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ROUNDTABLE

Navigating Climate, Culture, Nature, Science, and Race: A Roundtable on Climate History in the Gilded Age and Progressive Era

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Abstract

What is climate history? How can it serve as a lens through which to view other historical questions? This roundtable identifies key themes in Gilded Age and Progressive Era climate history, and demonstrates that this era was pivotal for both scientific and cultural perceptions of climate. It also shows how climate history can illuminate other subjects, including histories of science, medicine, health, and race. Further, it considers present-day implications. This roundtable began as a session sponsored by the Society for Historians of the Gilded Age and Progressive Era at the 2024 Organization of American Historians annual meeting in New Orleans. What follows is a conversation based on that panel, a selected bibliography of scholarly sources, and a collection of primary sources for teaching climate history.

Keywords: climate; science; environment; agriculture; Gilded Age and Progressive Era

What is a good definition of climate, especially in relation to the Gilded Age and Progressive Era?

Lawrence Culver (LC): The simplest explanation, and one that many people in this historical era would have accepted, is that climate is long-term weather in a specific place. They were especially interested in determining the agricultural viability of places, or what is best to plant where. That preoccupation long predates Americans of the Gilded Age, especially in settler societies navigating unfamiliar environments. It is, however, crucial to understand that climate was and is not simply "the weather," but rather a host of cultural and intellectual constructs surrounding weather. Climates could be healthy or unhealthy, for example, supposedly generating the "miasmas" that were blamed for illnesses, most infamously malaria, literally "bad air." This idea of healthy or unhealthy climates would

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persist even as germ theory and medicine advanced in the later nineteenth century and spurred the ailing (especially those suffering from respiratory illnesses) to seek healthier climates. Yet climate could be much more. It was imbued with a toxic brew of racist myths, ranging from the idea that the moderate climate of California explained the supposed laziness of Mexican Californians, or that the hot, humid climate of the South explained the purported torpor of former slaves and poor whites. Climate could be used to justify racism, dispossession, or slavery. It also, most especially in the Gilded Age and Progressive Era, became associated with ideas of white racial regeneration and eugenics. For example, while late nineteenth-century boosters could promote California as a place for agriculture or health, they also touted it as the first Mediterranean climate claimed by Anglo-Saxons, and thus key to a "rebirth" of the white race. White supremacy permeated conceptualizations of climate and racial health in ways that we are only now starting to grapple with.

Bryan Paradis (BP): Jared Farmer's *Trees in Paradise* (2013) has shown that by the 1890s, Southern California boosters ranging from civic groups to trade associations prompted a change in the region's climate description from that of a sub-tropical climate to a Mediterranean climate. Of course, the climate and weather itself did not change, but the verbiage used to describe those two variables did. Relabeling the region as having a Mediterranean climate conversely advertised Southern California as a new society steeped in modernity, glamor, and public health. In this sense, climate was more of a marketing tactic and identifier for imagined communities than it was a science.

Karolin Wetjen (KW): The same is true for discussions about tropical and subtropical climates in European colonies. When climatology emerged as a discipline – with its name coming from the German term *Klimatologie* – European societies were discussing the effects of heat and humidity in African and South Asian colonies. To better understand colonial climates became a driving force of the discipline. Imperialism shaped understandings of climate all over the world.

Brian Frehner (BF): I cannot easily define "climate" during this era, but I would start with the simplistic notion I often use when describing environmental history to people unfamiliar with the field: it can be understood as a dialectic between nature and culture that explores how each changes the other over time. So, too, with climate. In this era, climate described long-term weather patterns but was much more than simply "weather" or "nature." Rather, the term encompassed the impacts of weather on health, economies, and people's abilities to shape the land through economic activities, including agriculture or industry. Thus, climate often encompassed social, economic, cultural, and political contexts, as well as the nature being changed. Whatever definition one adopts, I think it is important that we understand that modern notions of "climate" are heavily invested in how we will shape the environment in the future to slow or halt the effects of the fossil-fuel economies that govern so much of the planet. Certainly, people in the late nineteenth and early twentieth centuries thought of the future when they used the term "climate."

Dustin Meier (DM): For middle-class social reformers in the Progressive Era, the distinct microclimate of industrial cities was strongly imbued with moralism. Settlement house workers and others often perceived the heat, smells, and coal smoke of the urban climate as coterminous with the supposedly declining morals of the working class. Either reforming that climate or removing children and families from it was often central to these reformers' missions, and it led to reforms such as smoke abatement, summer

camping, and the quest to add more urban green space. For these people, climate was the long-term trend of increasing temperatures due to the urban heat island and the new atmospheric hazards of the fossil-fuel economy. Climate was also the impact that these things had on the people they purported to help and their general anxieties about the changes wrought by industrial capitalism.

Caroline Grego (CG): I come to climate history as a historian of the U.S. South, a region where the white elite developed specific concepts about climate to justify the enslavement of African-descended peoples. By this time, obviously, slavery had been abolished, but many of those false ideas that white southerners promoted about Black southerners' inherent suitability for labor in a hot, humid, malaria-ridden climate persisted and evolved. Indeed, many white southerners' concepts about climate took on some new, dispossessive forms: Could the South's climate be remade and rendered more agreeable to both white southerners and potential white immigrants through, for example, drainage? Could the South, properly drained and farmed, be more profitable and pleasant climatically, in a way that promoted racial segregation? These ideas found widespread expression among white southerners during this era, which of course was also the era of the dawn of Jim Crow. The critical definitions of climate outlined above have made me think carefully about what distinguishes climate knowledge during this era from both earlier and later periods. We have already noted that when historical actors discussed "climate," it was rarely just a reference to long-term weather patterns within place, but rather it was a signifier for both climatic impacts and social understandings of those impacts. The late nineteenth and early twentieth centuries provided a transformative time for us to investigate "climate" as such a broad term because this period was an era of unprecedented and intensifying industrial and agricultural change that had, as we know now, a massive impact on our present climate.

How did people in the Gilded Age and Progressive Era define and learn about climate?

LC: Again, I think most would define climate as long-term weather in a specific location. Perhaps this was less true by the later nineteenth century, but older ideas of climate were tied to geography: specific places had specific weather regimes. This idea went all the way back to ancient Greece and was still quite influential during and after the Enlightenment. How they learned about climate is a more difficult question. Nineteenth-century thinkers certainly still read older sources. Alexander Von Humboldt, for example, who straddled the transition from the Enlightenment to more modern ways of environmental thinking, was influenced by older geographical ideas of climate. People have recorded daily weather conditions in diaries or noted unusual weather events for millennia – from how often the Tiber froze in ancient Rome, to how early cherry trees blossomed in Japan. In most places though, instrument-based records date from about the 1880s. That is not to say that people had not been measuring air pressure, temperature, or humidity before then. Thomas Jefferson, for example, often took measurements using instruments at Monticello. But even in his case, the regularity of his measurements – along with the time and location and the specific instruments used – could vary, making his records less valuable and consistent. Federal surveys of the West also recorded weather with instruments. Beyond instrument-based records, though, there was also a constellation of vernacular records, from diaries to almanacs, and collective memories of big events, such as hurricanes or floods.

Something especially interesting about Gilded Age and Progressive Era climate history is how many different factors emerged at the same time: regular instrument-based weather records, professionalization of the sciences and academic disciplines, the emergence of land-grant universities, and the first government agencies to record and predict weather. The history of climate science in this era provides an opportunity to see how the professionalization and institutionalization of knowledge production changed knowledge in some ways, while at the same time other, older ways persisted. Beyond the United States, in the 1870s and 1880s, British authorities were keenly interested in understanding monsoons, and other weather patterns across their empire, especially as droughts and horrific famines stalked regions they ruled or places they were eager to open to capitalist market forces, such as India and China. The result was a more systematic recording of weather and the sharing and compilation of weather data.

KW: It is important to remember that these facets of climate were also discussed in the popular media. Daily newspapers and magazines reported the weather regularly and even speculated about possible climate changes. Since its emergence at the end of the nineteenth century as a subdiscipline of geography, climatology has attracted public interest, not least because of the close link between climate and race. Newspapers, magazines, and journals therefore played an important role in how people learned about climate. Such outlets have so far been neglected in the study of climate knowledge, yet they offer invaluable insights, particularly regarding everyday understandings of climate.

BF: During the Gilded Age and Progressive Era, people learned about climate based upon knowledge cultivated locally, by physically confronting nature, and by conceptualizing notions of climate in their minds about how the material world might function. People engaged with nature through subsistence activities such as agriculture. They learned about nature by traversing the landscape. As one scholar put it, the physical health of many westward, overland travelers and the material aspects of the landscape became so intertwined that "the health of the land" and their bodies did not exist in isolation from one another. Thus, local observations enabled both Indigenous people and settler societies to learn about climate. Farmers in settler societies might even gain knowledge about climate from *The Old Farmer's Almanac* or from railroad brochures that touted the idea that "Rain Follows the Plow." Indigenous people learned through oral traditions and passed along ideas from one generation to the next.

CG: The experiential ways that people understood the climates in which they lived – through their labor, observing seasonal patterns, and shaping their actions on the basis of that knowledge – were still quite dominant during the Gilded Age and Progressive Era. But, as the other commenters have pointed out, this period was a transitional era during which weather observations in the United States were increasingly standardized and professionalized, through federal bureaucracies and educational institutions. People in the South engaged with both modalities of learning about and understanding climate. Through the start of the twentieth century, journals kept by landowners were still largely records of daily weather conditions, with evidence that they were using some instruments, primarily thermometers and, in some cases, anemometers. Meanwhile, U.S. Weather Bureau agents across the South also began to experiment with and devise ways of spreading information to the general public, especially about hurricanes; they could

not forecast with precision, but they could draw upon technology and communications systems to collect and disseminate news about coming storms. Previously, southerners depended upon vernacular knowledge about rising, shifting winds, changes in humidity, and the appearance of clouds and fronts to alert them to hurricanes, but even that knowledge provided very little warning, especially for people living in places vulnerable to storm surge or other forms of flooding. The Gilded Age and Progressive Era was not a time of revolutionary change for grasping the nature of these major climate elements – that change would come later in the twentieth century – but some shifts were already evident.

How was climate knowledge created? How was it used and abused?

KW: During the late nineteenth and early twentieth centuries, the connection between the "right" climate, the highest productivity, and the greatest progress of civilization was firmly established by German geographer Friedrich Ratzel and, in the United States, by Yale geographer Ellsworth Huntington. It seemed possible to create desirable climates through technical means. Heating systems, and especially air conditioning systems, became ways of creating a "weather à la carte," and promised the highest productivity and comfort. Euphoric engineers promised future control of the climate, which in turn would allow modern man to become independent of the harmful climate. People desired to see the atmosphere subject to calibration, control, and change. At the same time, however, these considerations also demonstrated man's dependence on the climate and the potential threat that the climate could pose to civilization, progress, and health.

BF: Climate knowledge was created individually and collectively by various constituencies for different purposes. On one hand, people created climate knowledge from their personal encounters with material nature as when they experienced long-term drought that transformed environments and limited or prevented future choices about how they might engage with the natural world, such as planting a crop. On the other hand, people created climate knowledge intellectually by conceiving ideas that enabled individuals or collective groups to realize their goals, as when scientists published findings that influenced (or failed to influence) how and where western expansion might occur. The possibility that people used and abused climate knowledge for specific aims suggests that power of various forms is embedded in what people know or think they know about climate. For example, industries, universities, and government agencies who employed personnel to formulate climate-related knowledge potentially possessed significant power to shape how societies thought about climate and their ability to affect environmental change. Climate knowledge was not always used for Machiavellian purposes. For instance, in some cases, it was simply used to convince settlers to move out onto the Great American Desert. Climate knowledge was certainly used to justify colonial expansion, but it was also used to question the price of "progress" and the scale at which humans affected environmental change.

What was the interplay of scientific knowledge, vernacular science, and folk belief?

LC: The Gilded Age and Progressive Era was a turning point from vernacular science to professionalized institutional science. Earlier, there was a huge amount of vernacular science, from Benjamin Franklin's famous experiments with lightning to the New Madrid

earthquakes of 1811–1812, or the spectacular Leonid meteor shower in 1833, which produced cascades of vernacular scientific observations. Some of these observations were simply recorded in diaries or shared in letters, but in other cases, they were sent to university professors or institutions such as the Smithsonian. Perhaps the most significant individual in this regard was Eunice Newton Foote, whose 1850s experiments proved that atmospheres containing more carbon dioxide retained more heat, thus providing the first concrete evidence for the science of climate change.

All that vernacular knowledge and vernacular science was still percolating, but by the Gilded Age and Progressive Era, professionalized academic science was beginning to supplant it. The agricultural and natural sciences in the United States grew with the formation of land-grant colleges and universities, and a host of those were founded in the years following the Civil War. That development created many more employment opportunities for scientists, and it also generated much more scientific data and weather records. And the role of the federal government in fostering scientific research and generating weather data was accelerating rapidly by the beginning of the era. The Smithsonian Institution provided weather measuring instruments to telegraph companies, and it even organized a weather reporting network. By 1860, five hundred weather stations furnished daily reports via telegraph. Not long after the Civil War, in 1869, a new telegraph service, headquartered in Cincinnati, began collecting weather data and producing weather reports. In 1870, Congress passed a resolution requiring the Secretary of War "to provide for taking meteorological observations at the military stations in the interior of the continent … and for giving notice on the northern lakes and on the seacoast, by magnetic telegraph and marine signals, of the approach and force of storms" ("History of the National Weather Service," National Weather Service, National Oceanic and Atmospheric Administration, https://www.weather.gov/timeline). President Ulysses S. Grant signed the bill into law, and although it was not yet a full-fledged federal agency, a new national weather service had been born within the U.S. Army Signal Service's Division of Telegrams and Reports for the Benefit of Commerce. In 1890, this division became a civilian agency when its responsibilities were shifted from the military to the newly created U.S. Weather Bureau within the U.S. Department of Agriculture. By 1898, the U.S. Weather Bureau, like the nation, would expand geographically beyond its continental confines when President William McKinley ordered the Bureau to create a hurricane warning network in the Caribbean. In addition, a host of new or newly expanded federal agencies also generated climate data. One of the most famous came from the U.S. Geological Survey, in the form of John Wesley Powell's magisterial *Report on the Lands of the Arid Region of the United States* (1878).

KW: Pronounced scientific and institutionalized research into weather and climate developed during this era. Nonetheless, the emergence of a modern view of weather and climate did not necessarily cause popular, everyday knowledge about climate to disappear. In agriculture, particularly, traditional knowledge persisted for a long time. In Europe, the *Hundertjähriger Kalender* (Centennial Calendar), along with farming rules, or farmers' proverbs, known as *Bauernregeln* in German, represent historical methods of predicting weather and agricultural cycles based on long-term observations and folk knowledge. The *Hundertjähriger Kalendar*, attributed to the seventeenth-century abbot Mauritius Knauer, is a weather prediction system based on the idea that weather patterns repeat cyclically over a seven-year period. The farmers' proverbs are relatively short, rhyming sayings that offer guidance on planting, harvesting, or forecasting weather, often

tied to specific days or saints' feast days. Collections of these climate rules were repeatedly collected and republished at the end of the nineteenth century. Knowledge of climate, or perhaps more accurately, vernacular understandings of climate, existed beyond scientifically precise measurements and was essentially linked to experiences of the seasons and climatic conditions in particular places. These different forms of knowledge sometimes contradicted each other, but at other times they complemented each other and were intertwined. Ultimately, knowledge about healthy and pathogenic climates was based on experience more than science. Even when Thomas Mann wrote *The Magic Mountain* (1924), the effect of altitude on the cure for tuberculosis was still disputed in medicine.

BF: This is an important question that has different answers depending upon the particular field of science and the place where scientists and vernacular practitioners cultivated their beliefs. I argue in my work that vernacular oil prospectors who cultivated local knowledge in the Southern Plains states developed epistemologies that informed the scientific knowledge generated by professional, university geologists. Early in the Gilded Age, neither group existed comfortably as a discrete entity, and both reflected a range of practices and held varying beliefs. As the field of petroleum geology matured, professional scientists and vernacular prospectors competed with one another for cultural and economic power and to stake a claim for accuracy about who was most qualified to find oil. The interplay was often contentious and acrimonious. Neither group used the term *climate* to describe the knowledge they produced, yet both were very much involved in generating knowledge that had profound effects on their scientific, cultural, and economic contexts. After all, they were locating a resource that would profoundly shape twentieth-century climatological history. Much work remains to be done regarding the relationships between those who generated climate-related knowledge.

CG: One major advance in scientific and medical knowledge during this era was the late nineteenth-century discovery that mosquitoes transmit a parasite that causes malaria. This development was tied to vernacular understandings of climate because, of course, wet, swampy, marshy landscapes – especially in the U.S. South but also in places like California and newly claimed overseas colonies – were construed as unhealthful climates (especially for whites) in part because malaria was often endemic there. These vernacular understandings were flawed: miasmas and "bad air" did not cause malaria; rather, the mosquitoes that thrived in those habitats did. Climate was not precisely responsible for the poor health of human inhabitants of these places, but for a long time, many people thought it was. I bring up malaria because I think it is a useful case study for looking at how different constituencies respond to new information about health. Whereas earlier understandings of malaria were shaped by a certain concept of climate, those ideas changed during the Gilded Age and Progressive Era. However, it took time to develop responses to this discovery, and it occurred within imperial contexts. One of the first large-scale malaria control projects was not in the American South (those did not begin until later), but rather in Central America, during the construction of the Panama Canal. Through such actions, we can also see how people attempted to shape climate using newly acquired medical knowledge, labor control, and infrastructure. Colonial contexts were the testing ground for experiments with manufactured climates. This is an important example to consider how people during this era moved between and from vernacular knowledge to what we today call scientific knowledge.

How do we think about historical agency in relation to climate? In some cases, people thought not only that the climate was changing, but that potentially they could change the climate. That idea is quite different from more recent climate denialism, which asserts that humans cannot alter the climate.

KW: The answer must be twofold. On the one hand, people during the Gilded Age and Progressive Era firmly believed they could change the climate, but they also were fully aware of the potential catastrophe of climate change. This idea becomes especially clear if we think about the threat of a new ice age. By 1880, scientists generally accepted the theory that there had been significantly colder periods in the Earth's climate history, and this understanding spurred important research in geology and climatology. The results of this research also aroused great interest outside scientific circles. The popular press even presented readers with scenarios of a coming ice age. Such imaginings demonstrated the political and social dimensions of climate change, and they resonated with longstanding Christian narratives of the end of the world. In particular, a possible change in the Gulf Stream was identified as one of the most important and likely triggers of a new ice age. Many technological fantasies began with this idea. Even fiction addressed the effects of a change in the Gulf Stream caused by technical means. Writers imagined massive snowfalls in the summer, the return of the mammoths, and the coming of hunger and death. Interestingly, in Europe, such a change in the Gulf Stream was always associated with world politics. It was often the Americans who "turned off" the Gulf Stream for the Europeans. People were fascinated by and convinced of the opportunity to change the climate positively, but they also feared climate change.

LC: One thing we can learn from looking at this question is to remember that people of the past more readily accepted something we are now having to relearn: that the natural and human worlds intersect. We certainly understand that we can affect the natural world, but older climatic ideas about things like miasmas, while factually erroneous, demonstrated knowledge that human beings were enmeshed in the natural world, and not entirely separate from it. Likewise, faulty ideas about how humans might change the climate still assume an interrelationship between humans and nature. Ever since Rachel Carson's *Silent Spring* (1962), we have basically had to relearn this fact and comprehend the troubling reality that everything from pesticides to microplastics spread throughout ecosystems and into human bodies. Although our knowledge is much more sophisticated, perhaps people who labored in nature, and lived closer to it than many of us do, comprehended this interrelationship more readily. They accepted that humans could act to affect or change nature, and in turn that nature had agency to affect humans.

BP: Not only were there faulty ideas about how humans might change the climate during this era, but there were also flawed conceptualizations about humans' ability to work around the climate. In the early twentieth century, the U.S. Department of the Interior experimented on sequoias from California, arguing that one of the country's most iconic and symbolic trees, with proper care, could be made suitable for Washington, D.C. Even though the trees came from the opposite coast of the United States and an entirely different climatic region, public officials expressed optimism that they could thrive in Washington. Every sequoia planted there eventually died from the colder winters and warmer summers, yet officials would not concede defeat. They refused to believe that climate was the primary concern. Documented attempts to grow sequoias in Washington,

D.C., occurred again in 1916, 1919, and 1931. The trees, of course, met the same devastating results each time. Government officials insisted that with enough trial and error, sequoias surely could be grown far outside their original climate zone. This example illustrates that the turn of the twentieth century witnessed instances where humans sought to experiment and, hopefully, circumvent differences in climate regions.

CG: I keep returning to the idea that no matter what agency people during the Gilded Age and Progressive Era perceived they had over the climate, the fact is that the industrial transformations of the era were so intense, and so consuming, that they established the foundations of the present-day climate crisis. The material consequences are so profound that it is difficult for me to look past them to interrogate how people of the era viewed their level of control over climate. A fossil-fuel-based economy emerged at this time, tying together huge leaps forward in capitalism, industrialization, and imperialism. Human consumption likewise increased in ways that would later shape the climate crisis, and that increase was fed by the emergence of agribusiness and the ballooning number of animals raised, killed, and consumed by people. This reality speaks to what I see as key to understanding the Gilded Age and Progressive Era climate: unintended consequences, on a devastating scale.

BF: Historical actors both did and did not imagine possessing agency over atmospheric conditions. There are numerous examples of optimism regarding technological progress in the form of agriculture, railroads, and dam building that dramatically transformed environments. Do we know whether the people involved in these activities concerned themselves with the possibility that their actions were transforming climate change on local, regional, or global scales? Most importantly, what is the significance of their belief in having agency over climatic change? I am uncomfortable interpreting such beliefs as sheer arrogance or as simple-minded myopia, despite the significant climate instability that challenges life on the planet today.

BP: There is a rich history of humans trying to enact some form of agency or influence over climate and weather. Micronesian sailors used weather talismans in an attempt to mitigate stormy weather during their oceanic voyages. By the nineteenth century, James Pollard Espy's *Philosophy of Storms* (1841) argued that large fires could influence rainfall, thus arguing for the burning of forests in the United States. Some people believed that gunpowder could affect thunderstorms, a result that might mitigate droughts. In the 1890s, the federal government even conducted studies to test such theories. Of course, there is an argument to be made that this example demonstrates not only perceived human agency over climate but also perceived human agency over the ability to negate or to work around one's climate. In this sense, it was less about changing the climate and more about producing a desired weather effect – therefore making the climate a less relevant factor in the development of a location.

CG: I see an interesting combination of hubris and despair in the Gilded Age and Progressive Era, especially from my vantage as a historian who studies hurricanes. On the one hand, I see the fixation of elite white southerners on control, order, and discipline, both over the environment and Black southerners. They were grasping for new ways to structure the South according to their white supremacist vision, and their ideas extended from climate to labor and everywhere in between. They expressed a great deal of

confidence in their ability to fashion society and nature according to their ideologies. But then, catastrophes, including the Great Sea Island Storm of 1893 and the 1900 Galveston hurricane, shook their optimism, because so many people died and because the hurricanes so overwhelmed infrastructure. However, the elite also considered these catastrophes as creating opportunities for new ways to extend control. Even if climate events in this era undermined human agency in one sense, the march of social engineering and technological advances continued. To be clear, I do not say that as a good thing, but the patterns of adaptation and continued control are evident in the wake of climate events.

KW: In my opinion, this question points to something that has been occupying historians for several years now: How can we work historically with our current methods in the face of climate and environmental crises? What challenges do these crises pose for the discipline? Scholarship that deals with the Anthropocene as a concept or formulates alternative terms for it, such as the works of Donna Haraway, illustrates this challenge and the difficulties of detaching oneself from anthropocentrism in historical studies. Climate change is a catalyst for these developments, and we look forward to seeing how the discussion advances in the coming years.

LC: Historians can contribute to this discussion about ongoing environmental crises. Climate science can do amazing work to reconstruct past climates, and then apply that history of climate to human history, and often pinpoint specific moments and places where climate shaped human history. Some of that work though is *really* big-picture history: nomadic peoples moving out of the Central Asian Steppes, Mayan city-states collapsing due to drought, and other examples of macrohistory where local stories might be in danger of being obscured. By maintaining a focus on agency, historians can provide a much more detailed understanding of how individuals and societies responded to climate change, and how they could imagine they might even be able to change climate, or at least adapt agriculture or other human practices.

How does climate history complicate the history of the environmental movement?

LC: Climate history reminds us that there were a greater number and variety of people intensely interested in the environment earlier than we think and that their motives and motivations were complex. John Wesley Powell is often remembered as a protoenvironmentalist because of his deep understanding of the nature of western aridity and climate, and the limits that those factors imposed. His warnings were ignored, to the peril of many settlers. Yet his solution was the massive hydraulic reengineering of water in the West, a development that did occur in the twentieth century, and something that many environmentalists later decried. Climate history reminds us that the history of environmentalism is older, more diverse, and more complicated than we think. Historians of the United States have learned to conceptualize the "long" Civil Rights Movement as chronologically bigger than the mostly 1950s–1960s narrative still sometimes taught in high school or college survey classes. Similarly, perhaps climate history can help us uncover and conceptualize a similar "long" history of the environmental movement.

KW: While today climate and environmental protection can hardly be separated from one another, this is not the case for the late nineteenth and early twentieth centuries. The environmental movement of that era focused on completely different issues – on animal

and landscape protection, on clean air, on water protection – but not really on the climate. Despite all the speculation about climate change, people in the Gilded Age and Progressive Era ostensibly saw it as the weather, and thus as something constant. In my opinion, one should therefore rather ask when and in what form climate protection became important and visible in the environmental movement. This is an exciting question because it can show how environmental debates are also constantly changing depending on social and political upheavals. Energy policy considerations always play an important role, especially for climate protection. Examining the historical dimension of interrelationships between climate, environment, and energy seems important, especially for today's debates, in which climate protection is unfortunately still being questioned.

DM: Historians of "municipal housekeeping" or urban environmentalism in the Progressive Era have argued convincingly that the environmental movement long predated the 1970s. Attention to climate bolsters this framework. In addition to measures such as occupational health, garbage collection, or housing reform, much of this environmentalist agenda concerned matters of climate. Settlement house workers, for example, viscerally understood that temperatures during the summer had been steadily rising for decades, since the onset of industrialism in cities such as New York or Boston. They took children outside of the city to summer camps or vacation homes, built rooftop gardens, and petitioned local governments for more green space. Atmospheric changes wrought by industrial pollution led to community activism and legal attacks on coal production. Paying attention to urban climates adds to our understanding of environmentalism and environmental justice, especially in pinpointing the interconnected nature of environmental concerns. Progressive Era reformers understood the deeply ecological nature of industrial cities. Smoke pollution and rising temperatures were entangled with water pollution, crumbling housing stock, and public health. For this reason, programming like summer camps addressed several factors at once. Remembering these interconnections can prove helpful for understanding the history of a movement that later seemed to comprise countless interests and groups. The environmental movement tends to highlight injustices that have resulted from the effects of climate change, while not always acknowledging that these injustices also emerged directly from its causes. Humans began pumping carbon into the atmosphere in the late nineteenth century, which led to global warming and subsequent environmental injustices that began in the late twentieth century. Floods, wildfires, drought, excessive heat, rising sea levels, and food insecurity have disproportionately impacted people in the Global South, Indigenous communities, low-income folks, and racial minorities. But these patterns began in the Gilded Age and Progressive Era. Working-class urbanites at the onset of the industrial period suffered excessive heat, poor air quality, exposure to toxic chemicals, and a lack of green space. Threats posed by climate change began not only with its effects but also directly from its causes.

BP: This question is a timely one. Climate science and theories regarding humans' ability to influence the climate have often been characterized by scientific uncertainty. This uncertainty and mystery within the observational and recorded data encouraged ideas of human agency over the climate. Although we briefly discussed earlier how this perceived agency transitioned into climate denialism by the twentieth century, one of the guiding contributors to both movements was this idea of scientific uncertainty. Scientific uncertainty encouraged climate thinkers to theorize ways in which humans could influence local climates. Similarly, climate thinkers in the late twentieth century manipulated or embraced scientific uncertainty to justify climate denialism. In this sense, the idea of

uncertainty, especially when thinking about the history of climate and the history of climate science, has been a thread of continuity as well as a source for preservation and conservation, as well as indifference.

BF: Studying how people in the past have understood climate offers edifying perspectives for understanding the multiple ways humans currently conceive of climate and may shape modern beliefs about whether humans possess the capacity to alter the planet's atmosphere for better or worse. In the same way that definitions of climate varied for historical actors during the Gilded Age and Progressive Era, so too should modern-day environmentalists consider the varied epistemologies generated by people regarding the climate crisis unfolding around us currently. This point should not be taken as a rationalization of climate denial. Rather, it is meant to convey how the immensity of the problem triggers people to respond with reactions that range from utter indifference to moral outrage and everything in between, responses that exacerbate a polarized culture pervading so much of American life and that increasingly cast the country as irrational and weird among global actors who are looking for leaders to provide solutions to climate-related events that disrupt their lives. As we watch the current climate crisis destabilize ecosystems and lives around the world, one wonders if it is meaningful to reference any "environmental movement" at all in relationship to this problem. Does an environmental movement exist and, if so, where do we look to find its leaders, policies, and objectives?

CG: The other contributors have pointed to illustrative examples, but I do not think there has ever been a coherent or singular environmental movement. The Gilded Age and Progressive Era was of course a time of unprecedented movement toward different kinds of environmental protection: the creation of national parks, the introduction of conservationist principles in land management, and the retooling of urban landscapes to promote health and recreation. But where was the climate in these actions? Many people conceptualized close connections between climate, land, health, and the human condition, and so actions to improve environmental conditions often had climatic concerns behind them. But too, I see precedents in this era for the impacts of the present-day climate crisis. For example, I think of Mike Davis's book, *Late Victorian Holocausts* (2000), where we see how famine and disease are tied to climatic fluctuations and imperial-modernist policies. Tens of millions of people died during famines in the late nineteenth century caused by the uneven effects of climatic changes shaped by human actions. We do not need to imagine the future to see the horrific possibilities of what climate change can hold – we already have history that shows us this. So, as we consider how the history of climate in the Gilded Age and Progressive Era complicates the history of environmental movements, I cannot help but think about how this history could inform contemporary environmental action.

Today we often conceptualize climate as a global problem. Yet this roundtable features a significant number of regional stories about specific places. What is the interplay historically between local, regional, national, and global stories?

LC: Although climate change is a global phenomenon, it plays out quite distinctly in different places, so a focus on regions might inform some present-day concerns, as every place will have to figure out local and regional climate adaptation and mitigation. A focus on specific places helps us avoid grand pronouncements or gross generalizations that can

result when history gets told from a metaphorical perspective of 30,000 feet, producing historical narratives that can be popular sellers in airport bookstores, but get wobbly as soon as we think about them in detail.

KW: Initially, climate was always recorded locally, as the average weather at a specific location. Nevertheless, people were already thinking of it by the late nineteenth century as a globally interconnected system. This formulation was particularly evident in the era's climate classification maps – for example, those by Walter Köppen – as well as in isothermal maps.

DM: During the Gilded Age and Progressive Era, as today, cities developed subtly different climates than surrounding agricultural land or small towns. Industrialization facilitated what we now call the urban heat island. Dense housing, skyscrapers, roads, and other forms of urban infrastructure coupled with the nascent fossil-fuel economy and a lack of green space trapped heat from the sun, leading to a decidedly warmer microclimate. This warming led people to seek refuge on fire escapes or at local parks during the summer, but more crucially, it negatively impacted human health. While climate could significantly impact agriculture and food systems in the Great Plains or Mountain West, in cities it altered peoples' lived experiences and public health. Focusing on these local stories as they played out in urban spaces also shows us with more nuance the power that climate has to contribute to environmental and social inequalities.

CG: I certainly tend to fixate on pockets of the U.S. South, especially the South Carolina Lowcountry. That context shows us that granular understandings of place are vital; they help us see more clearly than perhaps anything else what global and national dynamics do, and how they interact with local conditions to shape not only broader social, political, economic, and environmental conditions but also people's lives. Climate can sometimes feel like this big, distant set of atmospheric conditions. But carefully considering how climate interplays with the individual – as we have established many did during the Gilded Age and Progressive Era – can be a key way to cultivate forms of environmental thinking and consciousness.

BF: The arid climate of the American West was also a major factor prompting irrigation. In the case of both the West and the South, it is clear that region shaped environmental perceptions. Yet again, one must be careful not to use *climate* synonymously with *environment.* The regional climate was often considered in attempts to justify the displacement of Indigenous people, the enslavement of Africans, and the control of labor on southern plantations.

BP: I would like to return to relationships between regionalism, climate, and disease. There is substantial evidence of people in the nineteenth and early twentieth centuries attributing illness and epidemics to various races, with one example being the Chinese community in San Francisco. By this time, however, traditional associations between climate, regionalism, and disease were increasingly challenged. Some thinkers associated and linked disease to specific geographic regions and their climates, rather than to individuals residing there, and some people suggested that relocating to a different region, and thus experiencing a change in climate, could mitigate the effects of illness and help prevent its progression. For instance, James Lind, a physician in the British Royal Navy, argued as early as the eighteenth century

that disease could be attributed to location and climate more so than the inhabitants. His work, *An Essay on Diseases Incidental to Europeans, in Hot Climates* (1768), explored these early understandings of climate, regionalism, and disease. Although various thinkers associated climate with disease, this does not mean that climate no longer had strong ties to displacement and racism. Race and climate would be interlinked throughout the nineteenth and twentieth centuries and beyond.

LC: Ultimately, the consequences of climate change are local, varying wildly from one place to another. As we move into the second quarter of the twenty-first century, it is clearer than ever before that both within the United States and globally we will see a patchwork of responses and efforts carried out by individual cities, states, and countries, sometimes coordinated and sometimes not. The more regional perspectives of the late nineteenth and early twentieth centuries may be instructive for the kind of piecemeal responses to climate change we are likely to get. This realization can also reconnect to older conceptualizations of climate. As noted above, Americans in the Gilded Age and Progressive Era intertwined ideas of climate and weather with ideas – often highly problematic ones – about race, culture, and illness. In some ways, people of the past perhaps thought about climate, environment, and human beings more holistically, as related systems, which they certainly are. At the same time, though, they were perfectly capable of grossly simplifying something complicated like climate for their own ends, whether it was for justifying racism and the displacement of Indigenous people, or for a breezy kind of boosterism that happily ignored climatic dangers in favor of short-term profit.

A significant portion of the regulatory state and regulatory agencies connected to climate and environmental policy in the United States had their origins in the Gilded Age and Progressive Era. Now, parts of the regulatory state are being dismantled. What can the history of the late nineteenth and early twentieth centuries tell us about that?

LC: I have been thinking about the contingent nature of environmental regulations and policy. The regulatory state was haltingly and sometimes haphazardly constructed over more than a century, with legislation, presidential acts, and the creation of government agencies at the top, and with grassroots advocacy and action below. We also see the interplay of federal and local initiatives, particularly for things like trash collection, workplace safety regulations, and the creation of water and sanitation systems, among other matters. Concerns often coalesced into new regulations or agencies. One example is the creation of the Food and Drug Administration, in 1906, due to concerns over unsafe food and dangerous "medications." In recent years, we have seen similar action, however halting and haphazard, as scientific climate concerns and climate protest movements begin to coalesce into concrete legislation and regulations. We can certainly also see, whether in the Gilded Age and Progressive Era or now, that moneyed special interests often get what they want, or at least get the most favorable version of government regulation and policy. We seem to be on the brink of a moment where whole areas of the regulatory state may disappear, or agencies like the National Weather Service may be severely curtailed. Such actions seem like disastrously bad choices. I suspect that in the longer term, even billionaires and corporate industry may discover that an unpredictable regulatory state ruled by individual judicial fiat or competing oligarchs may be worse than

current regulatory regimes that may seem too oppressive or expensive but are at least predictable.

BP: Debates surrounding climate change and humanity's role in altering it have evolved, yet many underlying continuities persist. Naomi Oreskes and Eric Conway's *Merchants of Doubt* (2010) showed how climate change denialism spread after reports surfaced from groups of academics who exploited ideas of scientific uncertainty and used selective data. Although debates surrounding the question of human-induced climate change shifted measurably, the contention that a warmer or wetter climate is good for maximizing profits persisted. The culture of climate science in the Gilded Age and Progressive Era can perhaps be described as one of scientific uncertainty, suffused with a varied plethora of methodologies and data. Much of this uncertainty can be seen in some political communities today, but the field as a whole certainly has evolved since then. Nevertheless, it was not too long ago that scientific uncertainty and capitalist influence prompted the spread of climate change denialism and reports that debunked or downplayed human-induced climate change, and thus promoted deregulation.

What kinds of climate futures did people in the Gilded Age and Progressive Era foresee, or imagine?

BF: People foresaw different climate futures, some of which were utopian and some of which were dystopian. There was widespread optimism that human ingenuity and technology could control or mitigate undesirable climates. Projects like irrigation systems or large-scale engineering projects were envisioned as ways to improve environments. However, there were also fears of climatic catastrophe. Science fiction portrayed futuristic scenarios where humans manipulated climate for good or ill by controlling the weather or by altering ecosystems.

BP: If we think about why climate science and climate futures developed, it is difficult to disconnect climate and climate futures from the history of capitalism. People have often expressed a desire to control or understand climate as a way to maximize resource extraction, especially regarding agriculture. In this sense, a technosolutionist approach existed even during the Gilded Age and Progressive Era. The ability to challenge and change any climate could potentially result in ideal conditions for farming a surplus of food. This hypothetical enamored climate thinkers. Changing the weather within one's place seemed to be more on the mind than the changing climate itself during the tail end of the Little Ice Age (which lasted, in whole, from about the 1300s to the 1800s). The world was about to heat up dramatically, if it was not already doing so.

LC: Perhaps the most useful thing we can learn about examining imagined futures from the past is to remain exceedingly humble about our abilities to predict. The future will almost certainly turn out differently than we think. Some late nineteenth-century Americans imagined wildly ambitious ideas about the future. They seemed to think that some combination of science, technology, capitalism, democracy, and white American Protestantism would yield a future liberated from the actual realities of climate. William Smythe's more fevered prognostications about the possibilities of an irrigated West in *The Conquest of Arid America* (1900) are one example. An even more florid and unhinged

example is William Gilpin, who in *Mission of the North American People, Geographical, Social, and Political* (1873) found in the climate and topography of the North American West the foundations of a future globe-spanning civilization. Promoters also sold to desperate people promises of rejuvenated health triumphing over the realities of tuberculosis or other diseases through the miracle of climate.

To wrap up our roundtable, tell us a bit about how and why each of you became interested in the field of climate history.

BF: I became interested in climate history because I did research into the development of science and technology used in the search for fossil fuels. I have long focused on the oil industry but have recently become interested in coal. The more I learn about coal, the more fascinated I have become with the ability of this resource to transform so many aspects of human life. I feel that there are more stories to tell about how the production and consumption of coal initiated long-term changes that set the stage for our current climate predicament.

BP: I did not originally envision my current project as exploring a history of climate or climate change. Yet while researching the history of engineering and dredging at the National Mall in Washington, D.C., annual reports from the Army Corps of Engineers expressed concern regarding the future sinking of the reclaimed land, as well as concern about flooding. As I saw that the National Mall did, indeed, flood daily by the end of the twentieth century, I began wondering if and how engineers and planners factored in climate change or understood it when creating Potomac Park, the Tidal Basin, and the National Mall. The history of the National Mall is largely a history of flood mitigation and climate change. When did engineers, planners, and politicians recognize flooding and rising waters as a major issue? How did individuals understand climate at the time and how did this interpretation of climate influence not only the National Mall in D.C. but also the nation's environmental policy? When did climate change, as we understand it roughly today, become a real source of concern, and why at that moment?

LC: I became a historian in part because it allows me to be an intellectual omnivore. Historians can draw from virtually any field and discipline with impunity, although of course, one must be careful about using knowledge generated by specialists in other fields. I was interested in the environment and nature before I became an academic historian, so my evolution into an environmental historian was somewhat unsurprising. As for climate history specifically, my current project derived from my first book as well as my teaching. My first book examines the history of Los Angeles and Southern California, and nowhere on earth more relentlessly or successfully packaged and sold climate as a commodity: a miraculous place producing health and wealth (and also more sinister things such as racial rejuvenation), and the perfect sunny setting for profitable citrus groves and outdoor silent movie shoots. I was already thinking about climate when I turned my dissertation into a book, and at the same time, I was starting to teach university courses. If you can successfully get a room of eighteen year olds to tune in and be interested in what you are talking about, you are probably onto something. My students are always interested in the idea that "rain follows the plow," and that this climate myth could have such pernicious effects. They live in a world where they perceive climate change, even if those in political and economic power may still try to deny or downplay it, and they respond to this story of wishful climate mythologizing because, on some level, they recognize it. They inhabit a

world where climate is a malleable thing people fight over. Through climate history, I believe I can tell a fascinating story about how human beings think about nature, utilize nature, have designs to transform nature or be transformed by it.

DM: In my work on settlement house summer camping in the twentieth century, I have continually asked myself how urban reformers criticized the urban environment. I realized that in the Progressive Era, they held a holistic vision of environmental hazards. This realization led me to think more broadly about long-term weather patterns, extreme heat, and atmospheric hazards as unique to this period. I also became interested in this field by teaching courses on environmental history, where I found that students were intrigued to think about how climate has historically altered human history, and how analyzing it can provide new answers to old historical questions.

CG: I became incidentally interested because of my background as a southern environmental historian. For my dissertation, I researched the Great Sea Island Storm of 1893, the deadliest hurricane in South Carolina's history, which meant I had to begin to think about what climate was and what it had meant historically, both from scientific and social perspectives. I was especially interested in how people who lived along the southeastern Atlantic coast understood, learned about, and collected information on climate events like hurricanes. This research caused me to think differently about southern environments because I had to consider the connections between climate and the very materialist perspective I tend to take on land. Climate history has opened up my work as an environmental historian in ways I never really expected.

KW: Current discussions about the climate crisis and the Anthropocene represent both a challenge and an opportunity. My interest in climate history is largely a result of this debate. In my research, I ask how historical actors in the nineteenth and twentieth centuries dealt with climate. I am interested in their ideas about climate and climate change, and which bodies of knowledge were intertwined in those discussions. Perhaps I am even concerned with the somewhat banal question of how the denial of climate change, which unfortunately still exists, can be explained. I also ask how the current environmental crisis influences historical work methodologically. What significance does historical work acquire in the face of changing futures, given that historical work is not, by its very nature, future-oriented?

LC: Truly, our worries about climate change are fears about the future. Yet I hope that readers find this conversation an enlightening confirmation of the fact that climate change also has a past, both as human actions that have changed the atmosphere and temperature of our planet, and as human ideas that have shaped human societies. Culture, capitalism, science, race, and empire, as well as dreams for safer, healthier environments all swirled in the climate and climate history of the Gilded Age and Progressive Era.

Teaching Resources

The roundtable authors have selected examples of primary sources that can be used to teach climate history in the Gilded Age and Progressive Era. These resources are by no means intended to be comprehensive, but rather introductory items that can help faculty

and students discuss and understand key hallmarks of climate history in the late nineteenth and early twentieth centuries.

Nordhoff, Charles. *California: For Health, Pleasure, and* Residence. New York: Harper and Brothers, 1873.

Fascinating and florid, Nordhoff's book on California set the template for the deluge of California boosterism to come, especially boosterism regarding Southern California and Los Angeles. Published in 1873, it also signaled that the Gilded Age would be a key transitional moment for how white Americans thought about climate. They had long been preoccupied with climate as a potential bane or boon to agriculture and settlement. But in California in general and Southern California in particular, climate transformed from a condition to a commodity. Climate ensured not just agricultural subsistence and survival, but also wealth and health. A supposedly miraculous climate could cure, or at least offer relief, for any and all diseases. In the longer term, the region's climate would also offer a license for more leisure, relaxed fashions, and mores, and what in the twentieth century would come to be called a California lifestyle. Yet this sunny, optimistic boosterism betrayed grimmer implications. Nordhoff wrote openly about white racial rejuvenation in a Mediterranean climate and disparaged the East as a place already lost to inferior, non-Anglo-Saxon immigrants. He devoted an entire chapter to the value of local Indigenous people as laborers. White Americans had benefited from other people's land and labor for centuries, but now California was packaged and sold to middle-class and affluent white Americans in important and problematic new ways, and climate was central to this process. Chapter titles should help instructors select materials for assignments, readings, or class activities. See, for example: "A January Day in Los Angeles," "Southern California for Invalids," "The Indians as Laborers," and "Semi-Tropical Fruits in Southern California."

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Arrhenius, Svante. "On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground." *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science.* Series 5, vol. 1 (April 1896): 237–76.

Callendar, G. S. "The Artificial Production of Carbon Dioxide and its Influence on Temperature." *Quarterly Journal of the Royal Meteorological Society* 64 (1938): 223–240.

Ward, Robert DeCourcy. *Climate: Considered Especially in Relation to Man.* London: John Murray, 1908.

Together, these three works by Arrhenius, Callendar, and Ward, trace the evolution of climate science from theoretical foundations to the impact of climate on society, each documenting a specific historical context of scientific thought. Arrhenius provided an early quantifiable link between carbon dioxide and global temperature, while Callendar provided observational data that connected industrial activity to measurable climate change. Ward's exploration of the relationship between climate and human societies

showed how climate shapes human history and how humans, in turn, impact the environment. Collectively, these works underscore the profound influence of humans' industrial activities in altering the earth's atmosphere.

Ruskin, John. *The Storm Cloud of the Nineteenth Century: Two Lectures delivered at the London Institution, February 4th and 11th, 1884.* New York: John Wiley, 1884.

John Ruskin's *The Storm Cloud of the Nineteenth Century* (1884) offers a compelling resource for teaching environmental history, literature, and the history of ideas. In these lectures, Ruskin critiqued industrialization and its impact on the natural world, symbolized by the ominous "storm clouds" of pollution. His evocative prose bridges science, art, and morality, making the text a rich site for interdisciplinary analysis. Instructors could use this text to explore Victorian environmental consciousness, contrasting Ruskin's observations with contemporary ecological issues. Assignments might involve close reading and analysis of Ruskin's descriptive language, encouraging students to assess its rhetorical effectiveness. Alternatively, students could contextualize the lectures within broader nineteenth-century debates about industrialization and environmental degradation or compare Ruskin's critique to modern environmental literature.

This source is available at the following website: https://archive.org/details/stormcloudninet00ruskgoog/page/n6/mode/2up

Huntington, Ellsworth. *Civilization and Climate.* New Haven, CT: Yale University Press 1915.

Ellsworth Huntington's *Civilization and Climate* explored the relationship between climatic conditions and the development of civilizations. He argued that temperate climates foster progress and stability, while extreme climates hinder advancement. This work is a significant example of early twentieth-century environmental determinism, illustrating how climatic theories were employed to rationalize cultural and racial hierarchies. This text allows students and instructors to examine historical perspectives on climate and its perceived impact on human societies. It can be used to discuss how these theories were used to reinforce Eurocentric narratives and justify imperialism.

This source is available at the following website: https://archive.org/details/cu31924032360871

Wald, Lillian D. *The House on Henry Street.* New York: Henry Holt, 1915.

An excerpt beginning on page 70 offers a brief and compelling account of the consequences of urban heat in the tenement neighborhoods of New York City, and how profoundly it affected aspects of daily life as simple and essential as sleep.

This source is available at the following website: https://www.gutenberg.org/files/68546/68546-h/68546-h.htm

Lamb, John. "Importance of the Forests to Agriculture." In American Forest Congress. *Proceedings of the American Forest Congress Held at Washington, D.C., January*

2 to 6, 1905, under the Auspices of the American Forestry Association. **Washington, DC: H. M. Suter, 1905.**

This source details how climate thinkers and government agencies believed forests could regulate climate and rainfall totals, even though they acknowledged a lack of concrete evidence. They believed that deforestation would lead to droughts while at the same time, they maintained forests as an effective form of climate regulation. In fact, by the time of the 1906 and 1907 editions of the Forest Service's annual reports, some requested a study detailing the connections between forestry, climate regulation, and climate change.

This source is available at the following website: https://www.loc.gov/resource/gdcmassbookdig.proceedingsofame59amer/?st=pdf&pdfPage=58 (pp. 42–51, especially pp. 46–50)

The entire volume can be found via the Library of Congress website: https://www.loc.gov/item/05032838/

The State **(Columbia, South Carolina). Feb. 6, 1907, p. 1.**

This photograph (Figure 1) by an unknown photographer shows African American convict laborers in 1907, likely from the Charleston County Jail, engaged in a "ditching" project for the Sanitary and Drainage Commission of Charleston County (SDCCC), which was established in the late 1890s. The SDCCC's purpose was to create a healthful climate in the county by draining the low, marshy lands common in coastal South Carolina. Through these efforts, the county would be more conducive to white settlement and productive agriculture. Of course, African Americans were put to work to bring about a renewed, salubrious climate that would be beneficial primarily to white South Carolinians.

"Mr. Cosgrove on Drainage." ***The State*** **(Columbia, South Carolina). Feb. 6, 1907, pp. 2, 8.**

This source excerpts a speech given before the South Carolina General Assembly by James Cosgrove, founder of the Sanitary and Drainage Commission of Charleston County. Cosgrove discusses the SDCCC's efforts to foment a healthier climate in the South Carolina Lowcountry, touching on the subjects of malaria, perceived racial abilities to survive and thrive in humid, hot environments, and the use of forced Black labor to carry out his vision. Here is an excerpt:

Now, my friends, it is but a few years since that great scourge of certain sections of our country, known as malaria by the doctors, and as "chills and fever" by most people, was discovered to be communicated by the bite of a species of the mosquito named "anopheles," and how this discovery was made is very interesting. I am indebted to Dr. George M. Sternberg, LL. D., surgeon general of the United States army, from whose address on "Malaria and Mosquitoes" most of the following facts have been taken.

The malarial parasite was first discovered about the year 1880 by Laveran, a surgeon in the French army, whose investigations were conducted at Algiers. It was first confirmed by Richard in 1882, then by the Italian investigators, Marchifava, Celli, Goigi, and Bignami; by Councilman Osler and Thayer in this country, and by many other competent observers in various parts of the world. The first confirmation in this country of the

Figure 1. African American convict laborers digging a ditch in Charleston County, South Carolina. *The State* (Columbia, South Carolina), February 6, 1907.

discovery of ameobiod [*sic*] parasites in the blood of malarial patients was made by Dr. Sternberg, in the pathological laboratory of the Johns Hopkins university, in March, 1886. As usual, the doctors commenced to disagree as to what was the intermediate host of this malarial parasite; some claimed one thing, while other claimed the mosquito. For some time the mosquito theory was laughed at, and at last it was determined to make a crucial experiment, and in the summer of 1890 Dr. Manson, a celebrated English surgeon, caused five healthy individuals to live in a hut on the Roman Campagna all summer. Now, as you no doubt know, the Roman Campagna is a large extent of territory near the city of Rome, Italy, that has been noted for centuries for its malarious character. The laborers would come from the villages in the mountainous regions near this field, and return to their homes at night, just as we have been doing in this coast section of this State, where in summer time we have to move from our farms and go to the salt water sections or the highlands. These five people were protected from the bite of mosquitoes by mosquito screens on the doors and windows and by mosquito bars over the beds. They went about freely during the day time, but remained in their protected huts from sunset to sunrise. The result of this experiment was all that could be desired, for these people remained in perfect health during the entire summer. It now remained to discover what genus of the mosquito was the intermediate host of the malarial parasite.… [After additional investigations] it was absolutely proven that malaria was communicated by the bite of the anopheles mosquito.

Now this mosquito breeds only in stagnant water, and my friends it is, therefore, self evident that to get rid of malaria we have but to drain the water off of our lands, so that

there may be no breeding places for the anopheles. Our experience in Charleston county absolutely proves this fact. Wherever we have drained land, malaria has disappeared.

Some ten years ago, in investigating the resources of Charleston county, I found that our sea islands in the vicinity of Charleston and a belt of land extending about two miles north of the city, were producing annually crops of all kinds of agricultural products, from cotton to strawberries, in large quantities and of the finest quality, the value of which amounted to large sums. It was a logical thought that this being so, why was not all of Charleston county outside the city under cultivation? The reason was not far to see. The dreaded malaria prevailed to such an extent that no white man could spend a summer's night in this territory but at the risk of contracting this disease. The condition of the public health was horrible to contemplate. Here was one of the oldest States in the Union, containing a princely domain, unfit for human habitation and no strong effort being made to reclaim and devote it to the purpose for which it was created by a kind and beneficent Providence. I had become firmly converted to the mosquito theory, and constantly urged that we make the experiment of draining a certain section of Charleston county, and watch the results. The sanitary and drainage commission was created, and work was begun with convict labor in a swamp located about one mile from the limits of the city of Charleston, known as "Horlbeck's woods." The water was waist deep in this swamp, and it was a breeding place for thousands of mosquitos of the malarial type. Today, a two hundred thousand dollar manufacturing plant is erected at this place, and where but a short time since naught was heard by the hoot of the owl and the buzzing of the mosquito, is the busy hum of machinery and the sound of the merry voices of children at play….

This object lesson was sufficient for our people. Our drainage commission has become part of our county government, and we in Charleston county could not do without it until our entire county has an established system of sanitary drainage.

This source is available at the following website: https://www.newspapers.com/image/746578881/?match=1&terms=cosgrove%20on%20drainage

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Crow: How the Great Sea Island Storm of 1893 Shaped the Lowcountry South (University of North Carolina Press 2022).

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