp and serrations."[77] Achieving this "dense, even, heavy fleece," which had been the primary object of Vermont breeders, had meant "develop[ing] a large amount of oil in the fleece, and encourag[ing] a looseness of the skin and consequent development of wrinkles over the carcass."[78]

These latter characteristics—wrinkles and yolk—were what made the Vermonts an identifiable type, associated not with fineness (the be all and end all of merino breeding in Australia), but with quantity of wool.

And they were, moreover, a natural feature of the breed, boosters argued: The "folds [were] not a *necessary* condition of fineness, *but of quantity* [of wool], and are peculiar to the Spanish full-blaoded [*sic*] Merinos," the Vermont Merino Sheep Breeders' Association insisted.[79] Most importantly, though, these traits were profitable, especially the wrinkle, which increased the overall surface area of an animal's fleece, thereby increasing the yearly yield of wool. The proportion of wool yield to live body weight—the metric by which Vermont breeders assessed the degree of improvement realized—grew dramatically in Vermont merinos, from 6 percent in 1812 to 21 percent in 1865.[80]

The yolk, or grease, was a more controversial trait. Its concentration at the tip of the fiber protected the interior of the fleece by producing a barrier to dirt and dust while maintaining the suppleness of the fiber. The yolk also added to the apparent weight of a fleece, but this gain was ephemeral, as most lanolin was removed during scouring—the first stage in processing wool. Hence the custom of measuring the weight of a fleece "in the grease" (i.e. before scouring) or "clean." The added bulk conferred by a heavy yolk was thus a transitory advantage, but many Vermont breeders preferred it, finding that although "dry, light fleeces with twisted dead ends…may not waste so much in the scouring tub," they were "devoid of that elastic strength and felting quality that gives Merino wool its greatest value."[81]

The "Vermont Invasion"

It was this promise—of more wool and therefore more profit, carried in the "blood" of these sheep—that Vermonters capitalized upon in the 1870s and 1880s, even as the sheep industry in New England faltered. By mating their own ewes to Vermont rams, for instance, sheep farmers in California, Australia, or South America could transmit this quality to future generations, and thereby line their own pockets. Blood, not wool itself, was therefore the great end to which Vermonters bred. "[W]e contend that we are not breeding altogether with a view of wool-growing in Vermont," declared the Vermont Merino Sheep Breeders' Association in 1879.

> But our most profitable product is blood…So long as nearly all the sheep in the flocks of the wool-producing regions of our own and other countries lack a sufficiency of wrinkles to make them stylish in the general appearance, and give them the greatest capacity for dense, heavy fleeces, and have not sufficient oil to properly preserve the strength, elasticity, fineness, and felting quality of the fibre of their fleeces, Vermont breeders should, and probably will, have a demand for all the sheep she can spare from her breeding flocks possessing these characteristics in a high degree.[82]

By the 1870s, demand for these "stylish looking sheep," as J. E. Montague called them, was indeed widespread.[83] Within the American sphere, the western territories (especially California) absorbed Vermont merinos literally by the carload, taking advantage of new, transcontinental railroads. Middlebury alone, for instance, sent twenty-nine carloads west in 1877, and in 1879 forty-one to the Southwest.[84] Indeed, so high was the demand for Vermont blood that fraud became a serious and persistent concern. The ready market for merinos encouraged dishonest breeders to cover inferior animals with a mixture of burnt umber, lampblack, and linseed oil, giving them the appearance of the very highly bred Vermont merino's distinctively yolky fleece. To the great disappointment of western buyers, this "Cornwall finish," as it was locally known, washed off in the first rain, revealing the fraud.[85]

Even in Australia—or perhaps, especially, in Australia—there was a demand for Vermont merinos. By the time the Vermont Agricultural Society's gift sheep arrived in 1877, Vermont merinos were already well known in Tasmania and New Zealand, where breeders had been using them to bolster the weight of their fleeces since the early 1860s.[86] Paradoxically, the distinctive wrinkles of the Vermonts were both the object of desire and a point of contention in New South Wales, the colony where the Vermont controversy was most pronounced. In almost every aspect, the sheep cultures of these two places was as different as could be, and this difference was quite literally embodied in their sheep.

Traditionally, Australian merinos were smooth bodied, and some breeders there argued (not without reason) that the excessive folds and wrinkles sported by the Vermonts were impractical in a flock of ten or twenty thousand sheep. Australian visitors to Vermont were constantly surprised at the kind of care lavished upon local merinos. The small size of Vermont flocks (large ones numbered in the mere hundreds) was remarkable, as was the fact that "the proprietors attend to the sheep themselves."[87] In some cases, the "higher class" of Vermont merinos were even "fed and tended with as much care as racehorses," being carefully folded at night, protected from rain and snow, and fed choice "clover, Timothy grass hay, together with rations of oats and occasional feeds of turnips, peas, carrots, and squash."[88] In Australia, by contrast, where merinos roamed the arid landscape by the thousands seeking scant vegetation, wealthy squatters left the management of their great flocks to paid overseers. Shearing such wrinkly creatures, moreover, was a slow business. One visitor reported that in Vermont, merinos were shorn "with very short bladed shears, not much longer than scissors, and the men employed at the work would not shear

more than a score a day."[89] With such small flocks, Vermonters could afford to shear "slowly, and with more method and care than is usual where tens of thousands have to be shorn."[90]

More than this, though, Australians debated whether a Vermont cross would add to, or detract from, the value of their wool. Australian-bred sheep grew wool that was very fine, and therefore could sell at a higher price per pound. Their fleeces, though, were lighter and less dense than the Vermont merinos' so there was less of it to sell. Advocates of the Australian type argued that the premium price for superfine overcame the relative lightness of such fleeces; Vermont advocates claimed that the added weight from their fleeces combined with greater demand for a more general-use article literally outweighed any advantage that came from the price differential. "A thousand packs of super 60s tops are consumed to fifty packs of 80s," noted one commentator, "while the difference in price between the two articles is never a great one."[91] Contention over the value of a heavy yolk also contributed to the debate over the Vermont merinos' place in Australasian sheep culture. This would eventually work against Vermont merinos in Australia. "Lana," a well-known Australian sheep expert, noted that "when the importation of American sheep began in earnest, reports came to hand of the wonderful weights…produced by these sheep." Initial enthusiasm, though, was tempered because "when it was seen that much of the heavy weight was represented by yolk the abnormal yields were gauged at their true value"—that is, their weight after scouring.[92]

London—the heart of the British Empire and the seat of decision making for the Australian colonies—was ultimately the arbiter of the dispute over Vermont merinos, albeit a rather equivocal one. That the "Vermonts [had] been tried and [were] not found wanting"[93] more or less held from the 1880s until 1906, when the pendulum unexpectedly swung back in the other direction. "The reaction came with a vengeance," reported one Australian journalist in 1907. "Plain-bodied sheep brought prices [at the 1906 stud sales] such as the owners never dreamt of."[94] This he attributed not to the London wool exchange but to its meat markets. Sheep, after all, are dual-purpose livestock, bred for meat as well as wool. Merino sheep have always been specialist wool growers, and without proximate markets in Australasia, meat had been so secondary a concern with colonial breeders as to rate hardly at all. But by the early 1880s, refrigeration technology had made it possible to ship frozen meat from colonial Australasia to Great Britain, and consumer tastes—not just for woolen goods but for mutton and lamb—began to inform breeding practices in distant lands.[95]

The extraordinarily large fleece of the Vermont merino required a decent-sized body to grow it. "To produce such a weight," wrote an Australian journalist of a fifty-pound fleece grown on an "Australian Vermont" bred by Samuel M'Caughey of New South Wales, "the skin had to be a mass of folds, and the sheep of a large size."[96] Even though merino sheep were small compared to long-wooled breeds like the Cotswold, known for its leggy frame and for regularly topping 200 pounds, from the Australian perspective Vermont merinos appeared relatively hefty compared to the Australian type.[97] With the advent of refrigerated shipping, however, commentators noted that "heavy weights…find no favour with the London carcase butchers, who rule the trade on the other side [of the ocean]."[98] Australian breeders turned back to their smaller merino types at the same time that they, like their counterparts in New England supplying the Boston markets, turned to stocky English mutton breeds to meet the demands of London's consumer preferences. By making perishable dairy products and meat effectively as non-perishable as wool—which is easy to store and ship, and never goes bad—artificial refrigeration technology altered the nature of sheep farming the world over. Compact meat breeds like the Southdown now reigned from New Hampshire to New Zealand.[99]

The day of the Vermont merino, with its heftier size and heavy fleece, was done, both at home and abroad. Where the advent of the frozen meat trade sounded its death knell in Australasia, the vicissitudes of the global wool market, combined with insurmountable competition from cotton, did the same domestically. The recovery of the American South's cotton industry post-Reconstruction, combined with increasing competition from the West, where sheep could be raised more economically at scale, dealt a fatal blow to Vermont's merino industry.[100] From a peak of almost 1.7 million sheep in 1840, the state's flocks fell to a mere 297,000 in 1900.[101] Vermonters returned to the dairy, although not always without regret: The rhythms of the dairy were different, the labor more intensive than that of sheep husbandry, and some mourned the loss of their erstwhile freedom even as they welcomed its profits.[102] The same technology that made it possible to send frozen sheep from the South Pacific to the North Atlantic also made it possible to send chilled butter, cheese, and milk from Vermont to Boston.[103] As the number of sheep in Vermont plummeted, the number of dairy cows rose by 85 percent during the last half of the nineteenth century.[104] Just as the same breed of sheep had pulled the two together, the same technology—artificial refrigeration—pulled them asunder, and the dairy cow came to reign over the Green Mountain State.

Notes

[1] Vermont Merino Sheep Breeders Association (VTMSBA), "Aims of Breeders of Merinos in Vermont," *Spanish Merino Sheep, Their Importation from Spain, Introduction into Vermont and Improvement Since Introduced* (Burlington, Vt.: The Free Press Association, 1879), 1: 85. While the names of sheep breeds are usually capitalized, merino sheep constitute more of a class than a singular breed. For this reason, the lower-case "merino" has been used in this article.

[2] Albert Chapman, "Improvement of Merinos in Vermont," *Fifth Report of the Vermont Board of Agriculture* (Montpelier, Vt.: J. & J. M. Poland, 1878), 237-239. An 1863 agricultural fair at Hamburg, Germany, where Vermonts "outranked all other Merino exhibits for length of staple and weight of fleece," was particularly important to their growing reputation. See Harold F. Wilson, *The Hill Country of Northern New England: Its Social and Economic History, 1790-1930* (New York: AMS Press, 1967), 92.

[3] VTMSBA, "Aims of Breeders," 88; Anon., [No Title], *Sydney Mail and New South Wales Advertiser*, 8 June 1878, 802.

[4] According to the *Sydney Mail and New South Wales Advertiser*, the pair was a gift from the "Vermont Agricultural Society." It is likely, though, that they came from the VTMSBA. Ibid.

[5] "The Metropolitan Intercolonial Exhibition," *Sydney Morning Herald*, 2 May 1878, 3.

[6] Ibid.; "Agricultural Society of New South Wales," *Sydney Morning Herald*, 9 May 1878, 7.

[7] "The Metropolitan Intercolonial Exhibition," 3; "Agricultural Society of New South Wales," 3.

[8] "The Agricultural Society of New South Wales," *Sydney Mail and New South Wales Advertiser*, 5 July 1879, 17.

[9] "The Merino of the Past and of the Future," *Sydney Mail and New South Wales Advertiser*, 10 June 1899, 1325; "Breeders' Facts," *Sydney Mail and New South Wales Advertiser*, 4 August 1883, 210; "Sale of Stud Sheep at Mudgee," *Sydney Mail and New South Wales Advertiser*, 4 August 1883, 211.

[10] "Breeders' Facts," 210.

[11] "Lana," "Sheep Breeding," *Wairarapa Daily Times*, 12 September 1907, 2.

[12] H. B. Austin, *The Merino: Past, Present and Probable* (Sydney: Grahame Book Co., 1947), 54.

[13] "Lana," "The Merino of the Past and of the Future," *Otago Witness*, 29 June 1899, 7. For some, the impact of "American blood" was still a cause for consternation in the mid-twentieth century. See Austin, *The Merino*, 110-113

[14] H. B. Carter, *His Majesty's Spanish Flock; Sir Joseph Banks and the Merinos of George III of England* (Sydney: Angus & Robertson, 1964), 3, 44.

[15] Ibid., 6-8.

[16] Carroll W. Pursell, "E. I. duPont and the Merino Mania in Delaware, 1805-1815," *Agricultural History,* 36 (1962): 91.

[17] Roger J. Wood and Vítězslav Orel, *Genetic Prehistory in Selective Breeding: A Prelude to Mendel* (Oxford: Oxford University Press, 2001).

[18] Carter, *His Majesty's Spanish Flock*, 6-8.

[19] See Harriet Ritvo, "Possessing Mother Nature: Genetic Capital in Eighteenth-Century Britain," in *Early Modern Conceptions of Property* (London and New York: Routledge, 1995), 413-426; Sarah Franklin, *Dolly Mixtures: The Remaking of Genealogy* (Durham, N.C.: Duke University Press, 2007).

[20] Wilson, *Hill Country of Northern New England*, 75-76.

[21] Carter, *His Majesty's Spanish Flock*, 49-53.

[22] Ibid., 54-59; Joseph Banks, *Some Circumstances Relative to Merino Sheep: Chiefly Collected from the Spanish Shepherds, Who Attended Those of the Flock Paular...and also Respecting the Sheep of the Flock of Negrete* (London: W. Blumer & Co., 1809), 7.

[23] VTMSBA, "Introduction of Merino Sheep into the United States from Spain," *Spanish Merino Sheep,* 1: 28.

[24] Ezra A. Carman, H. A. Heath, and John Minto, *Special Report on the History and Present Condition of the Sheep Industry of the United States* (Washington, D.C.: US Department of Agriculture, Bureau of Animal Industry, 1892), 132. As "Napoleon entered Spain," the authors recounted, "his soldiers and those of Wellington slaughtered and ate thousands of sheep."

[25] Ibid., 132.

[26] VTMSBA, "Introduction of Merino Sheep into the United States from Spain," *Spanish Merino Sheep*, 1: 20. In what must have been a painful turn of events for him, Cragie was later seen paying $1,000 for a merino ram.

[27] Eldad Harlow, quoted in VTMSBA, "Introduction of Merino Sheep into Vermont," *Spanish Merino Sheep*, 1: 52.

[28] Edwin Hammond, quoted in ibid., 54.

[29] Carman et al., *Special Report*, chapters 1 and 2. For the history of livestock breeding in Europe, see Robert Trow-Smith, *A History of British Livestock Husbandry*, 2 vols. (London: Routledge and K. Paul, 1957); Margaret Derry, *Masterminding Nature: The Breeding of Animals, 1750-2010* (Toronto: University of Toronto Press, 2015).

[30] Harold F. Wilson, "The Rise and Decline of the Sheep Industry in Northern New England," *Agricultural History,* 9 (January 1, 1935): 39.

[31] Franklin, *Dolly Mixtures*, 118-157. For the role of domestic animals in "new world" colonization, see Virginia D. Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford: Oxford University Press, 2004); William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983); William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991); Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 1986).

[32] Cronon, *Changes in the Land*.

[33] Carman et al., *Special Report*, 29.

[34] Ibid., 53.

[35] Quoted in ibid., 43-44.

[36] Carroll W. Pursell, "E. I. duPont, Don Pedro, and the Introduction of Merino Sheep into the United States, 1801: A Document," *Agricultural History*, 33 (1959): 86-88.

[37] James Mease, "Observations on Sheep," *Archives of Useful Knowledge*, 1 (1811): 103-106. Quoted in Pursell, "E. I. duPont, Don Pedro," 88.

[38] Pursell, "E. I. duPont and the Merino Mania in Delaware," 92. Seventy rams and twenty-one ewes survived.

[39] Ibid., 91.

[40] Carman et al., *Special Report*, 29.

[41] VTMSBA, "Introduction of Merino Sheep into the United States from Spain," 1: 25.

[42] Ibid., 31; Vermont Merino Sheep Breeders' Association (VTMSBA), "Introduction of Merino Sheep into the United States from Spain." *Register of the Vermont Merino Sheep Breeders' Association,* 2 (1883): 45.

[43] Humphreys reportedly sold two pairs for a combined $6,000. Pursell, "E. I. duPont and the Merino Mania in Delaware," 95.

[44] Quoted in ibid., 91. See also Steven Stoll, *Larding the Lean Earth : Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002), 108-120.

[45] Quoted in Pursell, "E. I. duPont and the Merino Mania in Delaware," 95.

[46] Stoll, *Larding the Lean Earth*, 116. See also Wilson, *Hill Country of Northern New England*, 76.

[47] Stoll, *Larding the Lean Earth*, 108, 110, 116; Pursell, "E. I. duPont, Don Pedro." Growing technological sophistication and intensive capital investment soon disassociated growing and milling. Stoll, *Larding the Lean Earth*, 116.

[48] Pursell, "E. I. duPont and the Merino Mania in Delaware," 95.

[49] Austin, *The Merino*, 63-64.

[50] Ibid.

[51] For the evolutionary history of Australia, see Alfred W. Crosby, *Ecological Imperialism*; Tim F. Flannery, *The Future Eaters: An Ecological History of the Australasian Lands and People* (Chatswood, N.S.W.: Reed, 1994).

[52] Austin, *The Merino*, 64.

[53] Merinos were, according to Steven Stoll, "an unmistakable geopolitical force in the northern countryside." Stoll, *Larding the Lean Earth*, 113-114.

[54] Carman et al. trace this dissemination in detail in *Special Report*.

[55] Pursell, "E. I. duPont and the Merino Mania in Delaware"; Wilson, "Rise and Decline."

[56] Wilson, "Rise and Decline," 25-29.

[57] Ibid., 28, 31.

[58] Ibid., 12-13.

[59] VTMSBA, "Introduction of Merino Sheep into Vermont," 1: 51.

[60] VTMSBA, "Introduction of Merino Sheep into the United States from Spain," 1: 28.

[61] Wilson, "Rise and Decline," 25-26; VTMSBA, "Biographies," *Register of the Vermont Merino Sheep Breeders' Association,* 2 (1883): 27–28; VTMSBA, "Introduction of Merino Sheep into the United States from Spain," 1: 33; VTMSBA, "Introduction of Merino Sheep into Vermont," 57.

[62] S. Axel Anderson and Florence M. Woodard, "Agricultural Vermont," *Economic Geography*, 8 (1932): 25; Wilson, "Rise and Decline," 13, 15.

[63] Wilson, "Rise and Decline," 14; Wilson, *Hill Country of Northern New England*, 80; Michael Sherman, Gene Sessions, and P. Jeffrey Potash, *Freedom and Unity: A History of Vermont* (Barre: Vermont Historical Society, 2004), 172.

[64] Ibid., 31.

[65] "The Australian Meat-Trade," *Chambers's Journal of Popular Literature, Science and Arts,* 11 (April 21, 1894): 246.

[66] Chapman, "Improvement in Vermont," 218; Wilson, "Rise and Decline," 26; Wilson, *Hill Country of Northern New England*, 89.

[67] Anderson and Woodward estimated the proportion of marginal land at the turn of the twentieth century as approximately 40 percent of the total area of Vermont. Anderson and Woodward, "Agricultural Vermont," 24-25.

[68] Wilson, "Rise and Decline," 13.

[69] Ibid., 13, 14.

[70] Ibid., 14.

[71] Ibid., 22.

[72] Ibid., 30.

[73] Chapman, "Improvement in Vermont," 218.

[74] "Farmers' Institute: The State Board and Merino Sheep Breeders at Middlebury," *Burlington Weekly Free Press*, 15 February 1889, 1.

[75] Chapman, "Improvement in Vermont," 218.

[76] E. S. Stowell, "Merino Wool Industry," *Fourth Report of the Vermont Board of Agriculture*, (Montpelier, Vt.: J. & J. M. Poland, 1877): 72.

[77] Ibid., 73.

[78] VTMSBA, "Aims of Breeders of Merinos in Vermont," 86.

[79] Ibid., 88. H. B. Austin, a mid-twentieth-century authority on the history of Australian sheep breeding, noted that the question of whether "plain-bodied" or wrinkly merinos were more faithful to the original Spanish type was widely debated in the nineteenth century. It is likely that the Spanish *cabanas* varied enough to account for later divergent types. Austin, *The Merino*, 168.

[80] Wilson, "Rise and Decline, 27; Sherman et al., *Freedom and Unity*, 232. The average weight of fleece more than doubled, from 2.2 pounds per animal in 1840 to 5.34 in 1870. Wilson, *Hill Country of Northern New England*, 88.

[81] VTMSBA, "Aims of Breeders of Merinos in Vermont," 86.

[82] Ibid., 88.

[83] J. E. Montague, "Sheep," *Fourth Report of the Vermont Board of Agriculture*, 62.

[84] Wilson, *Hill Country of Northern New England*, 185.

[85] Wilson, "Rise and Decline," 29-30; Wilson, *Hill Country of Northern New England*, 94.

[86] Austin, *The Merino*, 48-62.

[87] "Farm Notes," *Ashburton Guardian*, 24 May 1892, 2.

[88] "Weight Of Wool," *Wanganui Herald*, 17 February 1888, 2.

[89] "Farm Notes," 2.

[90] "American Merino Wool," *Hawke's Bay Herald*, 2 August 1882, 3, reprinted from the *Town and Country Journal*.

[91] "Vermont Merinos at The Fifth Series of London Sales," *Otago Witness*, 15 January 1902, 9. Although wool grading today measures the diameter of the fibers that make up a fleece in microns, in the nineteenth century the English or "Bradford" Count, which classed fleece according to the amount of yarn that could be spun from one pound of clean wool, prevailed. "Fine" wool referred to everything over 64s, and "superfine" was often used to distinguish 80s. For an excellent guide to wool grading and the various systems employed, see Rodney Kott, "Wool Grading," Montana State University (1993). Online: http://store.msuextension.org/publications/AgandNaturalResources/MT198380AG.pdf. Accessed 26 April 2016.

[92] "Lana," "Sheep Breeding," 2.

[93] Ibid.

[94] "Lana," "Sheep Breeding," 2. See also Austin, *The Merino*, 172.

[95] Rebecca J. H. Woods, "Breed, Culture, and Economy: The New Zealand Frozen Meat Trade, 1880-1914," *Agricultural History Review*, 60 (2012): 288–308; "From Colonial Animal to Imperial Edible: Building an Empire of Sheep in New Zealand, ca. 1880-1900," *Comparative Studies of South Asia, Africa and the Middle East*, 35 (January 1, 2015): 117–136.

[96] "Lana," "Sheep Breeding," 2.

[97] Wilson, *Hill Country of Northern New England*, 187.

[98] "Lana," "Sheep Breeding," 2.

[99] Wilson, "Rise and Decline," 31-32; Wilson, *Hill Country of Northern New England*, 186-187. In New Zealand, the frozen meat trade spurred the development of novel "native" colonial breeds. Woods, "Breed, Culture and Economy"; Woods, "Empire of Sheep."

[100] Wilson, "Rise and Decline," 19, 32; Anderson and Woodward, "Agricultural Vermont," 25; Sherman et al., *Freedom and Unity*, 200.

[101] Wilson, "Rise and Decline," 18, 32.

[102] Wilson, *Hill Country of Northern New England*, 191-193.

[103] Wilson, "Rise and Decline," 12-13, 36; Wilson, *Hill Country of Northern New England*, 203.

[104] Anderson and Woodward, "Agricultural Vermont," 26. The number of dairy cows rose from 146,128 in 1850 to 270,194 in 1900. Wilson, *Hill Country of Northern New England*, 205.