R. Allen Bolar, Ph.D.
UC San Diego

A Brother and a Man: Darwin and the Politics of Race in America, 1860-1880

The changes in the history of science have a remarkable, almost comic aspect....Three years ago, just before Darwin's book appeared, the theory of the possibility or probability of the different races of mankind having descended from a single pair was considered as perfectly antiquated, and as having lagged behind all scientific progress.[1]

-Rudolph Wagner (1862)

It's difficult to get a man to understand something, when his salary depends on his not understanding it[2]

-Upton Sinclair (1934)

Introduction

In early 2013 a scientist at Arizona State University named Daniel Sarewitz wrote an editorial in the journal *Nature*, where he argued that scientists in the United States had lost much of their ability to influence public policy, because they were viewed as a Democratic interest group rather than a neutral source of information.[3] Without endorsing or condemning epistemic inequality, we can note that scientific voices are often privileged in public debate because they are believed to be more reasonable, more objective, and more useful than the layman's opinion. However, scientific voices are viewed more skeptically, and are more easily ignored, when scientists are viewed as political partisans. Political ideology, and beliefs about other people's political ideology, provides a lens through which people view the opinions of others. Sarewitz argues that the party allegiances of scientists in the United States, which are overwhelmingly Democratic, has led citizens and public officials to view them as biased and politically interested, and therefore doubt the trustworthiness of

[1] Rudolph Wagner quoted in Karl Christoph Vogt, *Lectures on Man: His Place in Creation, and in the History of the Earth.* (London: Longman, Green, Longman, and Roberts, 1864), p. 463.
[2] Upton Sinclair, *I, Candidate for Governor: And How I Got Licked* (Berkeley and Los Angeles: University of California Press: 1994 [1934]), p. 109.
[3] Daniel Sarewitz, "Science Must be Seen to Bridge the Political Divide," *Nature*, Vol. 493, No. 7430 (Jan. 3, 2013), p. 7.

their work—at least when it touched on politically contentious issues like the environment or public-health. Sarewitz recommended that if the scientific community wished to "reassert its value as an independent national asset," scientists must be able to show that their recommendations are supported by scientists with conflicting political allegiances. Bipartisanship would signal that scientific recommendations were trustworthy, and make it more likely that scientific opinion would be heeded. Regardless of *why* scientists are seen this way, it remains true that politics can shape the perceptions about the reliability of scientific work. This chapter will show that debates over Darwin's theory of evolution in the 19th century were similarly "politicized." The assumed political content of Darwinian evolution as well as the political allegiances of that theory's scientific supporters were viewed as overwhelmingly representing the political viewpoint of one side of the most contentious issue in 19th century American politics—the existence of slavery in American life and governmental support for white supremacy. Darwinian evolution was thoroughly associated with a scientific message that challenged ascriptive Americanism and the Southern civil religion that emerged in the 19th century to protect that political tradition.

Traditional narratives that have been used to explain the reception and diffusion of Darwinian evolution have been either incomplete or misleading. Attitudes towards Darwinian science are not simply a function of religion, education, class, or culture, but are attitudes towards political tradition and ideology. Scientists and other experts can be quite useful in democracies, because they can provide data and knowledge otherwise unavailable. However, when political coalitions view scientific recommendations as antagonistic to group ideologies they face an incentive to ignore scientific experts. Such a pattern shaped the reception to Darwinism in 19th century America. Darwinian science, and its most prominent proponents, became involved in larger social and political discussions, which shaped how the public, and even scientists themselves, viewed the new Darwinian science. During the 19th century, science gained an increasingly prominent role in

political discourse. For this reason, scientists, as purveyors and creators of political legitimacy were viewed not as neutral but as interested political participants. Believing or not believing in Darwinian evolution reflected group loyalty, as well as ones understanding of the theory.

In the United States, evolutionary scientists have been unusually ineffective at generating assent from the public, because evolutionary science has been inextricably bound to claims about racial identity, which has played a particularly strong role in the American political tradition. We cannot understand the reception to Darwinism without understanding the particular historical and political circumstances in which it was introduced to America. In this chapter I will show how this happened. I will present case studies of the United States and United Kingdom, where the political persuasions of Darwinists and the political implications of Darwinism shaped the debate over evolution and where the reception to evolution was dominated by issues of race and class, respectively.

Politics, Culture, and Scientific Authority

Max Weber has said that "it should be remembered that the belief in the value of scientific truth is the product of certain cultures and is not a product of man's original nature."[4] Southerners could not accept the emerging scientific consensus in support Darwinian evolution, because white supremacy and Southern nationalism created a social and political context in which evolutionary science was perceived to be untrustworthy and in opposition to white Southern values. In the 19th-century, the politics and discourse surrounding racial identity combined with the desire to protect white supremacy polarizing public opinion about the truth of evolution and the scientists with whom it was associated. Because of political partisanship, concerns over racial identity, and the prevailing Southern civil religion which channeled Southern intellectual life, Northern scientists were

[4] Max Weber, "'Objectivity' in Social Science and Social Policy," *Max Weber on the Methodology of the Social Sciences*. Trans and ed. Edward A. Shils and Henry A. Finch. (Glencoe, Ill.: Free Press, 1949), p. 110.

perceived as untrustworthy outsiders rather than objective experts who spoke with scientific authority. Against Darwinism Southerners rallied together using the language of Conservative Protestantism against the new modern, "materialistic", anti-Christian, racial egalitarian doctrine of Darwinism.

Southerners opposed Darwinian evolution because of both the *context* in which it emerged, and the racial *content* with which it was associated. In the middle of the 19th-century, the desire to protect white supremacy before and after the Civil War, as well as a preexisting American tendency to judge science by its usefulness, meant that the American public's judgment of Darwinian evolution was colored by its implied racial message. Darwinian evolution was perceived to be a radical departure from previous biological understandings of the nature of race and species, and it's radicalism undermined biological conceptions of race as a fixed and natural phenomenon. In addition, the political leanings of the scientists who were associated with evolution were such that the messengers, as well as the message, were viewed as outsiders and political opponents whose scientific message hid a political agenda.[5]

Science emerged throughout the nineteenth century as an increasingly secular, independent, and professional source of political authority.[6] The increasing power to diagnose and solve social and political disputes gave science increasing political clout. In the 19th century, the view of science as savior became increasingly popular. This was an age increasingly enamored of the certifiable truths that scientists were increasingly able to provide, and, it is said, less satisfied with biblically mandated guidance.[7] Similar to church authority, scientific opinion lent credence and strength to political doctrines and often possessed enough leverage to shift political agendas, and norms of

[5] A similar phenomenon can be seen today in the description of climate scientists as "watermelons," who are green on the outside but red on the inside.

[6] On the growing prestige of science see David A. Hollinger's, "Justification by Verification: The Scientific Challenge to the Moral Authority of Christianity in Modern America," in *Religion and Twentieth-Century American Life*, ed. Michael J. Lacey (New York: 1989) and Thomas L. Haskell, ed., *The Authority of Experts: Studies in History and Theory* (Bloomington: 1984).

[7] Faust (1981), p. 11.

social discourse dictated that scientific opinions could not be ignored. During the nineteenth century, both religion and science were capable of serving as bulwarks to political authority, and both were, therefore, the potential subjects for political dispute. In the United States religious denominations split over political questions related to race and slavery. Many have viewed scientific activity as different, as somehow better, purer, and more insulated from the day-to-day grubbiness of democratic compromise, or the humbug of superstitious custom, traditional tomfoolery, and bigoted prejudice. However, scientific authority was fully capable of being subject to political incentive and partisan politics. Southerners cared what scientists had to say about evolution, because social norms of democratic discourse and the authority of science made it impossible to brush aside science as "irrelevant." Darwinian evolution had to be opposed as bad or corrupt science, and, as we shall see, the Lost Cause mythology and Southern civil religion dictated the form in which the opposition would emerge. The defense of white supremacy would be led by Conservative evangelical clergy and other shapers of Southern nationalism.

The Formation of the Southern Civil Religion

Though the American South is now known as the "Bible Belt", one must remember that the religiosity that the South is known for has not been a permanent feature of the American landscape. Rather, it was not until the South's evangelicalism emerged and evolved over the latter part of the 18th century and the first half of the 19th century that it became the dominant religious orientation of Southern whites by the time of the Civil War.[8] Even after the Civil War, American Protestantism's dominant region was not the South but New England, where almost all of the leading thinkers, writers, and intellectuals of American Protestantism had been born and resided.[9] By the early 20th

[8] Christine Leigh Heyrman, *Southern Cross: The Beginnings of the Bible Belt*. (New York: Alfred A. Knopf, 1997).
[9] George Marsden, *Fundamentalism and American Culture: The Shaping of Twentieth-Century Evangelicalism: 1870-1925*. (New York and Oxford: Oxford University Press, 1980), p. 22.

century this had changed, and the American South had gained the reputation as the country's most religious region. Political Evangelicalism has not been an eternal part of the Southern identity. Rather, Southern evangelicalism arose in the midst of the South's defense of the political and social white supremacy in the 19th century, and in the process merged with Southern nationalism creating a sort of Southern civil religion that guided, shaped, and set the bounds for political discourse and infused Southern politics with a religious inflection that is clear well into the 20th century.

The evangelical denominations initially faced hostility in the American South due to features of evangelicalism that clashed with prevailing Southern norms, including disapproval of slavery and challenges to Southern notions of white male honor.[10] For evangelicals to tell their story in the American South, they had to engage with a preexisting Southern discourse of white male privilege, honor, and shame.[11] In the process of evangelizing the American South, evangelicals made peace with the types of Southern values that upheld white supremacy to such a degree that by the middle of the 19th century, an initially resistant Southern power structure came to embrace evangelicalism as a vital part of Southern identity and distinctiveness.

During the 18th century, the South's dominant form of Protestantism was state-supported Anglicanism, but the Revolutionary War had a profound impact on Protestantism by delegitimizing the Anglican Church in much of America through its association with Great Britain. The simultaneous disestablishment of state-supported Churches at that time also created an opportunity for rival denominations to gain converts. The evangelical Baptists, Methodists, and Presbyterians all made concerted efforts to spread the word, and by taking up the challenge with gusto found themselves bringing many into the evangelical fold. This was especially true outside of the wealthier,

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[10] Bertram Wyatt-Brown, *Southern Honor: Ethics and Behavior in the Old South* (New York: Oxford University Press, 1982).
[11] Robert Elder*, Southern Saints and Sacred Honor: Evangelicalism, Honor, Community, and the Self in South Carolina and Georgia, 1784-1860*. Diss. Emory U, 2011.

older settlements along the Southern coast, where the Anglican churches, now called Episcopalian, held on amongst some of the well-to-do social establishment.[12]

The evangelical denominations met with success, though less so in the South than in the North due to evangelicalism's antislavery position, and because its relative egalitarianism challenged white male patriarchal authority as masters in the home. Evangelicals challenged traditional white male authority, and they challenged white southern notions of male honor by condemning dueling, drinking, gambling, carousing, and fighting, all things that Southern white men considered normal behaviors for men such as them.[13] The methods that Southern white men considered necessary to establish their identity as men of honor were frowned upon by the new evangelical clergy. The evangelicals, in fact, found what success they had in the South by preaching to those who lacked traditional power status, such as women, the young, the poor, and Southern blacks. Southern white men were less inclined to see their authority challenged and their codes of honor questioned by the new evangelical preachers who began to ride across the rural townships of the Southern frontier. The traditional barons of Southern power, the white, wealthy, established middle-aged scions of Southern society stayed largely aloof from the new evangelicalism sweeping the land.

However, by the beginning of the 19th century, the Southern preachers began to acclimate their preaching to the preexisting Southern honor code, and in so doing began to find greater success with the established, white, "independent" masters that possessed the highest status in Southern society. Evangelical preachers in the South had been mocked as unmanly and dishonorable men by the white Southerners who wielded power and had been looked down upon as effeminate men who were unwilling to assert themselves and to engage in the traditional folkways of Southern "masters." To overcome the antipathy of Southern white men, Southern evangelical

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[12] Heyrman. (1997), chapter 1.
[13] Richard Hildreth, *Despotism in America: an Inquiry into the Nature, Results, and Legal Basis of the Slave-Holding System in the United States*. 2nd ed. (Boston, MA: John P. Jewett & Co., 1854), p. 150-5.

preachers began to assert their manliness and assert their place within the southern culture of male honor. As Christine Heyrman describes it, "preachers insisted that they, too, were masters, men who had lost neither the will nor the skill to dominate and, when necessary, by violent means."[14] Baptist and Methodist preachers altered their behavior and conduct among worldlier men, and in so doing began to win over the South's masters. The evangelical preachers confronted a rigid mode of discourse that stressed masculinity over femininity and the dominance of patriarchal control over the home. To succeed in the South, evangelicalism had to adapt to preexisting ideologies that stressed male privilege and white supremacy.[15] In so doing, evangelicalism became more acceptable to traditional modes of Southern mastery and honor and thereby became acceptable for the traditional scions of Southern power. Rather than Southern white men changing their norms to fit into evangelical patterns, Southern evangelicalism changed itself to accommodate preexisting and prevalent norms of Southern white society.

By the 1830s and 1840s, Southern evangelicalism posed no challenge to prevailing attitudes towards slavery or the accoutrements of the Southern honor code. In the North, the growing antislavery movement began to attempt to use the northern evangelical Churches as conduits for their antislavery message by teaming up with the northern evangelical Methodists and Baptists that had maintained their antislavery evangelical message. The split over slavery between the evangelical churches in the north and south led to a compromise within the church over slavery. In order to hold the Church together, Church organizations agreed that the Church's position within each state would depend upon the laws of that state. Those in favor of such a compromise argued that the secular order was ordained by God and should be respected. However, the growing antislavery movement within the Church became increasingly unhappy with the Church's acquiescence to

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[14] Heyrman (1997), p. 238.
[15] Bertram Wyatt-Brown, "God and Honor in the Old South," *Southern Review*, Vol. 25, No. 2 (Spring 1989), pp. 283-96.

slavery in the South and began to push for stronger evangelical denunciations of slavery everywhere, even where it was protected by secular laws.

The southern churches declared that the northern churches were flirting with infidelity due to their rejection of the compromise that had been previously agreed to, and because, they argued, a clear Biblical understanding that adhered to the letter of the Word showed that Christian religion clearly accommodated, accepted, and even celebrated slavery. The Southern evangelicals saw a religious defense of slavery to be part of a conservative religious persuasion, and they argued that it was the Northerners who were changing the clear meaning of the Bible and flirting with infidelity by attempting to force the word of God to submit to a "higher law" of human-made reason and modern interpretation. Southerners associated abolitionism with infidelity and considered the South to be a bastion of religious and political "conservatism."[16] The southern churches reacted harshly against the use of "rationality," the "higher law," and "reasonableness" when it came to interpreting the Bible as an antislavery document, and they accused Northern evangelicals of flirting with materialism and infidelity by being willing to change the Bible to suit their political and moral "fanaticism." Southerners accused Northern evangelicals of being arrogant enough to place fallible human rationality and reason over the clear and literal word of God. These fights over Biblical interpretation would be echoed later in Southern attitudes towards Northern Christians, who considered evolution to be compatible with the Bible. As they had over slavery, Southerners would denounce the evolutionists as condoning materialism and infidelity.

In the 1840s and 50s, the Southern churches split away from the national evangelical churches, because of differing views on slavery. In this split, the Southern churches cast themselves not as renegades who were leaving because they wanted to establish a new church but as defenders of the true faith who were casting out the infidels who threaten to poison the community. Though

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[16] Mitchell Snay, *Gospel of Disunion: Religion and Separatism in the Antebellum South*. (Cambridge: Cambridge University Press, 1993), p. 13.

it was the Southerners who broke communion with the North, Southerners argued that it was Northern fanaticism, which they argued had departed from a traditional understanding of the Bible, that had broken the unity of the Church. By the middle of the 19th century, the Southern evangelicals saw themselves as religious conservatives determined to defend traditional Protestantism against Northern infidels and fanatical abolitionists. By the Civil War, the rebellious, secessionary South saw itself not as revolutionaries or radicals but as defenders of traditional American values and institutions.[17] The historian James McPherson agrees with those Southerners and argues that it was the North that had changed, while the South had remained rooted in the past.[18] Conservative Evangelical Protestantism had become a part of Southern identity separating Southerners from non-Southern whites, just as racial identity separated whites from blacks in the racial hierarchy. The myth of the Southern Anglo-Saxon's social and political identity depended as much on the belief in "conservative" Protestantism as it did in racial distinctiveness.

This conservative religious evangelicalism had accommodated itself to southern honor codes, folkways, and white supremacy, and was now being used as a unifying force of southern identity. Southern evangelicalism now became a marker of Southern distinctiveness and an influence on the growth of Southern identity. Whereas previously evangelical preachers had been a thorn in the side of Southern slave-masters by preaching against slavery and attempting to teach and convert Southern blacks, evangelicals now strengthened the slave system. Evangelicals started schools and missions that sought to keep black children under surveillance and to inculcate values supportive of the slave regime. Southern masters that had rejected evangelical effeminacy and antislavery now saw support for "evangelical missions and local churches as a sign of their responsibilities as citizens and masters."[19] Donald G. Mathews describes the situation thusly:

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[17] Snay (1993), p. 47.
[18] McPherson (1983), pp. 230-44.
[19] Mathews (1977), pp. 245-6.

> In this gradual manner were the boundaries between believers and worldlings blurred. During the years when the southern ideology was taking shape, therefore, Evangelicalism became in the view of many Christian theorists one of the distinguishing marks of what it meant to be a southerner.[20]

White Southerners also cast themselves as conservative "letter-of-the-law" readers of the Constitution, who argued that Northern abolitionists were determined to tear up documents based upon compromise and to subject the Constitution to a "higher law" that rejected traditional interpretations of the powers given to the southerners.

Southern religious identity was formed during the transition of the evangelical faith into Southern folkways, and in the formation of Southern nationalism during the creation of the Confederacy. As Mitchell Snay put it, "the centrality of religion in the Old South, the strongly religious flavor of the slavery controversy, and the close affinity between religion and American nationalism suggest, then, the importance of religion in the formation of antebellum Southern distinctiveness."[21] Southern clergymen were important creators of political ideology in the South, and Southern Baptist, Methodist, and Presbyterian clergy took up crucial leadership positions in the creation of southern identity and southern nationalism in the 1860s during the creation of the Confederacy.[22] By the 1860s, conservative Protestantism had become a focal point of Southern nationalism, and also a useful supporter of white supremacy.

After the end of the Civil War, conservative Protestantism served as a marker of cultural and political identity for white Southerners that allowed them to accept their defeat as a martyrdom in a righteous cause, and it served as a vital part of the Southern civil religion which worked to preserve white Supremacy after the end of slavery. The fusion of conservative Protestantism with a particular set of values based on Southern honor codes and white supremacy came to form an important part

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[20] Ibid., p. 246.
[21] Snay (1993), p. 5.
[22] William J. Cooper, Jr. and Thomas E. Terrill, *The American South: A History* (New York: McGraw-Hill, 1991), pp. 265-6; Drew Gilpin Faust, *The Creation of Confederate Nationalism: Ideology and Identity in the Civil War South* (Baton Rouge and London: Louisiana State University, 1988), p. 22.

of Southern white identity and united Southern whites together in defense of the "Southern way of life." As historian Edward Crowther describes it, "the common struggle to maintain white supremacy, shared concepts of honor, and similar visions of society tightened the ideological tie that transcended material differences among southerners; and evangelical religion was the lashing for their shared ideas and values."[23] The rhetoric of the Lost Cause and the sacralization of Southern politics set Southerners apart from the rest of the United States as a distinct people with a distinct culture, and prescribed accepted codes of conduct in both social and political contexts. While the liberal tradition in America was present, so was another, distinctive political tradition that existed in parallel.

Conservative religion was a powerful tool in the defense of tradition, the status quo, and the existing social order which favored hierarchy and white supremacy. The controversy over evolution was deeply related to the defense of white supremacy, and in attacking evolution Southern whites were attacking what they saw as a tool of racial leveling while at the same time acting out tropes of conservative Evangelicalism that formed important parts of Southern white identity. The political opposition and the religious opposition to evolution cannot easily be separated, and just as we saw in the defense of slavery, though the language and inflection may sound religious, the core opposition to evolution carries a clear racial message.

When evolution emerged in the middle of the 19th century, scientific authority and social norms around discourse in American public life ensured that Southern white supremacists would distrust Northern evolutionists, but that they would feel it necessary to engage with evolutionists rather than to ignore them. The power of science to legitimize ideas and shape public debates over race was a potentially powerful threat to white supremacy, and the Southern civil religion that fused a defense of white racial privilege and conservative Evangelicalism formed the methods and sources

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[23] Edward R. Crowther, "Holy Honor: Sacred and Secular in the Old South," *Journal of Southern History*, Vol. 58, No. 4 (Nov., 1992), p. 619.

of opposition to evolution. It was no accident that conservative Southern clergy were the both the primary creators and upholders of the Lost Cause mythology in the South and the primary factors behind the anti-evolution movement, as well.

Science, North and South

In his Pulitzer-Prize winning book on 19th century American Science, historian Robert Bruce asks if scientists' minds threw "a brighter, purer, steadier light on political issues than that of the layman?"[24] According to Bruce, they did not. Bruce argued that, actually, the political leanings of scientists were "not perceptibly different" from everyone else's, and that "in those turbulent years the scientific methods resolved no political questions, not even to the satisfaction of the scientists."[25] Bruce claimed that, by and large, the political opinions of scientists regarding the most important issues of the era, slavery and union, reflected not their scientific training but their sectional affiliation.[26] This was true, but Bruce does not go far enough. Not only did the scientists' political opinions tend reflect their section, but their scientific opinions tended to do so as well. Or, as I shall show in this chapter, at least regarding their scientific opinion of Charles Darwin's new theory, which had just been released on the eve of the Civil War.

It is often difficult to reconstruct 19th century naturalists' opinions about racial hierarchy and human slavery, because during the mid-19th-century, tensions ran so high that it was advisable for scientists to remain silent on the subject of race or slavery lest they court controversy and incite animosity amongst fellow scientists or the politicians and philanthropists, who provided the funding upon which they relied. The biographer of Spencer Fullerton Baird, the first curator of the Smithsonian Institution, described it thusly: "Peace had to be kept not only among [the scientists]

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[24] Robert V. Bruce. *The Launching of Modern American Science, 1846-1876*. (Ithaca: Cornell University Press, 1987), p. 271.
[25] *Ibid*., p. 271.
[26] *Ibid*., p. 272.

but between them and the public only too ready to criticize. Opinions on politics and on the burning question of human slavery must be withheld from utterance."[27] In an age before science's professionalization, keeping donors and benefactors happy was vital. It makes sense then that politically controversial opinions would tend to be kept quiet.

Yet, many scientists did make their political preferences known even at great personal cost. One supporter of Darwin's theory, the physiologist Charles-Edouard Brown-Sequard, provides an example of how an unpopular opinion about human slavery could be costly professionally. Shortly before the Civil War, Brown-Sequard briefly worked at the Medical College of Virginia, resigning after only four months, in large part because "he disapproved of slavery and expressed himself so frankly on the subject that a malicious rumor eventually circulated that, with his dark complexion and foreign background, he himself was of black origin."[28] Another scientist, the Massachusetts-born Frederick Augustus Barnard, fled the south and his position as chancellor of the University of Mississippi. Barnard's sympathies were with the North, where he returned to denounce the slave system and southern traitors.[29] The Connecticut-born Sereno Watson also fled the South on the eve of the War, returning to the North where he would go onto to become one of America's foremost botanists.[30] Watson had taken a position in Greensboro, Alabama which he left in 1861 because of disunion sentiment. He told his brother in 1860 that "the people is apparently gone crazy. I do not know how to account for it & have no idea what might be the end of it." He continued, "it seems to be their endeavor here as elsewhere to browbeat & bully into silence those whom they cannot persuade to go with them & so to make it appear that there is but one opinion throughout the South….I would like to breathe free air once more,—have the privilege of speaking as I think, &

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[27] William Healey Dall, *Spencer Fullerton Baird: A Biography, Including Selections from His Correspondence with Audubon, Agassiz, Dana, and Others*. (Philadelphia & London: J. B. Lippincott Company, 1915), p. 224.
[28] Michael J. Aminoff, *Brown-Sequard: An Improbable Genius who Transformed Medicine*. (Oxford: Oxford University Press, 2010), p. 84.
[29] Frederick Augustus Porter Barnard, "Letter to the President of the United States, by a Refugee," (New York: C. S. Westcott & Co., 1863).
[30] John Coulter, "Sereno Watson," *Botanical Gazette*, Vol. 17, (May, 1892), pp. 137-141.

feel that I am a freeman."[31] Another similar story was shared by the geologist, physicist, and future president of MIT, William Barton Rogers. For much of his career Rogers had served as a distinguished Professor at the University of Virginia. Rogers was well-respected by students there, and enjoyed support from the University for his work, but he decided to leave his comfortable employment in Virginia in 1853 for an uncertain future in the North. He did so in order to leave the lands of slavery and to leave what he described as the illiberal and violent atmosphere fostered by slavery in Virginia.[32] In addition, Rogers faced pressure in Virginia to apply his work in a way that was useful to the preservation of slavery. As A.J. Angulo describes it, "as criticism from northern and international communities intensified, abstract or practical studies that failed to help defend the South met with opposition or even scorn." Rogers tried to keep his sympathies for northern social and political values private in order to maintain his ability to work, but eventually it became too difficult to stay in Virginia.[33] The intensity and pressure of proslavery feeling in the American South was so great that it pushed these four elite scientists (all members of the National Academy of Sciences) away from their employment in the South, because they were viewed as being unsympathetic to the preservation of slavery.

Though the pressure outside the South was less intense, the intrusion of political opinions around slavery and secession was not confined there. This can be seen by the importance that government funding played in the founding and shaping of the National Academy of Sciences, which was founded in 1863 during the height of the Civil War. The newly formed NAS required a loyalty oath from its members until 1872, which discouraged southern scientists from participating in the institution even after the reunion of the states and the cessation of the war. There was a

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[31] "Sereno Watson to Henry Watson, November 17, 1860," *Henry Watson Papers, 1765-1938*, Box 6, Duke University; Quoted in Marc Egnel, *Clash of Extremes: The Economic Origins of the Civil War.* (New York: Hill and Wang, 2009), pp. 282-3.

[32] A.J. Angulo, *William Barton Rogers and the Idea of MIT*. (Baltimore: The Johns Hopkins University Press, 2009), pp. 17-31.

[33] Ibid., p. 21-22.

considerable dispute, described by the scientist J. Peter Lesley as an "exciting debate," over the requirement that members subscribe to such a loyalty oath.[34] Frederick A. Barnard claimed that if an oath was required "there was not a man of science in the South who would not *continue* to be a rebel, and spit on our diploma."[35] The oath was passed over the opposition and vehement speeches of Louis Agassiz and other "Copperheads," who argued that the oath would unfairly exclude those who were "even slightly *implicated* in the Rebellion."[36] Hurt feelings seemed to follow the resolution of the dispute. Many of those who had fought to remove the oath felt the need to reestablish their antislavery credentials amongst their fellow northern scientists, while the contingent that had fought for the loyalty oath (made up disproportionately of Bay Staters) found themselves described as forming "an illiberal clique, based on Plymouth Rock."[37] In the end the oath was required, because as Lesley put it, "some one, I willingly forget who, argued that we would lose government patronage, unless we bid for it with the oath; I suspect it was only an unfortunate way of stating a higher truth, that we are the children of government, and the Academy is the creation of the government, and owes it an oath of allegiance as its first duty…."[38] Unfortunate or not, American science was inextricably linked with the political realities of mid-nineteenth century American politics.

Northerners dominated the elite forums of American science, and this was particularly true in the natural sciences. The Civil War was disastrous for Southern scientists. Collections and libraries were lost, ties to Northern correspondents were interrupted, often forever, and southern scientists found that funding for science had dried up along with almost all government-supported

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[34] *Ibid*., p. 419.
[35] J. Peter Lesley, "Letter from Peter Lesley to His Wife, April 23, 1863," *Life and Letters of Peter and Susan Lesley*, Vol. I, ed. Mary Lesley Ames. (New York and London: G. P. Putnam's Sons, 1909), p. 419.
[36] Quoted in Rexmond Cochrane, *The National Academy of Sciences: The First Hundred Years, 1863-1963*. (Washington, D. C., National Academy of Sciences, 1978), p. 73.
[37] Peter Lesley describes a fellow scientist as approaching him after the dispute to tell him that his wife "Emma was going out to see the black regiment" while appealing to "his record as an old and consistent anti-slavery man." J. Peter Lesley (1909), p. 420. "Letter from Joseph Leidy to Ferdinand Hayden, April 28, 1863," *Science in Nineteenth-Century America: A Documentary History*. Ed. Nathan Reingold. (Chicago and London: The University of Chicago Press, 1964), p. 209.
[38] Lesley (1909), p. 420.

functions during Reconstruction.[39] America's elite scientific institutions would be almost entirely populated and controlled by non-Southerners, who were disproportionally New Englanders. Only five of the National Academy's (NAS) fifty founding members were born in border states (one from Kentucky, one from Washington, D. C., and three from Maryland), while not a single NAS founder was born in a Confederate state. On the other hand, twelve of the NAS's founders had been born in Massachusetts, twelve in Pennsylvania, and ten in New York. Connecticut alone accounted for as many NAS scientists as all the slave states combined, even though the slave states possessed twenty times the population of free whites as Connecticut in 1860. At exactly the same moment that Darwin's theory was being debated amongst the elite scientific minds of the United States, southern scientists were almost entirely separated by war and political animosity from the great debates taking place over the new theory of evolution. Of course, it is unsurprising that none of the founders would hail from the Confederacy, since the NAS was founded by the Federal Government in 1863, yet this northern domination persisted in the natural sciences for the rest of the nineteenth century, long after end of the Civil War, Reconstruction, and the disappearance of the loyalty oath.

Amazingly, the proportion of NAS "naturalists" born in slaves states (both border and Confederate) was even smaller than that of the founding NAS members. Of the eighty scientists classified as "naturalists" that joined the NAS between 1863 and 1900, only three were born in slave states (Joseph LeConte of Georgia, John Edwards Holbrook of South Carolina, and Alpheus Hyatt of Washington, D. C.). Ninety-six percent of American-born naturalists admitted to the NAS before 1900 were born in free states. Once again New England was overrepresented. More than half of the NAS's American-born naturalists came from New England, while Massachusetts alone

[39] Bruce (1987), pp. 342-3.

accounted for nearly thirty percent.[40] The rate at which New England produced naturalists was exceptionally high, and, after properly accounting for population size, positively dwarfs the contributions of any other region. While the middle-Atlantic states produced NAS naturalists at roughly the national average, the state of Massachusetts produced them at five-times the national average and nearly 50 times the rate of the slave states, when adjusted for population.[41] In the era during and after the Civil War, America's naturalists were overwhelmingly not from the regions that had fought to preserve slavery during the war and were continuing to fight to preserve white supremacy in the American South after the war.

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[40] 71 out of the 80 were born in the United States. Of those 71, 54% were from New England and 28% were from Massachusetts. (Table shows birth places of NAS members classified as naturalists, 1863-1900; # of NAS naturalists, 1863-1900; % of NAS naturalists, 1863-1900) (birth places found in official NAS biographies and compiled by author):

State	#	%
Massachusetts:	20	25
New York:	13	16
Pennsylvania:	10	13
Foreign-born:	9	11
Connecticut:	8	10
Maine:	6	8
Indiana:	3	4
New Hampshire:	2	3
Ohio:	2	3
Georgia:	1	1
Illinois:	1	1
New Jersey:	1	1
Rhode Island:	1	1
South Carolina:	1	1
Vermont:	1	1
District of Columbia.:	1	1
TOTAL	80	100%

[41] New Englanders were far more likely to produce NAS-level naturalists than any other region of the country. (Table shows N-Ratio; i.e. the ratio of the % of NAS naturalists born in state/region divided by that state/region's % of the free population of the United States in 1830; 1.0 = average):

Region	N-Ratio
Massachusetts	5.01
Connecticut	4.11
New England	2.97
Pennsylvania	1.13
New York	1.04
Mid-Atlantic	1.02
Midwest	0.62
Slave States	0.12

*compiled by the author

Robert Bruce's claim that the political opinions of American scientists tended to reflect their sectional affiliations is by and large true.[42] New England, and especially Massachusetts, had led the nation in anti-slavery sentiment before the war, and overwhelmingly threw its support behind John C. Fremont, Abraham Lincoln, and the new anti-slavery Republican Party. However, though anti-slavery sentiment ran strongly in New England and the northern Midwest, there remained a significant minority of slavery sympathizers, the Cotton Whigs and the Copperheads, who opposed the ending of slavery, or opposed a war to preserve the union, in places like New York City as well as southern Ohio, Indiana, and Illinois. This mixture was reflected in the political attitudes of the NAS naturalists themselves, who were mostly, but not entirely, opposed to slavery, the Confederacy, and state-supported white supremacy.

I have been able to discover clear political opinions for a little more than half of the eighty naturalists that joined the NAS before 1900, related to the issues of slavery, race, and white supremacy. Any attempt to narrowly define a 19th century person's political beliefs about a controversial issue like that of 19th century race and slavery is difficult. To categorize a citizen's political beliefs as pro-, anti-, or unclear, as I have done, lumps together wide varieties of nuanced differences in belief between persons, oversimplifies the nuances everyone holds about important political issues, and also has to take into account people's ability to change their minds throughout their life. Much of the historical evidence about the political beliefs of the NAS scientists is contradictory or unclear enough to make it impossible to say on which side of the issue they fell. In addition, many scientists have left little to no historical trace that can shed light on their political beliefs at all. Notwithstanding the difficulties in doing so, I have categorized all NAS naturalists in

[42] Bruce (1987), p. 272.

this period as holding either pro-white supremacy, anti-white supremacy, or unclear political opinions.[43]

Of NAS naturalists having clear opinions on state-supported white supremacy, I have categorized 79% as against and 21% as being for. Of those NAS naturalists who have made their opinions about evolution and the development of species known, 87% supported the idea of evolution and the development of species, while 13% were opposed. There was also a substantial age difference between these two groups. The average naturalist who joined the NAS before 1900 was 26 years old in 1859 when Darwin published the *Origin of Species*, while the average age of an NAS naturalist who opposed was 52. As the 19th century progressed, the ratio of naturalists who opposed evolution to those who supported it got even smaller. The vast majority of elite American naturalists supported evolution and opposed state-supported white supremacy.

These labels, of course, include a wide range of opinion about both evolution and white supremacy. For example, the 87% of naturalists who supported evolution includes those who fully accepted Darwinian evolution (that is to say, unguided natural selection) as correct, those who held an Asa Gray-type belief in divinely guided evolution, as well as those who believed in evolutionary Neo-Lamarckianism, which rose to real prominence in the United States by the 1870s but differed from Darwinian evolution in a number of important respects. Though Darwin was undoubtedly the most important influence behind the scientific consensus around the existence of species development and evolution through time, the scientific consensus that Darwin's method of natural selection was correct did not completely win out until the early part of the 20th century and the completion of the modern synthesis.

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[43] In addition to the database of naturalists' political opinions that I have compiled, I have relied on Ronald Numbers' data on the evolutionary beliefs of the NAS naturalists to reach conclusions about the relationship between political opinions over race and slavery and scientific reception to Darwinism in America. Ronald L. Numbers. "Naturalists in the National Academy of Sciences, 1863-1900," *Darwinism Comes to America.* (Cambridge, MA: Harvard University Press, 1998), pp. 137-159.

These caveats hold for their political opinions as well. Some scientists are easy to classify: Asa Gray was clearly and consistently anti-slavery, while Louis Agassiz abhorred the idea of racial mixing and believed that whites and blacks were separate species, and they both said so multiple times in their writings. Some, like Clarence King or Jared Kirtland, are also easy to categorize. Geologist King once claimed that "miscegenation was the hope of the white race," and at another time talked of a future in which White, Black, and Asian-Americans would form a single American race, after which point the "American race" would finally "become conscious of its own ideals and aspirations, its own sentiments and emotions, and, as all other great races have done before it, will find its own fit means of expression."[44] The blond-haired, blue-eyed King even performed a feat that was quite unusual for the 19th century, by leading a double life "passing" as a black man named James Todd, so that he might secretly marry a black woman named Ada Copeland, who had been born in slavery in Georgia before the Civil War.[45]

The naturalist Jared Kirtland moved from his native Connecticut to Ohio in the early part of the 19th century, and once there rose to both political and scientific prominence. Before being admitted to the NAS, Kirtland had served for a number of years starting in 1828 as a member of the Ohio House of Representatives. After leaving active politics, he took part in the hiding of runaway slaves as they traveled to Canada on the Underground Railroad. Kirtland's farm was one of the final stops as slaves approached Lake Erie to cross over to Fort Malden in Canada. In one particularly daring episode, Kirtland hid two runaway slaves in his parlor at the same time as he entertained their southern masters in his kitchen.[46] During the Civil War, Kirtland served as the examining surgeon

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[44] Robert Underwood Johnson, *Remembered Yesterdays*. (Boston: Little, Brown, and Co., 1923), p. 226; Clarence King, "Style and Monument," *The North American Review*, Vol. 141, No. 348 (Nov., 1885), pp. 443-4.

[45] Martha A. Sandweiss, *Passing Strange: A Gilded Age Tale of Love and Deception Across the Color Line*. (New York: Penguin Press, 2009).

[46] "Charles J. Morse letter to Wilbur Siebert, March 5, 1897," *Wilbur H. Siebert Collection*. MSS116AV BOX58 09OH 022. Ohio Historical Society; "Emma Kirtland Hine letter to Wilbur Siebert, Jan. 23, 1897," *Wilbur H. Siebert Collection*. MSS116AV BOX58 09OH 027. Ohio Historical Society.

for recruits from Columbus and Cleveland, but gave all his pay to the "Soldiers' Aid Society" of northern Ohio.[47]

Kirtland, like King, was easy to classify, but others were trickier. Geologist J. Peter Lesley switched positions on both evolution and race. Before and during the Civil War, Lesley was a dedicated anti-slavery man.[48] In 1850, Lesley had a sermon that he preached against the "Fugitive Slave Bill" printed in William Lloyd Garrison's abolitionist newspaper, *The Liberator*.[49] At the same time he flirted with the idea of supporting Darwinian evolution. One friend described him as having an "inclination towards the theory, as he would occasionally confess, yet never fully adopting it."[50] In his 1866 memoir of the geologist Edward Hitchcock, Lesley describes Hitchcock's fame as having risen through forces of natural selection, because he says "the struggle for posthumous fame, like the struggle for animal life, is crowned only in the persons of the best competitors."[51] Yet, later, Lesley's opinions would drastically change on both issues. By the end of the 1860s, Lesley had turned decisively away from Darwinism into hard opposition, and he seems to have abandoned his belief in the racial equality of blacks and wished them to leave the North and return to the South.[52] Demonstrating the confusing historiographical understanding of the relationship between race and Darwinism, historian Lester Stephens is unsure how to explain Lesley's changing opinions, but nevertheless attributes them to "the influence of the doctrine of Social Darwinism, which caused many Americans to alter their views of the intellectual capacity of the black race," even though it

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[47] Ed. James Grant Wilson and John Fiske, "Jared Potter Kirtland," *Appleton's Cyclopaedia of American Biography*, Vol. III (New York: D. Appleton and Company, 1892), p. 558.
[48] W. M. Davis, "Biographical Memoir of Peter Lesley, 1819-1903," *National Academy of Sciences Biographical Memoirs*, Vol. VIII, (Washington, D.C.: National Academy of Sciences, 1915); Lester Stephens, "'Forget their Color': J. Peter Lesley on Slavery and the South," *The New England Quarterly*, Vol. 53, No. 2 (Jun., 1980), pp. 212-221.
[49] J. P. Lesley, "The Fugitive Slave Bill: A Sermon Delivered in Milton, (Mass.), October 30, 1850," *Liberator* (Nov. 1, 1850).
[50] Benjamin Smith Lyman, "Biographical Notice of J. Peter Lesley," *Life and Letters of Peter and Susan Lesley*, Vol. II, ed. Mary Lesley Ames. (New York and London: G. P. Putnam's Sons, 1909), p. 472-3.
[51] J. Peter Lesley, "Memoir of Edward Hitchcock, 1793-1864: Read Before the National Academy, Aug. 9, 1866," *Biographical Memoirs*, Vol. 1 (Washington, D. C.: National Academy of Sciences, 1877), pp. 115.
[52] J. Peter Lesley, *Man's Origin and Destiny: Sketched from the Platform of the Physical Sciences*. 2nd ed. (Boston: George H. Ellis, 1881 [1868]); Stephens (1980), p. 220-1.

was when Lesley was adamantly opposed to Darwinism that his abolitionist zeal waned.[53] Though Lesley's opinions shifted throughout his life, I have characterized him as a creationist and an opponent of white supremacy, because these represented his longest-held opinions on the matter. This makes Lesley the only NAS naturalist to be an anti-slavery creationist who outlived the Civil War.[54]

Another tricky case to classify is that of Georgia's Joseph LeConte. LeConte was born in Liberty County, Georgia and grew up on a slave plantation. He studied under Louis Agassiz at Harvard before returning to the South to serve as professor of chemistry and geology at what would become the University of South Carolina. LeConte would be one of the rare slave-state born evolutionists. LeConte called himself "an evolutionist, thorough and enthusiastic. Enthusiastic, not only because it is true, and all truth is the image of God in the human reason, but also because of all the laws of nature it is by far the most religious, that is, the most in accord with religious philosophic thought."[55] Though he was born in the South, LeConte was no longer there when he said that. Although LeConte stayed in South Carolina through the Civil War, he left in large part out of frustration over the oppression of newly freed slaves during the reconstruction era. LeConte made his way to California, where he became one of the first science professors at UC Berkeley (LeConte Hall is named after him). LeConte's political opinions were somewhat anomalous for a southerner during reconstruction. He insisted in 1866 that the franchise should be given "without distinction of color," and claimed that slavery should have ended long before.[56] It is unclear to what degree LeConte actually rejected slavery or believed in racial equality, but he abandoned the defense of the

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[53] Stephens (1980), p. 220.
[54] The geologist Edward Hitchcock and the chemist Benjamin Silliman, Sr. were both anti-slavery creationists, but both died in 1864.
[55] Ed. William Dallam Armes, *The Autobiography of Joseph Le Conte*. (New York: D. Appleton and Company, 1903), p. 336.
[56] Armes (1903), p. 235-6.

Southern status quo and has been classified as for evolution and against the Southern defense of white supremacy.

There was a strong correlation between those who supported evolution and those who opposed state-supported white supremacy. If we exclude the Neo-Lamarckians, who held quite different beliefs about the nature of evolution than Darwin, the overwhelming majority of Darwin's supporters opposed white supremacy. Of those NAS naturalists whose opinion on both racial politics and evolution is known, only 8% of non-Neo-Lamarckian evolutionists favored state-supported white supremacy, while 92% were opposed. This contrasts sharply with the 50% of Creationists and 67% of Neo-Lamarckians, whose opinions are known, who supported state-supported white supremacy. Moreover of those NAS naturalists who helped to found the institution, 100% of those who supported evolution were opposed to white supremacy, while founding naturalists who supported creationism were split 50%-50%. There was a clear correlation among elite natural scientists in the United States between support for Darwinian evolution and racial attitudes that were congenial to the southern proslavery position.

Table 4-a: Political and evolutionary beliefs of NAS Naturalists, 1863-1900

w/ unclears	**racist**	**nonracist**	**Unclear**	**Total**
Evolutionists	2 (4.4%)	23 (51.1%)	20 (44.4%)	45 (100%)
Creationists	3 (37.5%)	3 (37.5%)	2 (25%)	8 (100%)
Neo-Lamarckians	2 (28.6%)	1 (14.3%)	4 (57.1%)	7 (100%)
Unclear	2 (10.0%)	6 (30.0%)	12 (60.0%)	20 (100%)
Total	9 (100%)	33 (100%)	38 (100%)	80 (100%)

Source: Evolutionary opinions from Numbers (1998); Opinions on race and slavery compiled by author.

Table 4-b: Political and evolutionary beliefs of NAS Naturalists, 1863-1900 without unclears

w/o unclears	**Racists**	**Nonracists**	**Total**

Evolutionists	2 (8.0%)	23 (92.0%)	25 (100%)
Creationists	3 (50.0%)	3 (50.0%)	6 (100%)
Neo-Lamarckians	2 (67.7%)	1 (33.3%)	3 (100%)
Total	7 (100%)	24 (100%)	34 (100%)

Source: Evolutionary opinions from Numbers (1998); Opinions on race and slavery compiled by author.

America's elite naturalists in the second half of the 19th century were overwhelmingly northern, antislavery, pro-evolutionary scientists and this was increasingly true as the century progressed. To the degree that citizens perceived Darwinian evolution as having political content and political salience, citizens would have had good reason to believe that the scientists most notably associated with this new theory represented one side of the political argument over race and slavery in America. We must now turn to establish the political content of Darwinian evolution, and examine the most common alternative explanation for resistance to Darwinism, religion.

Religious Attitudes to Darwinism

America's atypical reaction to Darwinism is usually thought to reflect its religiosity. Since Darwin's theory seems to contradict the Book of *Genesis*, as well as William Paley's natural theology, it has seemed natural that Darwinian evolution should face resistance from the religious. Indeed, some prominent historians of science have argued that Darwin's theory represented a major schism between religion and science. The historian of biology, Peter J. Bowler, has gone so far as to say that "Darwinism's greatest triumph was that it soon established a complete break between science and religion."[57] Yet there are important problems with this way of thinking. Firstly, during the

[57] Peter J. Bowler, *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900*. (Baltimore & London: The Johns Hopkins University Press, 1983), p. 27.

middle of the nineteenth century, science and religion were more often seen as mutually reinforcing than necessarily hostile, and religious doctrine was flexible enough to accommodate new scientific theories. Secondly, the American South was not an obviously more religious region of the country at the time, and both evolution's supporters and detractors tended to be religious themselves.[58] Thirdly, we have clear evidence that American Southerners objected specifically to Darwinian evolution rather than to other scientific theories even though those theories shared many of Darwinism's supposedly anti-religious implications. Religious objection is unable to explain the variation we see in terms of either scientists or lay citizens in the United States.

There certainly are ways in which Darwinism was perceived to be antagonistic to theology. First, Darwinian evolution does contradict Archbishop James Ussher's traditional dating of the universe's creation (8 o'clock in the evening on Saturday, October 22, 4004 BC). Second, Darwin argued that the development of the various species of life on earth had occurred in a different order than the Bible claims. Third, Darwin's theory seemed to contradict William Paley's natural theological argument for the existence of God. Paley's "watchmaker argument" uses the reasonable assumption that the presence of a watch implies the presence of an intelligent watchmaker. By analogy, Paley reasons, the presence of the marvelous and intricate natural world implies the necessary existence of a creator, i.e. God.[59] Though David Hume had done a fairly thorough job of destroying Paley's arguments (before Paley even wrote them), many Christians still viewed Paley's

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[58] In fact the regional composition of church adherence is remarkably consistent across various regions of the United States at the time. Finke and Stark estimate that the various regions of the country all had church adherence rates of between 32%-39%, with the exception of areas of heavy internal migration in the West (Mormon Utah boosted the "Mountain" region to a high of 69% in 1860). New England's 36% and the East North Central's 39% are remarkably similar to the South Atlantic's 39% and the East South Central's 35%. Roger Finke and Rodney Stark, "Turning Pews into People: Estimating 19th Century Church Membership," *Journal for the Scientific Study of Religion*, Vol. 25, No. 2 (Jun., 1986), pp. 180-192. In addition, the religious mix of Americans was similar across regions, with the vast majority of Americans belonging to some form of Protestantism. While there were indeed denominational differences between Northern and Southern Protestantism, much of the denominational splits were themselves a result of views towards slavery.

[59] William Paley, *Natural Theology; or, Evidences of the Existence and Attributes of the Deity* (1802).

Natural Theology as wonderful proof of God's existence.[60] Finally, evolution seemed to imply a materialistic universe free from the protective hands of a God who interacted with its creation. All of these "contradictions" could have, and often did, cause theological difficulties for the religiously observant.

Yet, mainstream nineteenth century Christian theology would have seen little to distinguish Darwinian evolution from other scientific "controversies" that faced earlier Christians. The Darwinian dating issue was unlikely to have dissuaded seriously many lay Christians, let alone scientists or Christian theologians. Though evolution necessitated a much earlier date for creation than Ussher, there were few who rejected Darwin's theory because of dating issues. This topic is discussed in greater depth below chapter six, but before the mid-20th century few creationists even argued for a young-Earth creationism. Besides, the necessity of an "old-Earth" would not have distinguished Darwinian evolution from either astronomy or geology, both of which also argued for a much longer history than a literal reading of the Bible, but neither of them have received sustained political opposition in the United States. Similarly, neither has Hume's (or Kant's) philosophical works on the existence of God been raised in the political consciousness of the American South to the level of Darwinian evolution. Like Darwinian evolution, there were some who called Newtonian mechanics materialistic and atheistic, since Newtonianism also seemed to imply that God did not intervene actively in the world. But the materialism of Newtonian physics has not encouraged the religious to banish the theories of Newton from public schools anywhere in America, so it is unclear

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[60] David Hume beats Paleyesque reasoning in his *Dialogues Concerning Natural Religion* (1779). For evidence that many Christians still viewed Paley's *Natural Theology* as wonderful evidence of God's existence see this quote from Charles Darwin: "In order to pass the B.A. examination, it was, also, necessary to get up Paley's *Evidences of Christianity*, and his *Moral Philosophy*. This was done in a thorough manner, and I am convinced that I could have written out the whole of the *Evidences* with perfect correctness, but not of course in the clear language of Paley. The logic of this book and as I may add of his *Natural Theology* gave me as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the Academical Course which, as I then felt and as I still believe, was of the least use to me in the education of my mind. I did not at that time trouble myself about Paley's premises; and taking these on trust I was charmed and convinced by the long line of argumentation." Charles Darwin, *The Autobiography of Charles Darwin, 1809-1882*, ed. by Nora Barlow (London: Collins, 1958), p. 59.

why charges of materialism would doom Darwin's theory. Many Christians have been perfectly comfortable to argue that natural laws were simply the methods by which God operated.[61] The new uniformitarian geology also worked by "materialistic" forces, but those who accepted Lyell's theories did not find themselves banished from the ranks of the orthodox. The geologist and theologian Edward Hitchcock, for example, argued that the geological sciences did not collide with revelation, but merely illustrated "the perfections and government of Jehovah" and that the idea that geology and religion were in conflict was "rapidly passing away."[62] It was perfectly possible to hold a similar attitude towards sciences, like evolution, that seemed to remove an active God from the workings of the world. In fact 19th century America's greatest Darwinian, Asa Gray, and others argued exactly that—that natural selection was simply God's method for creating the diversity of life on Earth.[63]

When one examines America's scientists in the mid-19th century, it is difficult to see much of a correlation between their religious faith and their attitudes toward evolution and natural history. Joseph Henry, a founding member of the National Institute for the Promotion of Science, described religion and science as complementary tools of human inquiry. The scientist, and intensely religious, James Dwight Dana claimed that believers made up a greater portion of the scientific profession than any other besides the clergy.[64] The South Carolina-born chemist J. Lawrence Smith agreed

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[61] Betty Jo Teeter Dobbs, *Newton and the Culture of Newtonianism*. (Amherst, NY: Humanity Books, 1995); J. B. Shank, *The Newton Wars and the Beginning of the French Enlightenment*. (Chicago: The University of Chicago Press, 2008).

[62] "I know indeed, that our science has been regarded as coming into collision with that sacred volume, to which, as Christians, we are bound to bow as the invariable standard of religious truth….but I am happy to believe, that such apprehensions are rapidly passing away. Theologians of enlarged and impartial minds are beginning to study geology; and instead of finding its truths hostile to revelation, they find, that it furnishes them with new and interesting matter, such as no other science can, for illustrating the perfections and government of Jehovah…I trust that the day is not distant, when the supposed geological objection to revelation will be as little remembered, as is not the analogous objection derived from the Copernican system of astronomy; and which, two or three hundred years ago, was supposed to be fraught with so much danger." Edward Hitchcock, *First Anniversary Address before the Association of American Geologists at their Second Annual Meetings* (New Haven: B. L. Hamlen, 1841), pp. 44-5. For more on Hitchcock see Stanley Guralnick, "Geology and Religion before Darwin: The Case of Edward Hitchcock, Theologian and Geologist (1793-1864)," *Isis*, Vol. 63, No. 4 (Dec., 1972), pp. 529-43.

[63] This "theistic evolution" is discussed in greater detail above in the first chapter. It argues that evolution was an historical process guided by God and is accepted by many mainline Protestant denominations, the Roman Catholic Church, and virtually all Jewish denominations.

[64] Bruce (1987), p. 119, 259.

when he said (13 years after the *Origin's* publication), "I will here, in defence of science, assert that there is a greater proportion of its votaries who revere and honor religion in its broadest sense, as understood by the Christian world, than in any other of the learned secular pursuits."[65] Both Dana and Henry would come to accept the theory of evolution; Smith did not. But none of them seemed to think that scientists were a particularly irreligious group of people. Indeed one did not have to be religious to reject Darwinism, which is made clear by looking at the two most famous American combatants over Darwin's theory, Louis Agassiz and Asa Gray: Gray was a very religious Presbyterian, while Agassiz was not religious. Henry Wadsworth Longfellow described Agassiz as but a "sparse and infrequent worshiper of the Gods."[66] Agassiz's biographer describes him as "never much of a churchgoer" who "routinely rebuffed any invitations to join others for Sunday worship."[67] Certainly, Agassiz had had no problems with other scientific arguments even though they seemed as capable of generating religious objection as Darwin's. Agassiz's support for the polygenist view of separate origins for the human races, and his Ice Age theory contradicted the *Genesis* stories of Adam and Eve and the Noachian flood, respectively. The religious southerners who feted Agassiz did not seem to raise religious objections to Agassiz's polygeny or Ice Age theory either.[68] The objections to Darwinian evolution of America's most famous creationist were not religious in nature.

Certainly there were some who did reject the new Darwinian science on religious grounds or ridiculed the new theory. The Princeton Presbyterian Theologian Charles Hodge, for example, offered this summary of his position on the conflict between science and religion, "It may be said that Christ did not teach science. True, but He taught truth; and science, so called, when it comes in

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[65] J. Lawrence Smith, "President's Address," *Proceedings of the American Association for the Advancement of Science, 1873 (22nd)*, (Salem, MA: Frederic W. Putnam, 1874), p. 25.
[66] Quoted in Christoph Irmscher, *Louis Agassiz: Creator of American Science*. (Boston and New York: Houghton Mifflin Harcourt, 2013), pp. 28-9.
[67] Irmscher (2013), pp. 28-9.
[68] Bruce (1987), p. 344.

conflict with truth, is what man is when he comes in conflict with God."[69] Another preacher after the Civil War, Brooklyn's Thomas De Witt Talmage, ridiculed the idea of "survival of the fittest" by asking if the generals who had died during the Civil War had not been as good as those who had survived.[70] But more common than an outright rejection, was for the religious to either ignore the new scientific thought on evolution or to interpret scripture as consistent with Darwinism. In fact the 19th century agnostic, Robert Green Ingersoll, mocked the malleability and changeability of religious thought towards Darwin:

> "The Church demonstrated the falsity and folly of Darwin's theories by showing that they contradicted the Mosaic account of creation, and now the theories of Darwin having been fairly established, the Church says that the Mosaic account is true, because it is in harmony with Darwin. Now, if it should turn out that Darwin was mistaken, what then?"[71]

While Ingersoll meant to mock the religious, he also pointed out that religious adherents usually retain enough flexibility to shape their doctrines to accord with the new discoveries of their time.

Such flexibility was commonly demonstrated by scientists and theologians. James McCosh, the president of Princeton and a Presbyterian like Hodge, warned against the Church's rejection of Darwin and claimed that there was "nothing atheistic in it if properly understood…"[72] McCosh claimed that Darwin and the Bible could be reconciled through the method of divinely-guided evolution, and he worried that if churches denounced the possibility of such a reconciliation they would "drive some of our thoughtful young men to infidelity, for they could see for themselves that development was everywhere in nature."[73] This is not to say that McCosh faced no opposition to his theological acceptance of Darwinism, in fact he faced off in a famous debate with his fellow

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[69] Charles Hodge, *What is Darwinism?* (New York: Scribner, Armstrong, and Company, 1874), p. 47.
[70] Cynthia Eagle Russett, *Darwin in America: The Intellectual Response 1865-1912*. (San Francisco: W.H. Freeman and Company, 1976), p. 26.
[71] Robert G. Ingersoll, "Col. Ingersoll t Mr. Gladstone," *The North American Review*, Vol. 146, No. 379 (Jun., 1888), p. 618.
[72] James McCosh, *The Religious Aspect of Evolution*, Enlarged and Improved Ed.. (New York: Charles Scribner's Sons, 1890 [1888]), p. vii.
[73] Russett. (1976), p. 27.

Princetonian, the seminarian Charles Hodge, who declared simply about Darwinism that "it is atheism."[74] While Hodge had accepted the new astronomy, Darwinism was too much for him.[75] Like the naturalists in the National Academy of Sciences, McCosh and Hodge differed in their opinion of Darwinism and slavery. McCosh opposed slavery and hoped "that the war may continue till the Northern States declare that every man who sets foot on their territory is free."[76] Hodge, on the other hand, was a supporter of slavery and had himself owned slaves.[77]

While the irreligious Agassiz opposed Darwin, it was common to find spirited defenses of Darwin amongst the religious. The Calvinist theologian, George Frederick Wright, argued that Darwinism presented no theological challenges to Calvinism; the two fields supported one another. Wright claimed that "the student of natural history who falls in the modern habits of speculation upon his favorite subject may safely leave Calvinistic theologians to defend his religious faith." Wright continued, "The man of science need not live in fear of opprobrious epithets; for there are none left in the repertory of theological disputants which can be specially aimed at the Darwinian advocate of continuity in nature." Those epithets, Wright claimed, had all been exhausted in attacks on Calvinism.[78] University of California geologist Joseph LeConte claimed that evolution did not demean humans as God's creation. He argued that it was a mistake for Christians needn't believe that evolution and religion operated in separate spheres and that evolutionary biologists "have nothing to do with [evolution's] effect on religion and on life."[79] In fact, the history of evolution led to Christ: "As organic evolution reached its goal and completion in *man*, so human evolution must

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[74] Hodge (1874).
[75] Bruce (1987), p. 355.
[76] Quoted in J. David Hoeveler, Jr., "Evangelical Ecumenism: James McCosh and the Intellectual Origins of the World Alliance of Reformed Churches," *Journal of Presbyterian History*, Vol. 55, No. 1 (Spring, 1977), pp. 46.
[77] David Torbett, *Theology and Slavery: Charles Hodge and Horace Bushnell.* (Macon, GA: Mercer University Press, 2006).
[78] George Frederick Wright, "Some Analogies Between Calvinism and Darwinism," *Bibliotheca Sacra*, Vol. 37, No. 1 (1880), p. 54.
[79] Joseph LeConte, *Evolution: its Nature, its Evidences, and its Relation to Religious Thought, 2nd ed., revised.* (New York: D. Appleton and Company, 1891 [1888]), p. 276.

reach its goal and completion in the *ideal man*—i.e., the Christ."[80] LeConte's reconciliation of Christianity with Darwinian evolution was not entirely ordinary, but it was an example of the way that many religiously minded individuals were perfectly capable of accepting both Christianity and Darwinian evolution.

The naturalist John Muir was an admirer of Darwin's and, like Gray, LeConte, and others, Muir had no trouble reconciling Darwin and religious belief.[81] In fact, in an interview near the end of his life Muir claimed that evolution seemed to *require* a religious faith: "To my mind, it is inconceivable that a plan that has worked out, through unthinkable millions of years, without one hitch or one mistake, the development of beauty that has made every microscopic particle of matter perform its function in harmony with every other in the universe...no; somewhere, before evolution was, was an Intelligence that laid out the plan, and evolution is the process, not the origin, of the harmony."[82] Even after Darwin's *Origin of Species* it was perfectly possible to maintain the view that religion and science were not in necessary conflict.

Historian of science Ronald Numbers has declared that he is unable to see any correlation between mid-19th century scientists' personal religious beliefs and their acceptance of Darwinism, and that he has "found no evidence in either biographical or autobiographical accounts to suggest that a single one of these [scientists] severed his religious ties as a direct result of his encounter with Darwinism."[83] Neither does Numbers see a relationship between the various religious denominations and their acceptance of Darwin: "if there is a pattern to these diverse responses, I fail

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[80] Ibid., p. 360.
[81] Stephen Fox, *The American Conservation Movement: John Muir and His Legacy*. (Madison, WI: The University of Wisconsin Press, 1981), p. 82.
[82] French Strother, "Three Days with John Muir," *The World's Work*, Vol. 17, No. 5 (Mar., 1909), p. 11356.
[83] Numbers, Ronald L. *Darwinism Comes to America*. (Cambridge, MA and London: Harvard University Press, 1998), p. 40-2. Numbers also points out that work done by Darwin's biographer, James Moore, has shown that not even Darwin gave up Christianity because of evolution, but rather because of the death of his beloved daughter, Annie. James Moore, "Of Love and Death: Why Darwin 'Gave up Christianity'," *History, Humanity, and Evolution: Essays for John C. Greene*, ed. James Moore. (Cambridge: Cambridge University Press, 1989). pp. 195-229.

to see it."[84] While it is certainly true that some prominent scientists were without significant religious feelings (Edward S. Morse for example), this should not surprise us. In fact, it would be more striking if there were no un-churched Darwinists in a country where most ordinary adults were not themselves church members.[85] The religious background of the mid-nineteenth century scientist was as varied as that of the layman's. As we shall see, it was not religion that explained the separation of the pro- and anti-Darwinians in America but politics.

The Politics of Science

In August 1876 in Buffalo, New York, the zoologist Edward Sylvester Morse delivered an address to the Natural History section of the American Association for the Advancement of Science (AAAS).[86] In his address Morse discussed the important changes that had come to the study of natural history since the publication of Charles Darwin's theory of natural selection. According to Morse, "never before ha[d] the study of animals been raised to so high a dignity as at present." While zoology had previously been considered a sort of "adjunct to geology," its importance had been raised to such a degree that it was now "the pivot on which the doctrine of man's origin hinges."[87] The abolitionists had described enslaved Africans as "a man and a brother," and the study of human origins had an important role to playing in deciding the scientific truth behind this statement.

Morse argued that one of the most far-reaching changes to come from scientific understanding of natural selection's power to shape life's variety was that it drastically altered how Earth's plants and animals were classified and how their essential nature was understood. Louis

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[84] Numbers (1998), p. 43. Numbers is backed up by Jon H. Roberts, "Darwinism, American Protestant Thinkers, and the Puzzle of Motivation," *Disseminating Darwinism: The Role of Place, Race, Religion, and Gender*, ed. Ronald L. Numbers and John Stenhouse (New York: Cambridge University Press, 1999), pp. 145-72.

[85] Finke and Stark argue that only 37% of Americans over the age of 13 were "church adherents." Certainly there were many Americans who possessed a religion, even if they didn't possess a church, yet it is striking nonetheless. Finke and Stark (1986), pp. 187.

[86] Edward Sylvester Morse, "Address of Professor Edward S. Morse, Vice President, Section B.," *Proceedings of the American Association for the Advancement of Science, 1876* (25th) (Salem, MA: Frederic W. Putnam, 1877), p. 137-176.

[87] *Ibid.*, p. 138.

Agassiz took issue with this. His position, and that of his supporters, was that both varieties and species were, as Asa Gray described it, "primordial" and "original creations."[88] For Agassiz, species and varieties were fixed, and "even the most extraordinary changes in the mode of existence, and in the conditions under which animals are placed, have no more influence upon their essential characters than the lapse of time."[89] For Agassiz, this fixity certainly extended to human varieties. As proof of the immutability of the "the races of man" and the permanent nature of their essential characteristics, Agassiz cited the polygenist work of Nott and Gliddon, which argued that the races of man were separate species with an unchangeable nature stretching back into the dawn of time.[90] The implication for the racial hierarchy was clear: black inferiority and white supremacy were natural and eternal facts. They were permanent, ideal types created by God.

But as Asa Gray and Edward Morse showed, this was no longer the consensus scientific view: "Scientific opinion upon this point is not what it was thirty or forty years ago….it was an article of scientific faith that species on the whole were fixed…and that probably they have come down essentially unaltered from the beginning."[91] Gray articulated the naturalists' growing realization that groups which had previously been considered species were actually mere varieties, which was philosophically an entirely different description. "What then is the substantial difference between varieties and species? Just here is the turning-point between the former view and the present. The former doctrine was that varieties come about in the course of nature, but species not; that varieties *became* what they are, but that species were *originally made* what they are."[92] Morse called this the "prime question" of natural history—whether or not the nature of forms was a result of

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[88] Asa Gray, *Natural Science and Religion*. (New York: Charles Scribner's Sons, 1880), p. 43.
[89] Louis Agassiz, *An Essay on Classification*. (London: Longman, Brown, Green, Longmans, & Roberts and Trubner & Co., 1859), p. 76.
[90] *Ibid*., p. 79, 82. The work cited by Agassiz is Josiah C. Nott and George R. Gliddon, *Types of Mankind*. (Philadelphia: Lippincott, Grambo & Co., 1854).
[91] Gray (1880), p. 37-8.
[92] *Ibid*., p. 42-3. Gray's italics.

"something inherent" which forms it, or if "a correlation can be established between the variation of species and certain physical conditions inducing these variations…"[93]

The understanding of Darwin's theory of natural selection, Morse argued, had drastically tilted the bar in favor of the environmental thesis, and as a result, the classification of species. After Darwin, naturalists began to radically reduce the number of species that they observed in nature. The number of bird and mammal species were reduced by nearly a third, and many species were reclassified as mere varieties within a changeable continuum of variation.[94] This change generated resistance. Many early classifiers had attached their name to their newly discovered species and had "persistently overlooked" deviations which might have downplayed the uniqueness of their discoveries.[95] Scientific progress faced resistance from personal honor as well as political advantage.

Morse claimed that the belief in the fixed nature of species type literally shaped the way that naturalists observed the world. If naturalists merely "looked upon classification as an artificial method to facilitate the study" of the natural world, the results of their studying would change. For example:

> Those who have believed in types as fixed laws, rigidly impressed at the outset of life, are those also who have recognized in the cells of a honey-bee, as well as in the arrangement of leaves about the axis of a plant, a perfect mathematical adjustment of parts, which were stamped at the beginning, and have so continued to exist without deviation.[96]

Those who saw speciation as an eternally fixed and inherently present phenomenon saw types as having a more rigid and more significant existence. Morse pointed out that true understanding of the variation in honey-bee cells was harmed by naturalists' belief in the fixed nature of species type. When bee cells were actually measured it was discovered that there was not one mathematically perfect "type" of honey-bee cell, and in fact "a cell of this perfection is rarely if ever attained."

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[93] Morse (1877), p. 142-3.
[94] *Ibid.*, p. 147-8.
[95] *Ibid.*, p. 139.
[96] *Ibid.*, p. 155.

There is great variation "which almost defies description," and for the study of which naturalists would have been better served to have "had adopted the plan followed by Mr. Darwin" to see that there is not a fixed form of the honey-bee cell, but a range of variation amongst the same species.

This reinterpretation of species classification had ramifications for understanding the "origins of man." Morse argued that a belief in the fixed nature of species type forced Agassiz, Morton, and the other polygenists to deny the unity of the human species, and that Agassiz's belief in the fixity of animal species was intimately tied to his belief in the fixity of racial types. Morse quotes Agassiz as saying that he "saw the time coming when the position of the origin of man would be mixed up with the question of the origins of animals, and a community of origin might be affirmed for them all."[97] Morse claims that because Agassiz held such a conviction it should not surprise us that he held human races to be not mere variations but separate species. Because Agassiz and his supporters thought in terms of fixed type rather than a continuum of variation and perceived great differences between the human races, they had to see racial differences as having the same nature and identity of other species' differences. Morse quotes Agassiz:

> Unless we recognize the differences among men, and we recognize the identity of these differences with the differences which exist among animals, we are not true to our subject, and, whatever be the origin of these differences, they are of some account; and if it ever is proved that all men have a common origin, then it will be at the same time proved that all monkeys have a common origin, and it will by the same evidence be proved that man and monkeys cannot have a different origin.[98]

Morse points out, as did a previous chapter of this dissertation, that Agassiz and the Southern polygenists were assailed by the Church, just as Darwin would later be, which shows the degree to which a fear of religious retribution was not sufficient to stop Southern naturalists before Darwin from supporting "religiously objectionable" science, so long as that science supported white supremacy and slavery. Though Agassiz and the Southerners opposed it, Darwinism had swept

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[97] Quoted in *Ibid.*, p. 164.
[98] Quoted in *Ibid.*, p. 164.

away the scientific defensibility of the notion that race was an eternally fixed essence—divine or natural. Instead racial groups were mere varieties from a common stock shaped by time and chance and fully capable of change in the future, as well.

Morse argued that Darwin raised natural history's status and made zoology the most important pivot upon which man's origins hinged. Regarding human origins, he argued that "to a mind unbiased by preconceived opinions, and frankly willing to interpret the facts as they stand revealed by the study of these ancient remains the world over, the evidences of man's lowly origin seems, indeed, overwhelming." Like almost all 19th century white Americans, Edward Morse was a racist, yet with a Darwinian understanding of racial variation he had to acknowledge that human racial type was not fixed, that all humans shared a common origin, and that "no one race possesses all the low characters" inherited from that common inheritance.[99] His scientific understanding changed the way that he saw the world, and importantly for the reception that Darwinism would have in the United States, Morse felt that a new understanding of human origins and heredity ought to have political implications: "the statute-books are to be again revised from the standpoint of science, with its rigid moral and physical laws, and not from the basis of established usage or long-continued recognition."[100] To base the statute-books on evolution would be, according to Morse, to place the statute-books on solid ground.

Morse was not alone in feeling the growing authority of science in public life. J. Lawrence Smith, President of the American Association for the Advancement of Science in 1872, claimed that "science at the present day commands the respect of the world; nations, looking up to it, seek its advice at all times, and move in no material enterprises without consulting its oracles."[101] Smith argued that scientists now had strong bearings on the physical, mental, and spiritual world, and even

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[99] *Ibid*., p. 170.
[100] *Ibid*., p. 176.
[101] J. Lawrence Smith, "President's Address," *Proceedings of the American Association for the Advancement of Science, 1873 (22nd)*, (Salem, MA: Frederic W. Putnam, 1874), p. 5.

the political world. The people and their representatives, Smith claimed, would judge American science by its "practical bearings," and its ability to produce the "raw material out of which all the progress of modern nations is constructed." As he put it, the "Government is fully alive to the value of well-directed scientific labors."[102] The American people would judge science pragmatically, and would consider its truths in relation to its effects on their daily lives. The paleontologist Othniel C. Marsh argued, the year after Morse spoke, that the scientific backing for evolution had raised it above other rival explanations of the origins of life: "But I am sure I need offer here no argument for evolution; since to doubt evolution to-day is to doubt science, and science is only another name for truth."[103]

Darwinian evolution fit neatly into an already existing strain of natural history, which said that science had demonstrated that all the human races shared a common origin and brotherhood, which was exemplified by the work of Alexander von Humboldt. Darwin admired Humboldt, the great 19th century German naturalist, and both shared a view on the United States shaped by their hatred of slavery. Humboldt stated that he could describe himself as no more than "half American," stating that while he agreed with the desires and aspirations of America, he disagreed with its politics because "the influence of Slavery is increasing, I fear."[104] Darwin and Humboldt shared a deep and abiding hatred of slavery, and both Darwin and Humboldt rooted their hatred of slavery in their understanding of what natural history had to say about racial type and racial variation.[105] Humboldt, like Darwin, disagreed with the idea that there were multiple species of humans, and he thought that the belief in a vast difference between skin types led many to believe that blacks were not even the same species as whites, and by implication not deserving of the same political rights and protections

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[102] *Ibid*., p. 5-7.
[103] Othniel Charles Marsh, "Address of Professor O. C. Marsh, Vice President, Section B," *Proceedings of the American Association for the Advancement of Science, 1877 (26th)*, (Salem, MA: Frederic W. Putnam, 1878), p. 212.
[104] R. W. R., "A Visit to Humboldt," *New York Times*, (June 9, 1859).
[105] Adrian Desmond and James Moore, *Darwin's Sacred Cause: Race, Slavery, and the Quest for Human Origins*. (Chicago: The University of Chicago Press, 2009).

as whites. "As long as attention was directed solely to the extremes in the varieties of color and of form, and to the vividness of the first impression of the senses, the observer was naturally disposed to regards races rather as originally different species than as mere varieties." In addition to maintaining the unity of humanity, Humboldt argued against the "depressing assumption of superior and inferior races of men….All are in like degree designed for freedom…" According to Humboldt natural history had the power to overcome racial differences by teaching humans their common origins. Quoting his brother, Wilhelm Humboldt, he said:

> if we could indicate an idea which throughout the whole course of history, has ever more and more widely extended the empire, or which more than any other, testifies to the much contested and still more decidedly misunderstood perfectibility of the whole human race, it is that of establishing our common humanity—of striving to remove the barriers which prejudice and limited views of every kind have erected amongst men, and to treat all mankind without reference to religion, nation, or color, as one fraternity, one great community…

He continued: "Thus deeply rooted in the innermost nature of man, and even enjoined upon him by the highest tendencies,--the recognition of the bond of humanity becomes one of the noblest leading principles in the history of mankind."[106] Natural history could teach that all the human races were "a man and a brother."

Writing after the publication of *Origin of Species*, the antislavery French naturalist Armand de Quatrefages also recognized the link between natural history's understanding of the unity of the human species and the social and political ramifications arising from this recognition. De Quatrefages described the social import of natural history thusly: "Every thing leads to the conclusion which we had already reached in our earlier lectures; and we can repeat with redoubled certainty: the differences among human groups are characters of race, and not of species; there exists only one human species; and, consequently, all men are brothers—all ought to be treated as

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[106] Alexander von Humboldt, *Cosmos: a Sketch of a Physical Description of the Universe* , Vol. I, (New York: Harper & Brothers, 1866 [1845-62]), p. 355-9.

such, whatever the origin, the blood, the color, the race."[107] Highlighting the overlapping concern of the white supremacists about both evolution's and miscegenation's power to weaken the social power of race, de Quatrefages points out that interracial marriage is the clearest demonstration of the brotherhood of man: "When you have two different vegetables, or two different animals, and wish to know whether they belong to two *different species*, or only to *two races of the same species*, marry them."[108]

Similarly, the American journalist David Goodman Croly proposed miscegenation as the clearest proof of human unity: "It is Miscegenation—the blending of the various races of men—the practical recognition of the brotherhood of all the children of the common father."[109] The German anthropologist Hermann Schaaffhausen argued that "natural science has overthrown error and prejudice" even though there were still some who denounced the argument that blacks were as capable of civilization as whites as mere "philanthropic enthusiasm." For Schaaffhausen used scientific authority to assert the right to social equality: "I must here protest against the assertion, and proclaim, in the name of science, equal rights for all human races, in the noblest sense of the word."[110] Schaaffhausen, like Croly, also held upsetting views (for white supremacists) about racial intermixture, which he called "one of the great means which nature employs for the improvement of the species…"[111] The implication of Darwinian evolution and science's proof of the unity of the human species seemed to be equal rights and miscegenation.

Darwin's personal politics and his scientific theories were thus politically challenging to southern slaveholders. Darwin felt strongly about slavery. In fact, it is better to say that he was

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[107] De Quatrefages, "Physical Characters of the Human Races," *Natural History of Man.* (1875), p. 109.
[108] Jean Louis Armand de Quatrefages, de Bréau, "The Unity of Human Species," *The Natural History of Man; A Course of Elementary Lectures*. Trans. Eliza A Youmans, (New York: D. Appleton and Co., 1875), p. 26.
[109] David Goodman Croly, *Miscegenation: The Theory of the Blending of the Races, Applied to the American White Man and Negro.* (New York: H. Dexter, Hamilton & Co., 1864), p. 1.
[110] Hermann Schaaffhausen, "On the Development of the Human Species, and the Perfectibility of Its Races," *Anthropological Review*. Vol. 7, No. 27 (Oct., 1869), pp. 366-7.
[111] *Ibid*., p.373.

fiercely anti-slavery.[112] While traveling in South America, Darwin witnessed the brutal treatment meted out to slaves and recoiled. Darwin nearly lost his position on the ship after arguing with Captain FitzRoy over slavery.[113] In a letter home he wrote:

> How steadily the general feeling, as shown at elections, has been rising against Slavery. What a proud thing for England if she is the first European nation which utterly abolishes it! I was told before leaving England that after living in slave countries all my opinions would be altered; the only alteration I am aware of is forming a much higher estimate of the negro character.[114]

His feelings were strong and life-long. In 1865 after the suppression of the Morant Bay rebellion (400 blacks executed, 600 flogged, 1000 suspect houses razed) by Governor Eyre of Jamaica, Darwin joined the Jamaica Committee along with other evolutionists like Alfred Russel Wallace, T. H. Huxley, Herbert Spencer, and other anti-slavery radicals and liberal politicians to prosecute Eyre, though the Eyre escaped without charges.[115] Darwin's hatred of slavery colored his thoughts on the animals he would make his life's study. "Animals—whom we have made our slaves we do not like to consider our equals. Do not slave holders wish to make the black man other kind?"[116] Darwinian science in America would come to take on the political associations of anti-slavery, progressive, northern Republicanism that represented a clear political challenge to the social and political mores of southern life regarding race, identity, and slavery. By 1875 nearly all American scientists accepted Darwinian evolution and a unitary theory of human origins, but Southerners would remain uniquely hostile to this scientific consensus.

The scientific battle lines over the science of Darwinism reflected the real battle lines of the American political system. In 1860, on the eve of the Civil War, Louis Agassiz and William Barton Rogers engaged in a debate in Boston on the new Darwinian science sponsored by the Boston

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[112] Desmond and Moore (2009).
[113] Darwin (1839), *Voyage of the Beagle*, p. 74.
[114] Darwin, Francis, ed. *The Life and Letters of Charles Darwin, including an Autobiographical Chapter*, 3 vols. (Murray, 1887), p. 246.
[115] Charles Lyell would also join the Jamaica Committee.
[116] Quoted in Desmond (1989), p. 407.

Society of Natural History. Louis Agassiz argued against the idea of evolution by natural selection, while Rogers argued the case for Darwinism. Agassiz's views on race and slavery are well known, and Rogers's anti-slavery opinions were discussed earlier in the chapter. Yale's James Dwight Dana was a friend to Agassiz but an opponent of slavery. While Dana had originally worried about the religious objections to evolution, Darwin was able to cultivate Dana successfully on the question of evolution, in large part by appealing to their shared anti-slavery views.[117]

Abolitionist transcendentalists like Ralph Waldo Emerson, Henry David Thoreau, and Theodore Parker all embraced Darwinian evolution.[118] Emerson saw Darwin as but part of a long line of developmental naturalists, and had no problem assimilating his work.[119] In fact, he seems to have anticipated him in his little poem that served as an epigraph to his essay "Nature": "And, striving to be man, the worm/ Mounts through all the spires of form." Thoreau read *Origin of Species* within weeks of its London publication, and was copying extracts from it into his notebooks by early the next year.[120] A Unitarian preacher, Parker enthusiastically embraced Darwin's theory, and even claimed to have anticipated Darwin's theory in what he called his "Darwin sermons."[121] The transcendentalists found ideological company amongst the natural historians that would become the face of Darwinian evolution in America.

After Darwin, evolution became associated with northern industrialists, monogenists, abolitionists, and racial egalitarians. While this was a varied crew, they all shared a belief in scientific progress, which informed their belief in social and political progress, as well. The US Senator, Carl Schurz, for example, was antislavery and a Spencerian. He was also a monogenist, free trader, and a

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[117] Desmond and Moore (2009), pp. 276-79; for more on Dana's religious position on development see his *Science and the Bible; a Review of 'The Six Days of Creation' of Prof. Tayler Lewis*. (Andover: Warren F. Draper, 1856).
[118] John B. Wilson, "Darwin and the Transcendalists," *Journal of the History of Ideas*, Vol. 26, No. 2 (Apr.-Jun., 1965), pp. 286-90.
[119] Laura Dassow Walls, *Emerson's Life in Science: The Culture of Truth*. (Ithaca, NY: Cornell University Press, 2003), p. 176.
[120] Laura Dassow Walls, *Seeing New Worlds: Henry David Thoreau and Nineteenth-Century Natural Science*. (Madison, WI: The University of Wisconsin Press, 1995), p. 194.
[121] George Willis Cooke, "Notes," in Theodore Parker, *The World of Matter and the Spirit of Man: Latest Discourses of Religion*. Ed. George Willis Cooke (Boston: American Unitarian Association, 1907), p. 421.

northern general during the Civil War. Schurz identified the ideals of Darwin and Spencer with northern politics. He claimed that if southerners had read Spencer, "there would never have been any war for the preservation of slavery."[122] *The New York Times*'s Civil War correspondent, abolitionist, and social reformer Charles Loring Brace was deeply moved by Darwin's *Origin of Species* and was said to have read it thirteen times.[123] Brace called "unjust prejudice against race or colour" a "disgrace" and when Brace wrote an ethnology called *The Races of the Old World*, he argued from a Darwinian point of view that the unity of humanity was assured and that there was little difference between the races.[124] As he put it, "it is to be expected that the varieties which spring from the original stock would be distinguished from one another with great difficulty, and that a definite race-mark would be a thing not easily found….Scarcely any marks of a human variety are permanent."[125] The northern preacher Henry Ward Beecher was an abolitionist, a proponent of capitalism, and an evolutionist. Beecher was one of the most famous preachers in America, and he used his perch to bring attention to the cause of racial quality by inviting abolitionists like Sojourner Truth and Frederick Douglass to speak at his church. Beecher even went so far as to finance John Brown's insurrection in Kansas—Brown's rifles were called "Beecher Bibles."

Similarly Herbert Spencer's American promoter, Edward Youmans, hoped that Beecher might use his powerful perch and hold over innumerable Amerian ears to lead American clergy to accept the doctrine of evolution, which Beecher did.[126] Youmans, founder of *Popular Science Monthly*, argued that the political process depended upon an informed citizenry with an adequate knowledge

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122 Werth (2009), p. 284.
123 Stephen O'Connor, *Orphan Trains: The Story of Charles Loring Brace and the Children He Saved and Failed.* (Chicago: University of Chicago Press, 2001), p. 80.
124 Charles Loring Brace, *The Races of the Old World: A Manual of Ethnology.* (London: John Murray, 1863), p. 257.
125 *Ibid.*, p. 394-5.
126 Edward Youmans, "Letter to Herbert Spencer from Edward Youmans, September 3, 1883," in John Fiske, *Edward Livingston Youmans, Interpreter of Science for the People.* (New York: D. Appleton and Co., 1894), p. 379.

of the workings of nature.[127] Youmans lamented that so many politicians, teachers, and preachers who guided the ship of state were ignorant of a scientific basis for their understanding of human nature.[128] Through writings and lectures, Youmans sought to spread scientific knowledge to the American people both to teach them science and to make them better citizens. His *Popular Science* would help to spread the "status and independence of scientists" and, in particular, Youmans's belief in evolution and Herbert Spencer.[129] Like other prominent proponents of evolution in America, Youmans was a firm believer in the antislavery cause, which his sister claimed he had imbibed from his abolitionist father ("Vincent Youmans was the first man in his town to declare himself an abolitionist") from a young age.[130] "Science," argued Youmans, "engages naturally with those great subjects of public interest which are no longer to be postponed or evaded."[131] Among the subjects Youmans listed that science had something to teach the public was the issue of the relations between the races.

The most famous evolutionists in America were, like the NAS naturalists, politically unpalatable to white supremacists, and this was never more the case than with the most famous defender of Darwin in America, Louis Agassiz's colleague at Harvard, Asa Gray. Gray was a botany professor and an orthodox Christian, and in his person he demonstrates the non-necessity of the science-religion conflict, because Gray sought to bridge the gap between religion and science on the question of human origins. Darwin even used Gray as an example to prove why it was absurd not to not think that "a man may be an ardent Theist & an evolutionist."[132] Gray was an intense and orthodox Christian, yet he became Darwin's greatest champion in America. Gray argued, like many

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127 Edward Youmans, "Preface," *The Culture Demanded by Modern Life: A Series of Addresses and Arguments on the Claims of Scientific Education*. Ed. Edward Youmans. (Akron, OH: The Werner Company, 1869), p. vi.
128 Edward Youmans, "On the Scientific Study of Human Nature," (1869), p. 374.
129 Robert V. Bruce. *The Launching of Modern American Science, 1846-1876*. (Ithaca: Cornell University Press, 1987), p. 354.
130 John Fiske, *Edward Livingston Youmans: Interpreter of Science for the People*. (New York: D. Appleton and Co., 1894), p. 30; Eliza Ann Youmans, "Sketch of Edward L. Youmans," *Popular Science Monthly*. Vol. 30 (Mar., 1887), p. 689-90.
131 Youmans, "Introduction—On Mental Discipline in Education," (1869), p. 54.
132 Charles Darwin, "Charles Darwin to John Fordyce, May 7th, 1879," Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-12041.

had before, that science and religion occupied separate spheres of knowledge and that while science was unable to establish the existence of God and the rightness of the Christian faith, it was "equally unable to overthrow" that faith.[133] Gray was one of a number of American scientists, who, like Benjamin Silliman, Edward Hitchcock, and James Dwight Dana, believed that evolution did not contradict the scriptural accounts in Genesis of human origins.[134]

Gray was also anti-slavery and his feeling influenced his work. In 1836, Gray stated in a letter to his father that he had immediately declined an offer of employment in the state of Louisiana, saying "I do not like the Southern States."[135] Asa Gray's most famous work was his *Manual on Botany*, which went through a large number of editions. Gray claims that he purposefully limited the geographic scope of his book to the northern states to "make the 'Manual" keep clear of slavery,--New Jersey, Pennsylvania (if little Delaware manumits perhaps I can find a corner for it), Ohio, Indiana or not as the case may be, leave out Illinois, which has too many Mississippi plants…"[136] During the Civil War, Gray ardently took up the Union cause joining a company of those too old to fight, or otherwise incapacitated, that drilled and guarded the State Arsenal in Massachusetts. Gray's correspondence with Darwin during this time reflected their shared belief in the Northern cause and the end of slavery, as well as their collaboration on spreading the word about Darwin's theory. In 1861 Darwin wrote Gray that while war was a misfortune, he "should not regret it so much, if I could persuade myself that Slavery would be annihilated."[137] For Darwin

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133 Asa Gray, (1880), p. 9.
134 Howe (2007), p. 465-6.
135 Asa Gray, "Letter to His Father, October 8, 1836," *Letters of Asa Gray*, Vol. I. ed. Jane Loring Gray (Boston and New York: Houghton, Mifflin and Co, 1894), p. 62
136 Gray (1894), pp. 346-7.
137 Charles Darwin, "Charles Darwin to Asa Gray, July 21, 1861," Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-3216. Asa Gray, "Asa Gray to Charles Darwin, May 15, 1865," Darwin Correspondence Database, http://www.darwinproject.ac.uk/entry-4833.

if slavery was abolished, then even "a million horrid deaths would be amply repaid in the cause of humanity," and Gray later proudly proclaimed after the war that "slavery is thoroughly dead."[138]

Gray's political beliefs influenced his reception of Darwin's ideas. In fact Darwin's biographer, James Moore, claims that Gray saw the *Origin of Species* as being primarily about man—in fact "everybody did."[139] After reading the *Origin of Species*, Gray realized what Darwin meant when he claimed that his theory could shed some "little light" on the "differences between the races of man."[140] In Gray's 1860 *Atlantic Monthly* review of *Origin of Species*, Gray knew that Darwinian evolution would spell the death knell of the scientific theory of human pluralism. Evolution meant that humankind was one family, and that as one travels back along the family tree,

> the lines converge as they recede into the geological ages, and point to conclusions which, upon the theory, are inevitable, but by no means welcome. The very first step backwards makes the Negro and the Hottentot our blood-relations; — not that reason or Scripture objects to that, though pride may.[141]

The question of species was of particular interest because of the debates over the unity of the human species, as well as the fight over the ending of slavery only a few years before. For Gray, mundane questions of botanical description gain "interest" when looked at "in view of the question of *species*."[142] As Gray understatedly put it, "what this term *species* means, or should mean, in natural history, what the limits of species…their origin, and their destiny—these are questions which surge up from time to time; and now and then in the progress of science they come to assume a new and hopeful interest." Gray declared Darwin's decimation of the polygenist argument espoused by Agassiz and the Southern cohort of Nott, Gliddon, and Morton to be a positive development

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138 Charles Darwin, "C. Darwin to A. Gray, June 5, 1861," *The Life and Letters of Charles Darwin: Including an Autobiographical Chapter*, Vol. II, ed. Francis Darwin (New York and London: D. Appleton and Co., 1911), p. 166.
139 James Moore, "Darwin's Progress and the Problem of Slavery," *Progress in Human Geography*, Vol. 34, No. 5 (Oct., 2010), p. 571.
140 Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. (London; John Murray, 1859), p. 199.
141 Asa Gray, "Darwin on the Origin of Species," *The Atlantic Monthly*, (Jul., 1860).
142 Asa Gray, "Species as to Variation, Geographical Distribution, and Succession," *American Journal of Science and Arts*, (May, 1863), p. 431-2.

resulting from the theory of evolution by natural selection. Once the "races of men" are established to be of one species, then it is established that they "are of one *origin*," which means that although the races are "strongly-marked" and "persistent varieties," they can hardly be maintained to be groupings that are "primordial and supernatural in the ordinary sense of the word."[143] Gray felt that what natural history taught ought to have influence on the distribution of political rights. It was here, according to Gray, that "where the 'touch of Nature makes the whole world kin,' we reach the sensitive point."[144] Gray even went so far as to claim that now that humans understood their shared connection with nonhuman animals they ought to change their behavior towards nonhuman life: "I fancy that human beings may be more humane when they realize that, as their dependent associates live a life in which man has a share, so they have rights which man is bound to respect."[145] For Gray, the fact of evolution changes the nature of racial identity from something fixed and necessary to something fluid and contingent.

Overwhelmingly, the greatest and most famous proponents of Darwin's theory of evolution in the United States were antislavery men like Gray, while Darwin's opponents were sympathizers with the slave system of the South. The historian Sidney Ratner argued that Gray, William Barton Rogers, and Theophilus Parsons were the initial vanguard who showed the most "rare courage and ability" to defend Darwin.[146] All three were strongly anti-slavery, and all of them found evolution to be compatible with their religious beliefs. The political opinions of both Gray and Rogers have been discussed, but Parsons was no less adamant about the issue even going so far to write an antislavery pamphlet in 1863, at the same time that he was defending Darwin.[147] Like Asa Gray, Parsons did

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[143] "One good effect is already manifest; its enabling the advocates of the hypothesis of a multiplicity of human species to perceive the double insecurity of their ground." Asa Gray, "Natural Selection Not Inconsistent with Natural Theology," *Darwiniana: Essays and Reviews Pertaining to Darwinism*. (New York: D. Appleton and Co., 1876), p. 176.
[144] Asa Gray, *Natural Science and Religion*. (New York: Charles Scribner's Sons, 1880), p. 54.
[145] Gray (1880), p. 54.
[146] Sidney Ratner, "Evolution and the Rise of the Scientific Spirit in America," *Philosophy of Science*, Vol. 3, No. 1 (Jan., 1936), p. 107.
[147] Theophilus Parsons, "Slavery. Its Origin, Influence, and Destiny," (Boston: William Carter and Brother, 1863).

not see his support of the new evolutionary theory as challenging his Christian faith, but rather asked "may not God act as well through this 'struggle for life' as through any other of his laws?"[148] Parsons recognized that Darwin's theory challenged Agassiz's belief in separate creations and that much of the criticism of Darwin's work came from the way that it had made fluid the nature of race and species. "What do we gain in real knowledge, when we insist that the word "species" *must* mean this or that, when it *may* mean anything…And as to the question of difference or identity, do we know enough about it to be very positive on any point, except our ignorance?" It was not religious objection that Parsons thought would prove the most difficult for people, but the question "which related to man himself."[149]

The French philosopher Antoine Augustin Cournot writing in the *Anthropological Review* during the American Civil War explicitly argued that "scientific impartiality" would not be enough to separate the political questions around race from the scientific study of the unity and origin of humankind, even if religious and humanitarian concerns also legislated for a belief in the consanguinity of man: "Not that so much importance exactly is attached to the scientific formula of the unity of the species, as because there is mentally associated with it another idea, which can be easily comprehended even by those most destitute of scientific education; namely, the idea of the descent from a single pair."[150] Cournot argued that if it could be shown that all humans were but part of a "brotherhood of man" then "this would be at once a sufficient physical foundation for the sacred idea of humanity, such as would tend to increase the influence of those religious and moral

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[148] He continues, "If we regard it as an instrument, by means of which he works out universal, inevitable, and never ending improvement, incorporating this law with the nature and essence of every thing that lives, or can live, may we not see in this also, at once his infinite love and his infinite wisdom?" Theophilus Parsons, "Review of *On the Origin of Species*," *The American Journal of Science and Arts*, 2nd Series, Vol. 30, No. 88. (Jul, 1860), p. 8.

[149] Parsons (1860), p. 9.

[150] Antoine Augustin Cournot, "On the Ideas of Species and Race Applied to Man and Human Society: On Anthropology and Ethnology," *Anthropological Review*, Vol. 2, No. 7 (Nov., 1864), pp. 268-9, originally published as "Traité de l'Enchainement des Idées Fondamentales dans les Sciences et dans l'Histoire," (Paris: 1861).

opinions which are most worthy of our attention."[151] The effects of science need not be impartial, and what naturalists had to say on this issue challenged the Southern tradition of ascribing rights based upon the "natural" category of race. As Cournot and others recognized, it was impossible for Darwinian evolution to remain free from such influences.

The Opposition to Darwinism

As we have argued, Christianity and science were used as dual, mutually supportive bulwarks for slavery before the Civil War and also to justify a political framework of organic, hierarchical conservatism in the American South. Two great modes of human intellectual achievement and authority, religion and science, were used to support the configuration of the antebellum social order as ordained by both God and Nature. This organic conservatism rested on the idea that the secular order which exists was blessed by and created by God, and a close (scientific) study of the world could demonstrate that hierarchies were both inherent and necessary in nature. If the South's social system was proper and superior and both revelation and reason proved it, when these underpinnings were challenged southerners reacted.

Certainly there were some who opposed Darwinism for upsetting the social order in ways not having to do with race—the philosopher Francis Bowen argued that Darwinism led to nihilism and pessimism, for example.[152] The English writer Francis William Newman argued that Darwinism led to a belief in determinism, which would lead children to be taught that "every action is determined, and that they have no free-will to choose right or wrong, but are necessarily the slaves of desire," which was "a most corrupting education."[153] Both Bowen and Newman's complaints shared a heritage with anti-materialist complaints stretching back to those against Thomas

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[151] *Ibid*., p. 269-70.
[152] Francis Bowen, "Malthusianism, Darwinism, and Pessimism," *North American Review*, Vol. 129, No. 276 (Nov., 1879), pp. 447-473.
[153] Francis William Newman, "The Atheistic Controversy," *The Contemporary Review*, Vol. 33, (Oct., 1878), pp. 496-7.

Hobbes—that Darwinism denied humanity's free-will. What was different about the complaints about Darwinism was that Darwinism changed natural history's understanding of human identity, which had important ramifications for scientific justifications of the racial hierarchy.

More common than worries about nihilism and determinism were arguments against Darwinism such as those presented by George Clinton Swallow, Missouri's state geologist until the start of the Civil War, during which time he was twice arrested for disloyalty to the Union.[154] For Swallow the real barrier to accepting Darwinism, the "insuperable barrier" as he called it, was evolution's claim that there was a connection between lower animals and man. Swallow argued that while it was possible for there to have been a physical connection between humans and nonhumans, it was impossible to equate the moral and intellectual sense of a monkey with a human, unless it could be said that "a savage has no more moral sense than a monkey." In which case there remained an "impassable barrier…between the savage and man."[155] For Swallow this impassable barrier was too great, though Darwin would have tried to make "a hybrid between a Chimpanzee lady and a Bushman."[156] Southern chemist, J. Lawrence Smith, echoed Swallow and argued that Darwin was a philosopher whose imagination transcended his knowledge of animal and vegetable life, and that Darwin uses not "logical and inductive reasoning" but an embarrassing type of logic when he "touched the confines of man." While rejecting Darwin, Smith referred positively to Agassiz and to the idea that Darwin must acknowledge that some "creative force" implanted man's moral sentiment.[157]

Darwinian evolution was altogether different from other regnant theories of human diversity, because it implied that races and species were mutable, and that the differences between

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[154] George Clinton Swallow, "On the Origin of Species," *Proceedings of the American Association for the Advancement of Science, 1873 (22nd)*, (Salem, MA: Frederic W. Putnam, 1874), p. 396-407; Leroy E. Page, "George Clinton Swallow, the Other Kansas State Geologist," *Transactions of the Kansas Academy of Science (1903-)* , Vol. 99, No. 3/4 (Dec., 1996), pp. 134-145.
[155] Swallow (1874), p. 400.
[156] *Ibid*., p. 406.
[157] Smith (1874), p. 12-5.

the races were less permanent, less "natural", and less necessary than the racial theories of Southern social order assumed. The natural order of a strictly separated color line wobbled when confronted with the notion of evolutionary development. What William Freehling said about mixed race children in the minds of Southerners applied to evolution as well. Evolution "made a dubious natural distinction altogether unnatural" and was as threatening to the social and political realities of southern life as the presence of Mulatto children.[158] Illiberal ideas about a fixed political order in the American South were shared by landed aristocrats in England as well, where the old orders felt politically challenged by scientific notions of progress and development. Anti-evolution drives were associated with larger political trends, and the science of Darwinian evolution was thought to be a harbinger of political change. W. J. Cash puts it well:

> The anti-evolution organizations were everywhere closely associated with those others which quite explicitly were engaged in attempting to wipe out all the new knowledge in the schools, to clear all modern books out of the libraries. "Yankee infidelity" and "European depravity" and "alien ideas" were their standard rallying-cries. They warned constantly and definitely that evolution was certain to breed Communism. Just as clearly and as constantly, they warned that it was breaking down Southern morals—destroying the ideal of Southern Womanhood. One of the most stressed notions which went around was that evolution made a Negro as good as a white man—that is, threatened White Supremacy. And always, as what I already say indicates, they came back to the idea of saving the South, appealed to and spoke in the name of exactly the old potent patriotism of the region.[159]

Attitudes towards scientific theories could not be separated from larger political movements, especially when these scientific theories touched on areas of crucial American political concern like race, identity, and progress.

In fact, an illustrative example of the way that racial politics and the war over slavery could drive scientific work can be seen by looking at the dispute that arose in the United Kingdom between the Ethnological Society of London (ESL) and the Anthropological Society of London

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[158] William Freehling, *The Road to Disunion: Secessionists at Bay, 1776-1854*. (New York and Oxford: Oxford University Press, 1990), p. 54. For more on the challenge that miscegenation to the Southern worldview see Joel Williamson, *New People: Miscegenation and Mulattoes in the United States* (New York: The Free Press, 1980).

[159] W. J. Cash, *The Mind of the South*. (New York: Vintage Books, 1991 [1941]), pp. 338-9.

(ASL). The ESL was a British learned society dedicated to studying the various peoples of the world, but its roots lay in an earlier organization called the "Aborigines Protection Society" whose mission was "protecting the defenceless, and promoting the advancement of uncivilized tribes."[160] The Aborigines Protection Society, had been founded by Evangelical and Quaker philanthropists who had tried to stop the African slave trade and slavery in British colonies. The original "scientific" mission of these groups was subservient to the humanitarian mission. The ethnology performed was done to aid the mission of influencing public opinion in Great Britain, and demonstrating to the public "what measure ought to be adopted with respect to the Native Tribes, in order to secure to them the due observance of justice and the protection of their rights; to promote the spread of Civilization among them, and to lead them to the peaceful and voluntary reception of the Christian Religion."[161] The anthropological work that was done by the Society was meant to demonstrate the unity of human species and actively combat the polygenist science being done at the time—the motto of the APS was *ab uno sanguine* ("of one blood"). Over time the scientific work that was being done was separated from the humanitarian work with the founding of the Ethnological Society of London. Though the new ESL no longer had an explicit humanitarian mission, its roots remained in the makeup of the scientists in the group and their field of inquiry.

The ESL rose in prominence amongst learned Britons and attracted scientific members who wished to share in the "study of man," although some of them did not share the egalitarian presumptions of the original membership. These new members were convinced by the increasing scientific clout of polygeny in the 1850s and believed that science had demonstrated that racial equality was false. By the late 1850s, these differing political agendas began to create tension over questions of race, and after the publication of Darwin's *Origin of Species* political differences led to the

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[160] George W. Stocking, Jr., "What's in a Name? The Origins of the Royal Anthropological Institute (1837-71)," *Man*, New Series, Vol. 6, No. 3 (Sep., 1971), p. 369.
[161] Quoted in Stocking (1971), p. 369.

creation of an offshoot group called the Anthropological Society of London. The scientific differences between anthropology and ethnology were small enough that many were unsure of how the fields of inquiry for the groups even differed. However, while their field of inquiry differed little, their reaction to new scientific developments and political developments differed greatly. According to the ESL, the ASL existed for the "free discussion of the various exciting questions which [the American Civil War] were bringing into prominence."[162] Certainly James Hunt, the founder of the ASL, wanted to discuss those "exciting questions." Hunt was an anthropologist, polygenist, anti-Darwinian, Confederate-sympathizer. In his opening address to the new institution, Hunt argued that:

> whatever may be the conclusion to which our scientific inquiries may lead us, we should always remember, that by whatever means the Negro, for instance, acquired his present physical, mental, and moral character, whether he has risen from an ape or descended from a perfect man, we still know that the Races of Europe have now much in their mental and moral nature which the races of Africa have not got.[163]

In his speech, Hunt defensively recognized but rejected the notion that polygenists were motivated by racism: "A serious charge has been made against the American School of Anthropology, when it is affirmed that their interest in keeping up slavery induced the scientific men of that country to advocate a distinct origin for the African race." Hunt went on to say that he hoped that interests and political bias would be absent from the new institution but that at the same time "we must not shrink from the candid avowal of what we believe to be the real place in nature, or in society, of the African or any other race."[164] Hunt laid out exactly where he thought the African's place in nature was in his book, *On the Negro's Place in Nature*.[165] Hunt's ASL published pieces on various topics included "Slavery," which argued that nature demonstrated that all men were not born equal, "the

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[162] Ethnological Society of London, "Ethnology and Anthropology: Are they Distinct Sciences, or one and the Same Science Under Different Names?," *The Ethnological Journal*. (Jul., 1865), p. 4.
[163] James Hunt, "Introductory Address on the Study of Anthropology, Delivered Before the Anthropological Society of London, February 24th, 1863," *The Anthropological Review*. (May, 1863), p. 3.
[164] Hunt (1863), p. 4
[165] James Hunt, "On the Negro's Place in Nature," *Memoirs Read Before the Anthropological Society of London, 1863-4*, Vol. I (London: Trubner and Co., 1865), p. 1-64.

Negro as a Soldier," which explained that Negroes made excellent drill marchers because of their "well known imitative faculty" and their "natural fondness for rhythmical movement," and "On the Weight of the Brain in the Negro" which explained that Negroes had significantly lighter brains than whites.[166] Whether or not Hunt desired his organization to be free from political influence, it was clear that it was differences over the "Negro Question" that caused the ASL to split from the ESL.

These two societies also differed in their reactions to Darwin's theory of natural selection and the claim that Darwin had ended the controversy over the plurality of the human species in favor of unity. The ASL rejected Darwinism, and the Darwinians, like Alfred Wallace and Thomas Huxley, would reject the ASL. Huxley called the ASL a "nest of imposters," while the *Ethnological Journal* claimed for itself "many of the most eminent of the Darwinians."[167] The ESL recognized that the Darwinian case for natural selection overwhelmingly demonstrated the unity of species which had long been the goal of their organization.[168] To Hunt, the proponents of Darwin's theories were like religious zealots.[169] Hunt described Huxley as "our most deadly, and sometimes even our most bitter, foe" and declared that his journal had "teemed with objections to the Darwinian theory of the origin of man."[170] Hunt rejected the Darwinian explanation for humanity's origins because Darwinism implied common descent for all races, which he called his "fundamental objection" to the application of Darwinism to the study of man.[171] Hunt, like other creationists who

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166 James Reddie, "Slavery," *Anthropological Review*. Vol. 2, No. 7 (Nov., 1864), pp. 280-293; Sanford B. Hunt, "The Negro as a Soldier," *Anthropological Review*. Vol. 7, No. 24 (Jan., 1869), pp. 40-54; J. Barnard Davis, "On the Weight of the Brain in the Negro," *Anthropological Review*. Vol. 7, No. 25 (Apr., 1869), pp. 190-2.

167 Stocking (1971), p. 377; Ethnological Society of London, "The Ethnological Journal," *The Ethnological Journal.* (Oct., 1865), p. 194.

168 James Crawfurd, "Lubbock on the Unity of Man and Natural Selection, *The Ethnological Journal.* (Jul., 1865), p. 17-21.

169 Once again the irony is shown that the polygenists whom Darwin opposed often attacked Darwinism as being religious nonsense, and claimed for themselves the mantle of courageous truth-seekers unafraid of offending religious sensibilities. "But here we see the difference between a disciple of Darwin and a disciple of Moses—one calls in natural selection with unlimited power, and the other calls in a Deity provided in the same manner." James Hunt, "On the Doctrine of Continuity Applied to Anthropology," *Anthropological Review*, Vol. 5, No. 16 (Jan., 1867), p. 116.

170 James Hunt, "The Dundee Anthropological Conference," *Anthropological Review*. Vol. 6, No. 20 (Jan., 1868), p. 77.

171 "Anthropology offers…nothing to support Darwinism, or what at least is passed off to the public as such. A fundamental objection to the application of Darwinism to anthropology is to be found in the fact that it is supposed to support a unity of the origin of mankind." James Hunt (1867), p. 118.

rejected Darwinian evolution, took many of his cues from Louis Agassiz. Hunt quotes Agassiz as saying "I am prepared to show the differences existing between the races of men are of the same kind as the differences observed between the various families, genera, and species of monkeys or other animals; and that these different species of animals differ in the same degree one from another as the races of men—nay, the differences between distinct races are often greater than those distinguishing species of animals one from another" and "are of the same kind and even greater than those upon which the anthropoid monkeys are considered as distinct species."[172] Agassiz's and Hunt's rejection of Darwinism cannot be separated from their rejection of the unity of species and the social implications of doing so.

The rejection of Darwinism because it implied the unity of humanity was not limited to the *Anthropological Review*. Within about ten years, Darwin had shattered the scientific respectability of the plural theory of human origins, but the polygenist racial hypothesis persisted amongst a group of people supporting the pre-Adamite hypothesis. The pre-Adamites argued, contrary to both elite science and mainstream Christian theology, that humans did not derive from a single pair of individuals. They argued that while Adam may have been the original ancestor of the white race, the African race was descended from a group of "pre-Adamic" ancestors, possibly apes. By connecting non-White races to the lower forms of animals, the pre-Adamites attempted to maintain a simulacrum of scientific raiment, and perhaps even an acceptance of Darwinian evolution for non-White humans and animals, while maintaining the special, fixed status of white identity. Tennessee's Buckner Payne wrote a pre-Adamite book called *The Negro: What is His Ethnological Status?*, in which he argued that the African race was descended from the monkey, and was "the noblest of the beast creation," whereas the white race was created in the divine image of God.[173] Payne acknowledged

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[172] James Hunt, "On the Application of the Principle of Natural Selection to Anthropology," *Anthropological Review*. Vol. 4, No. 15 (Oct., 1866), p. 323.
[173] Buckner Payne, "The Negro: What is His Ethnological Status?," 2nd. Ed. (Cincinnati: 1867), p. 23.

that there was, at least, one important difference between monkeys and black people: "The difference between these higher orders of the monkey and the negro, is very slight, and consists mainly in this one thing: the negro can utter sounds that can be imitated; hence he could talk with Adam and Eve, for they could imitate his sounds."[174]

There were others who argued along similar lines. A. Hoyle Lester's *The Pre-Adamite, or Who Tempted Eve?*, William Campbell's *Anthropology for the People: A Refutation of the Theory of the Adamic Origin of All Races*, and Charles Carroll's *The Negro a Beast* are three prominent examples.[175] White supremacists, such as the pre-Adamites, recognized the racial implications of the common descent implied by Darwinian evolution. Campbell described the "unity of the origin of the human race" as implied by Darwinian evolution as having "been the source of a fanaticism which has brought an incalculable amount of sin and suffering on the world, and threatens much more." What worried Campbell was that "many scientists give their authority to this dangerous delusion, and the assertion may be safely ventured that on no subject has more nonsense been published to the world, labeled 'science,' and received as oracular wisdom by the credulous multitude." What was the delusion and fanaticism to which evolutionary scientists were lending their authority? It was "the unfounded and debasing error that all races of men were alike created in God's image, and constitute one brotherhood, capable of attaining the same intellectual and moral level; and that, hence, all racial diversities should be disregarded and obliterated….A more cunning and dangerous lie, and a more palpable one, than the genetic equality and unity of the human race, the evil one never intended."[176]

Carroll too saw his attempt to combat Darwinism as an attempt to combat political leveling between the races. In fact, Carroll argued that the degree to which African-Americans had enjoyed

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[174] *Ibid*., p. 23.
[175] A. Hoyle Lester, *The Pre-Adamite, or Who Tempted Eve?* (Philadelphia: J. B. Lippincott & Co., 1875); William Campbell, *Anthropology for the People: A Refutation of the Theory of the Adamic Origin of All Races*. (Richmond, VA: Everett Waddey Co., 1891); Charles Carroll, *"The Negro a Beast" or "In the Image of God."* (St. Louis, MO: American Book and Bible House, 1900).
[176] Campbell (1891), pp. 3-4.

any improvements in social and political equality by the end of the 19th century was due to the influence of evolution: "our present social, political and religious systems, so far as our relations to the Negro are concerned, are based solely on the atheistic theory of evolution."[177] Carroll claims that the racial egalitarianism of the evolutionary scientists and their desire to view whites and blacks as of the same blood drove them to declare a connection between humans and nonhuman animals: "All scientific investigation of the subject proves the Negro to be an ape; and that he simply stands at the head of the ape family, as the lion stands at the head of the cat family….This being true, it follows that the Negro is the only anthropoid, or man-like ape; and the gibbon, ourang, chimpanzee and gorilla are merely negro-like apes. Hence, to recognize the Negro as a "man and a brother," they were compelled to declare man an ape."[178] For Carroll the theory of evolution was responsible for enhancing the social status of Negroes: "when the scriptural teaching of Divine Creation is accepted in its entirety, and the atheistic Theory of Development, which first introduced the Negro into the family of man, and which keeps him there, as one of the lower "races of men" is repudiated, the Negro will make his exit from the Adamic family with it, and will resume his proper position with the apes."[179] Evolutionary science gave scientific backing to the notion that black racial identity contained as much or as little dignity as white racial identity.

The pre-Adamite rejection of a common humanity between blacks and whites attempted to reconcile a fixed and eternal conception of white identity, a separate and lower existence for African-Americans, while still accepting as much of the new scientific consensus towards evolution as possible. This "move" was a reaction to the new scientific consensus around evolution in the second half of the 19th century and an attempt to maintain a veneer of scientific respectability, without rejecting a pre-Darwinian conception of fixed racial type and a special, scientifically credible

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[177] Carroll (1900), p. 81.
[178] *Ibid.*, p. 87.
[179] *Ibid.*, p. 89-90.

status for white supremacy. While there are still white-supremacist groups in 21st century America that espouse pre-Adamite views, such as the Christian Identity movement, the pre-Adamite movement has been largely relegated to the fringes of American life.

In areas where science did not interact with political concerns over race or slavery, even where there was the potential for real interactions with religion, southern attitudes toward science were quite different. This can be seen in the southern attitude towards the geology of Charles Lyell. Lyell was Darwin's friend, and would, like him, develop an important theory of geological science that would change the way that people thought about the historical development of the world. Published from 1830-1833, Lyell's book *Principles of Geology* popularized the theory of Uniformitarianism, which had been developed previously by James Hutton, and for which Lyell became the theory's most prominent adherent and proponent. Like Darwin's theory of evolution by natural selection, Uniformitarianism successfully challenged a reigning scientific theory in a way that seemed to contradict Biblical revelation. Lyell argued that the geological formations present on the Earth today arose as a result of the slow, gradual accumulation of processes still observable in the world.[180] The clear implication of Uniformitarianism was that the world had to have a much longer history than revelation seemed to imply. By contradicting the prior reigning geological theory, Catastrophism, Lyell also made it harder for geological science to comport with belief in miracles or divine interventions. Catastrophism, like the special creation of biological species, necessitated an active God, who worked his hand on the development of the world. Catastrophic floods, such as the account of Noah in *Genesis* fit comfortably with the prior theory in a way they did not with Uniformitarianism. So, while it seems that nineteenth century geological debates would have proved challenging to the idea of natural theology and biblical revelation in the same ways that Darwin's theory, and thus have provoked a religious backlash, in fact "most divines were continuing to deny

[180] Charles Lyell, *Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes Now in Operation*, 3 Vols. (London: John Murray, 1830-3).

any contradiction between religion and science".[181] Lyell and other geologists found the South a much more congenial place than would adherents of Darwinian evolution.

So, why were Southerners not as resistant to Lyell as to Darwin? Almost certainly politics played a role. The politics of biology and geology in America were quite different, since geologists had little to say about politically salient questions about the color line. Lyell was not making an argument about the developmental evolution of species or human ancestry. In fact, when Lyell did venture outside his wheelhouse to offer an explanation for the origin of species, he stoutly rejected the idea of the progressive evolution of biological life on Earth.[182] As the historian William Coleman put it, "a major aim of the *Principles of Geology* was to destroy totally the theory of the successive development of organic creation."[183] Here is Lyell in his own words: "it appears that the species have a real existence in nature, and that each was endowed, at the time of its creation, with the attributes and organization by which it is now distinguished."[184] On this point Lyell was in complete agreement with Louis Agassiz, evolution's primary opponent in America in the 19th century.[185] When Robert Chambers argued in favor of transmutation (evolution) in his *Vestiges of the Natural History of Creation* in 1844, Lyell, along with other geologists like the American Edward Hitchcock, rejected Chambers' argument as being both wrong and unscientific.[186]

Though Lyell would later join an anti-slavery society, he did not attack slavery when he visited the American South before the Civil War. Lyell told Josiah Nott, the polygenist slavery apologist, that he hoped that slavery would be able to civilize the Negro, who could be "brought up

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[181] Elizabeth Fox-Genovese and Eugene D. Genovese, *The Mind of the Master Class: History and Faith in the Southern Slaveholders' Worldview* (Cambridge: Cambridge University Press, 2005), p. 537.
[182] Walter F. Cannon, "The Uniformitarian-Catastrophist Debate," *Isis*, Vol. 51, No. 1 (Mar. 1960), pp. 38-9.
[183] William Colemen, "Lyell and the "Reality" of Species: 1830-1833," *Isis*, Vol. 53, No. 3 (Sep., 1962), p. 329.
[184] Charles Lyell, *Principles of Geology*, Vol. II (London: 1832), p. 65.
[185] William Stanton, *The Leopard's Spots: Scientific Attitudes Toward Race in America, 1815-1859* (Chicago and London: The University of Chicago Press, 1960), p. 139.
[186] Guralnick (1972), p. 533.

to the Caucasian standard."[187] Though Lyell came to America with some feeling against slavery, he found that his prejudices had been altered: "After the accounts I had read of the sufferings of slaves, I was agreeably surprised to find them, in general, so remarkably cheerful and light-hearted." In addition to being cheerful and free from care, Lyell described the slaves as "better fed than a large part of the laboring class of Europe," and he "found it impossible to feel a painful degree of commiseration for persons so exceedingly well satisfied with themselves."[188] When Lyell traveled through the South on another trip in the late 1840s, he spoke with a Northerner who condemned slavery, and rather than take the Northerner's feelings as genuine, Lyell felt that the man had merely "seen what was bad in the system" through a "magnifying and distorting medium…and had imbibed a strong anti-negro feeling, which he endeavoured to conceal from himself, under the cloak of a love of freedom and progress."[189] The southerners whom Lyell met did not find him to be personally disagreeable to their peculiar institution, and Lyell found the southerners to be hospitable and obliging. Neither Lyell's geology nor his personal politics particularly challenged Southerners who were exquisitely sensitive about slavery.

Southerners extended a welcome to the geological sciences, even when it contradicted biblical literalism, in a way that they would not for Darwin's evolutionary ideas. North Carolina Congressman and Confederate General Thomas Clingman lectured on the compatibility of science and religion when it came to the idea of prior geological epochs, while at the same time he rejected biological evolution.[190] Slaveowner, farmer, and Fire-Eater Edmund Ruffin also welcomed the new geological sciences even though it seemed to contradict biblical literalism. In addition to firing the

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187 Quoted in Stanton (1960), p. 80.

188 Charles Lyell, *Travels in North America in the Years 1841-2 with Geological Observations of The United States, Canada, and Nova Scotia*, Vol. I (New York: Wiley and Putnam, 1845), pp. 144-5

189 Charles Lyell, *A Second Visit to the United States of North America*, Vol. II (London: John Murray, 1849), p. 40.

190 Thomas Lanier Clingman, "Huxley, Darwin and Tyndall; Or the Theory of Evolution." *Selections from the Speeches and Writings of Hon. Thomas L. Clingman, of North Carolina, with Additions and Explanatory Notes.* (Raleigh, NC: John Nichols, 1877), pp. 60-8. Irrelevant side note: Clingmans Dome in Smoky Mountains National Park is named after Thomas Clingman.

first shot of the Civil War and defending slavery, Ruffin found time to write scientific treatises discussing the geological phenomena of his area.[191] Ruffin welcomed the geologist Hugh Miller's *Testimony of the Rocks*, which argued for a great age of the Earth, but rejected the development of species.[192] Other proslavery Southerners like William Gilmore Simms and John Reuben Thompson welcomed Miller's geological work, as well.[193]

Support for Republican politics amongst white southerners was minimal (to say the least) as northern carpetbaggers and radical Republicans attempted to alter the South's power structure. After the Civil War, the Solid South reacted to these northern scientific ideals with hostile resistance that was both political and religious.[194] Though the resistance was couched in terms of religious objections, these religious objections cannot be separated from the political objections. It was the politicization of Darwinian science that raised the salience of this particular scientific doctrine to such a degree that it would be treated differently than had evolutionary theories prior to Darwin or the geological sciences, both of which have the same potential for religious resistance and hostility. Rather than a flexible religious adaptation to this particular scientific enterprise, religious southerners reacted differently than religious northerners or religious Englishmen. Darwinian science was associated with the politics of racial egalitarianism, and the implication that race was contingent variety rather than fixed species politicized southern reaction to evolution.

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[191] Edmund Ruffin, *Agricultural, Geological, and Descriptive Sketches of Lower North Carolina, and the Similar Adjacent Lands.* (Raleigh, NC: Institution for the Deaf & Dumb & the Blind, 1861).

[192] Hugh Miller, *The Testimony of the Rocks; Or, Geology in its Bearings on the Two Theologies, Natural and Revealed.* (Boston, MA: Gould & Lincoln, 1857).

[193] Fox-Genovese & Genovese (2005), p. 537-8.

[194] "Neither learning nor literature of the secular sort could compare with religion in power and influence over the mind and spirit of the South. The exuberant religiosity of the Southern people, the conservative orthodoxy of the dominant sects, and the overwhelming Protestantism of all but a few parts of the region were forces that persisted powerfully in the twentieth century. They were a large element in the homogeneity of the people and the readiness with which they responded to common impulses. They explained much of the survival of a distinctive regional culture, and they went far toward justifying the remark that the South was solid religiously as well as politically." C. Vann Woodward, *Origins of the New South, 1877-1913*. revised edition (Baton Rouge, LA: Louisiana State University Press, 1972 [1951]), p. 448.

Evolutionary ideas before Darwin were predominately Lamarckian and consistent with polygenist natural history. Lamarckian evolution held that human races did not share a common ancestry, but this version of evolution was supplanted after 1859. As this happened, the politics of evolution in the United States, as in England, came to mirror the politics of Darwin and those closest to him. Darwin's impact was not in introducing the world to evolution, but rather in doing it so well that he was able to take evolution out of the service of some and place it in the hands of those who matched his views on race and slavery.

Darwin and Class

Darwin's politics were not to the left. Marx recognized this and was ambivalent about Darwin's work; Marx considered it to be a reflection of bourgeois thinking.[195] "It is remarkable how Darwin recognizes among beasts and plants his English society with its division of labour, competition, opening up of new markets, inventions, and the Malthusian 'struggle for existence.' His [nature] is Hobbes' *bellum omnium contra omnes*…"[196] Darwin represented a "crude English" theorist to Marx because he read into nature laissez-faire Manchesterism and misjudged the extent to which human purposes have been incorporated into natural processes.[197]

Darwin's politics were similar to the scientific, industrialist milieu in which Darwin's family had long been active. Societies such as Birmingham's Lunar Society saw men such as Matthew Boulton, Josiah Wedgwood, Benjamin Franklin, and James Watt exchanging papers on chemical breakthroughs, electricity, and bourgeois theories of government and economics.[198] Darwin's grandfather, the industrialist Josiah Wedgwood, was close friends with the naturalist Erasmus

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[195] Ralph Colp, "The myth of the Darwin-Marx letter," in *History of Political Economy*, Vol. 14, No. 4 (1982), p. 461-482.
[196] Marx to Engels, June 18, 1862, *Marx-Engels Selected Correspondence*. (Moscow: Progress Publishers, 1975), p. 120
[197] Terence Ball, "Marx and Darwin: A Reconsideration," in *Political Theory*, Vol. 7, No. 4 (Nov., 1979), p. 473.
[198] Alan Houston, *Benjamin Franklin and the Politics of Improvement* (New Haven and London: Yale University Press, 2008), p. 144.

Darwin (Charles' other grandfather), Watt, and Joseph Priestley as well.[199] Scientists such as Priestley and Erasmus Darwin were associated with theories of free trade and republican government. "These societies bound science ever closer to the new world of profit and power, the world that Burke would characterize as that of sophistery, economy, and calculation."[200] This was a tightly knit world binding together industry and bourgeois science.

When Darwin published *Origin of Species*, evolution was associated with radical politics and revolutionary France. Darwin was no friend to either the radicals or the French. Though Robert Grant had been an early mentor, Darwin avoided Grant because of his radicalism.[201] Darwin's lifestyle was entirely divorced from the reality of Grant's existence with his "union activities, medical leveling, and guinea-grabbing teaching occupation…"[202] Darwin retained the belief in transmutation he had gained from Grant, but of a Malthusian not a modified Lamarckian variety. Darwin was a 'thorough Liberal' and believed in the self-help values of Victorian author Samuel Smiles. Politically Darwin leavened his bourgeois political beliefs in free-trade and anti-unionism with a paternalistic bent.[203] Darwin was a major landowner, the product of an Oxbridge education, and enjoyed playing the role of country paternalist in Downe, the village south of London where he lived. Wealth and comfort allowed Darwin to pursue his research without having to lecture or write for pay. As we

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[199] Silvan S Schweber, "Darwin and the Political Economists: Divergence of Character," in *the Journal of the History of Biology*, Vol. 13, No. 2 (Autumn, 1980), p. 258.

[200] Isaac Kramnick, "Religion and Radicalism: English Political Theory in the Age of Revolution," in *Political Theory*, Vol. 5, No. 4 (Nov., 1977), pp. 522.

[201] Desmond & Moore, *Darwin*. P 203.

[202] Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London*. (Chicago: The University of Chicago Press, 1989), p. 404.

[203] Darwin often hesitated to forthrightly proclaim that evolution implied much for human society, for example in Charles Darwin to Hugo Thiel, 25 Feb. 1869, in *The Life and Letters of Charles Darwin*, ed. Francis Darwin, 2 vols. (New York: Appleton, 1919), pp. 293-94, Darwin claims that it did not "occur to me formerly that my views could be extended to such widely different, and most important subjects." However, elsewhere it did occur to Darwin that his views could be so extended. A year after the publication of *Descent of Man*, in 1872, Darwin sent a letter to Heinrich Fick, a law professor at the University of Zurich, in which he speculated about the potential harms to society caused by a unionized workforce. The letter says that unions are opposed "in short to all competition. I fear that Cooperative Societies, which many look at as the main hope for the future, likewise exclude competition. This seems to me a great evil for the future progress of mankind." Found in Richard Weikart's, "A Recently Discovered Darwin Letter on Social Darwinism," *Isis*, Vol. 86, No. 4 (Dec., 1995), p. 611.

shall see, Darwin was instrumental in removing the radical cast that colored the English view of evolutionary biology.

For a comparison we can look at the history of Darwinism's reception in the United Kingdom, another English-speaking, Protestant, capitalist, industrial democracy. As we shall see, economic, religious, and political forces in Victorian England caused Darwin's theory to be viewed as both terrifically important and terribly scandalous, but the absence of a significant racially-motivated political cleavage meant that evolution's story turned out quite differently in England than in America.

Why did Darwin's biological theory scandalize and impact Victorian society enough to force its social and political movements to think in terms of "Darwinisms"? In the words of historian, K. Theodore Hoppen:

> In the case of mid- and late Victorian Britain the ambiguous and slippery notion of 'evolution' generated perhaps the most striking cluster of concepts around which the governing ideas of the time were put together and assessed. Indeed, the appearance of views of society constructed out of an engagement with certain kinds of evolutionary analysis constitutes a division between the later Victorian period and what had gone before at least as significant as the movement towards electoral democracy or the development of the party system.[204]

Reaction to Darwin's theory spanned a wide spectrum of English society, partly because an evolutionary conception of humanity's place in the natural world was tied to social movements remaking nineteenth century English political and economic life.

There were numerous axes upon which debates over evolution turned in England, but the politically dominant one was that of class. In the latter part of the eighteenth century, a rising middle class of industrialists, bankers, and merchants sought political power commensurate with their new economic strength. Electoral reform and the ending of privileges for landed wealth and the Church of England were goals for many in this emergent middle class. Industrialization also left

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[204] K. Theodore Hoppen, *The Mid-Victorian Generation: 1846-1886*. (Oxford: Clarendon Press, 1998), p.472.

Great Britain more urban, more industrial, and more proletarian, a process which created a politically conscious working class, as well. Workers were prepared to defend their interests, and the rise of the Chartist movement was representative of a newly assertive labor movement. The comfortable status quo that had linked land, church, Oxbridge, and Toryism faced social and political challenge from both labor and capital, and natural history would play an important role.

Rival Versions of Natural History: Establishment and Radical

Natural history helped to situate eighteenth and nineteenth century hierarchies by analogy to the natural world. Politically, natural history was used in two different ways. Mainstream natural history at Oxford and Cambridge demonstrated the fixed order of nature, and by analogy, society. Innumerable country parsons were as comfortable studying William Paley's *Natural Theology*[205] as they were collecting beetles. Understanding nature was as important as understanding theology, because together they both demonstrated God's plan for creation. The "Great Chain of Being" firmly situated humans' place in a fixed hierarchy stretching from brute animal life down below up to humans and up still farther to the world of spirit inhabited by the angels. This firmly situated natural hierarchy situated human social and political hierarchies, as well. It is anachronistic to imagine an inevitable conflict between science and religion in the nineteenth century. On the contrary, most natural historians before Darwin were not foes but friends of the Church.

There was another, more radical, side to natural history. Before Darwin, evolution (more commonly called "transmutation") was associated with radical materialism and the French Revolution. In Britain transmutation was supported by an underground of radical thinkers, many in the medical profession, who pushed a materialist philosophy and saw transmutation as an outgrowth

[205] William Paley, *Natural Theology, or Evidences of the Existence and Attributes of the Deity collected from the Appearances of Nature* (1802).

of their ideas. [206] These free-thinkers at Edinburgh University, the University of London, and various medical schools included men like Robert Grant (1793-1874) who hoped to use theories of the transmutation of species to demonstrate the need for social reform to benefit the English working class.

The early 'evolutionist' Robert Grant was a Scottish MD, a naturalist, a progressive radical, and a strong, early influence upon a young Charles Darwin. Grant was a follower of the evolutionary ideas of the naturalist Étienne Geoffroy Saint-Hilaire, a colleague of Jean-Baptiste Lamarck. Lamarck's evolutionism found a home within radical philosophy in France. Grant gave his support to both radical and democratic causes, as well as movements aiming to professionalize scientific and medical work. Grant supported the reformer Wakley, the journal *The Lancet*, and the British Medical Association—all considered reformist at the time. He was also widely held to be a materialist and an atheist, because it seemed that there was no place for the supernatural in his scientific theories of transmutation.

Evolution carried associations that colored it as anti-church and anti-establishment, and to many English the association with France meant materialism, revolution, anarchy, and bloodshed. Darwin knew that the reception of his evolutionary theory would be controversial, and in order to avoid aiding the radical cause, Darwin delayed publication of the *Origin of Species* for almost twenty years until 1859. Darwin kept his theory of evolution secret, because he feared treatment similar to that which followed the publication of Robert Chambers' anonymously published *Vestiges of the Natural History of Creation* in 1844.

When Chambers published *Vestiges* it produced a sensation, in large part because this was not science written for specialists but for a wider audience. Chambers' work was seen as a type of Jacobin Lamarckism that argued from evolutionary principles that society must progress to a state of

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[206] Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London*. (The University of Chicago Press: Chicago, 1989)

full cooperation.[207] It sold well and garnered some praise, but it also provoked denunciation from mainstream naturalists who saw it as both scientifically unsound and politically provocative.[208] Rev. Adam Sedgwick feared the social implications if humans were viewed as byproducts of changeable evolution. Sedgwick wrote to the geologist Charles Lyell that "...If [*Vestiges*] be true, the labours of sober induction are in vain; religion is a lie; human law is a mass of folly, and a base injustice; morality is moonshine; our labours for the black people of Africa were works of madmen; and man and woman are only better beasts!"[209] For Sedgwick the social and political implications of evolution were as important as the religious.

After Darwin: Reaction and Acceptance

The fear of radicalism lingered. Perhaps Darwin's most famous English opponent was Richard Owen (1804-1892), English biologist and coiner of the term "Dinosaur". In the 1830s, Owen had campaigned against radical naturalists, and he then sought to destroy the ability of Darwin's ideas to gain adherents. Owen argued that the *Origin of Species* symbolized an 'abuse of science,' and was reminiscent of something 'to which a neighbouring nation, some seventy years since, owed its temporary degradation.'[210] After *Descent of Man* was published in 1871, the London *Times* book review charged Darwin with "a very mischievous influence," and argued that his views would cause morality to lose all "elements of stable authority." Undermining the moral foundations of society was bad enough, but was even worse if the 1871 Paris Commune shows what an undermined morality might look like. "There is much reason to fear that loose philosophy,

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[207] Adrian Desmond, "Artisan Resistance and Evolution in Britain, 1819-1848," in *Osiris*, 2nd Series, Vol. 3 (1987), pp. 79-85.
[208] James Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation*. (Chicago and London: University of Chicago Press, 2001).
[209] "Letter of Adam Sedgwick to Charles Lyell", April 9, 1845, *The Life and Letters of the Rev. Adam Sedgwick* vol. 2 (1890), pg. 84.
[210] Desmond & Moore. (1991), p. 491.

stimulated by an irrational religion, had done not a little to weaken the force of these principles in France, and that this is, at all events, one potent element in the disorganization of French society."[211]

Before 1859 evolution was associated with radical politics, but after Darwin it was possible to be both an evolutionist and a capitalist. Darwinian evolution was no longer seen as a challenge to property and capital, and "Social Darwinism" became associated with laissez faire and the politics of industrialists, capitalists, free traders, and Victorian English liberals. Darwin expanded the political spectrum that could lay claim to the mantle of evolutionary ideas. Unlike in debates over race, where Darwinism became associated with one side, widely divergent economic theories could appeal to Darwinian evolution for justification.

The scientific consensus supporting evolution in the United Kingdom did not face the amount of resistance it would in the United States, because all sides felt that they could use Darwinism's legacy. New Liberals formed a counter-current to evolution's use by free-trade, laissez faire capitalists. T. H. Green claimed that biological theories of evolution provided 'empirical' evidence of the movement towards collectivism.[212] L.T. Hobhouse and J. A. Hobson used biological and evolutionary ideas and were in bitter conflict with the views of the social Darwinists.[213]

> Darwin's great achievement was to show for the first time, by means of the theory of Natural Selection, that the Evolution principle might be made to harmonise and illuminate a vast mass of otherwise disconnected and unintelligible facts of organic life. Spencer's achievement was to show that the same principle could be made the connecting link of all the sciences, and in particular of all the sciences that deal with living beings, and by its aid to construct a philosophy not, as philosophy too often is, opposed to science, but itself the sum or synthesis of the sciences.[214]

Even before Darwin's death, disputes over the interpretation of evolution's meaning had begun. Social Darwinists were sure that natural selection endorsed their view that competition could

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[211] "Mr. Darwin on the Descent of Man," *The Times*, (April 8, 1871), p. 5.
[212] Ibid., p. 471.
[213] Michael Freeden, "Biological and Evolutionary Roots of the New Liberalism in England," in *Political Theory*, Vol. 4, No. 4 (Nov., 1976), pp. 471-490.
[214] L. T. Hobhouse, "Leader", *Manchester Guardian*, September 12, 1903.

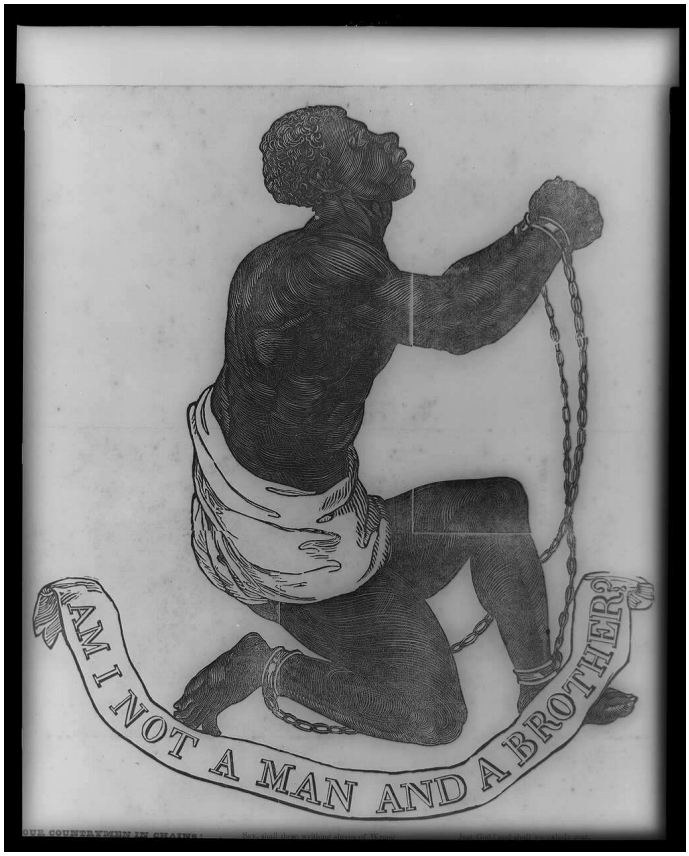
make the poor thrifty, upright, and virtuous; while others argued that evolution demonstrated the need for social reform and cooperative coexistence. For example: "the law underlying the evolutionary process makes for collectivism, and there is a deeper significance in the old saying that man is a 'social animal' than we have as yet realized."[215] Scientists influenced the politics of evolution through their work. The French zoologist Alphonse Milne-Edwards (1835-1900) argued that the solidarity of cells within living organisms demonstrated that cooperation not individualism was the 'law of nature'.[216] Darwinism ceased to divide politically, because it was not a cudgel for one side but rather a vision of society to which all sides laid claim.

Darwin died in 1882 and was buried in Westminster Abbey, alongside Isaac Newton, as a scientific native son. The staunch Anglican Lord Salisbury, Tory Prime Minister and chancellor of the University of Oxford, put Darwin's disciple Joseph Hooker's name up for a knighthood, and he recognized T. H. Huxley's eminence in the world of science by making him privy councillor.[217] Both the Anglican and the Catholic Church in England showed little hostility to evolutionary ideas. When the American Fundamentalist geologist George McCready Price came to England in 1925 to debate the evolutionist Joseph McCabe, he received so much heckling that the debate turned into a fiasco. One member of the conservative Victoria Institute in London "rebuked Price for attempting 'to drive a wedge between Christians and scientists,' as had been done in America."[218] The inevitable conflict between religion and science that is supposed to have dominated the reception of evolution in America showed few signs in the United Kingdom.

Conclusion

[215] R. Didden, "Individualism or Collectivism? Which Way Does Evolution Point?," in *Westminster Review*, Vol. 149 (Jun., 1898), 660-661.
[216] Theodore Zeldin, *France 1848-1945: Volume I: Ambition, Love and Politics*. The Oxford History of Modern Europe, edited by Alan Bullock and F. W. D. Deakin (Oxford: Clarendon Press, 1973), p. 656.
[217] James Moore, "Deconstructing Darwinism: The Politics of Evolution in the 1860s," in *the Journal of the History of Biology*, Vol. 24, No. 3 (Autumn, 1991), p. 354.
[218] Numbers (1998), p. 103.

The abolition movement in the 18th and 19th centuries argued that the rights of African slaves to live free was secured by their dignity as human beings and the evil of enslaving a fellow man. The powerful question "am I not a Man and a Brother?" sought to establish the political and social rights of an oppressed racial minority on the shared humanity of the enslaved African. For polygenists who sought to deny the common humanity of whites and blacks, and for white supremacists who sought to establish white supremacy on a firm foundation of an eternal racial identity, Darwinism's implications for the scientific understanding of race were politically threatening. The growing power and authority of science in the middle of the 19th century, and the overwhelming support of elite scientists for both evolution and an end to slavery meant that evolutionary science could not be viewed as having been created by, and promoted by, impartial and disinterested scientists, but instead was viewed as being part of an ideological campaign to definitively establish the black slave as a man and a brother. Political tradition in the form of the Southern nationalism and white supremacy, not religious reaction, politicized the debates around Darwinism in America.



Appendix A

Complete list of naturalists who joined the National Academy of Sciences between 1863-1900, organized by scientific opinion of evolution and political opinion of racial equality. (Source for scientists' opinions of evolution from Numbers (1997); opinions on racial equality compiled by author.)

Evolutionists (45/80)

NAS Naturalist	Born	Died	Born In	Evolution	Inequality
Spencer Fullerton Baird	1823	1887	Reading, PA	For	Against
Franz Boas	1858	1942	Minden, Germany	For	Against
Charles-Edouard Brown-Sequard	1817	1894	Port Louis, Mauritius	For	Against
Elliott Coues	1842	1899	Portsmouth, NH	For	Against
William Healey Dall	1845	1927	Boston, MA	For	Against
James Dwight Dana	1813	1895	Utica, NY	For	Against
Asa Gray	1810	1888	Paris, NY	For	Against
Arnold Henri Guyot	1807	1884	Boudevilliers, Switz.	For	Against
Ferdinand Vandeveer Hayden	1829	1887	Westfield, MA	For	Against
Clarence Rivers King	1842	1901	Newport, RI	For	Against
John Lawrence LeConte	1825	1883	New York, NY	For	Against

Joseph LeConte	1823	1901	Liberty Co., GA	For	Against
Joseph Leidy	1823	1891	Philadelphia, PA	For	Against
Leo Lesquereux	1806	1889	Fleurier, Switz.	For	Against
Lewis Henry Morgan	1818	1881	Aurora, NY	For	Against
John Wesley Powell	1834	1902	Mount Morris, NY	For	Against
William Barton Rogers	1804	1882	Philadelphia, PA	For	Against
John Torrey	1796	1873	New York, NY	For	Against
Addison Emery Verrill	1839	1926	Greenwood, ME	For	Against
Charles Doolittle Walcott	1850	1927	New York Mills, NY	For	Against
Josiah Dwight Whitney	1819	1896	Northampton, MA	For	Against
Joseph Janvier Woodward	1833	1884	Philadelphia, PA	For	Against
Jeffries Wyman	1814	1874	Chelmsford, MA	For	Against
Eugene Woldemar Hilgard	1833	1916	Zweibrücken, Bav.	For	For
Henry Fairfield Osborn	1857	1935	Fairfield, CT	For	For
Alexander Agassiz	1835	1910	Neuchâtel, Switz.	For	Unclear
William Keith Brooks	1848	1908	Cleveland, OH	For	Unclear
Henry James Clark	1826	1873	Easton, MA	For	Unclear
William Gilson Farlow	1844	1919	Boston, MA	For	Unclear
Grove Karl Gilbert	1843	1918	Rochester, NY	For	Unclear
Theodore Nicholas Gill	1837	1914	New York, NY	For	Unclear
George Lincoln Goodale	1839	1923	Saco, ME	For	Unclear
George Brown Goode	1851	1896	New Albany, IN	For	Unclear
Othniel Charles Marsh	1831	1899	Lockport, NY	For	Unclear
Charles Sedgwick Minot	1852	1914	Roxbury, MA	For	Unclear
Edward Sylvester Morse	1838	1925	Portland, ME	For	Unclear
Frederic Ward Putnam	1839	1915	Salem, MA	For	Unclear
Samuel Hubbard Scudder	1837	1911	Boston, MA	For	Unclear
Sidney Irving Smith	1843	1926	Norway, ME	For	Unclear
William Stimpson	1832	1872	Boston, MA	For	Unclear
William Henry Welch	1850	1934	Norfolk, CT	For	Unclear
Charles Abiathar White	1826	1910	North Dighton, MA	For	Unclear
Charles Otis Whitman	1842	1910	Woodstock, ME	For	Unclear
Edmund Beecher Wilson	1856	1939	Geneva, IL	For	Unclear
Amos Henry Worthen	1813	1888	Bradford, VT	For	Unclear

Neo-Lamarckians (7/80)

NAS Naturalist	Born	Died	Born In	Evolution	Inequality
Alpheus Spring Packard, Jr.	1839	1905	Brunswick, ME	Neo-Lam.	Against
Edward Drinker Cope	1840	1897	Philadelphia, PA	Neo-Lam.	For
Alpheus Hyatt	1838	1902	Washington, D.C.	Neo-Lam.	For
Joel Asaph Allen	1838	1921	Springfield, MA	Neo-Lam.	Unclear
Charles Emerson Beecher	1856	1904	Dunkirk, NY	Neo-Lam.	Unclear
William Henry Brewer	1828	1910	Poughkeepsie, NY	Neo-Lam.	Unclear
Clarence Edward Dutton	1841	1921	Wallingford, CT	Neo-Lam.	Unclear

Creationists (8/80)

NAS Naturalist	Born	Died	Born In	Evolution	Inequality
Edward Hitchcock	1793	1864	Deerfield, MA	Against	Against
John Peter Lesley	1819	1903	Philadelphia, PA	Against	Against
Benjamin Silliman, Sr.	1779	1864	Trumbull, CT	Against	Against
Louis Agassiz	1807	1873	Môtier, Switz.	Against	For
George Engelmann	1809	1884	Frankfurt, Germany	Against	For
Augustus Addison Gould	1805	1866	New Ipswich, NH	Against	For
Thomas Sterry Hunt	1826	1892	Norwich, CT	Against	Unclear
John Strong Newberry	1822	1892	Windsor, CT	Against	Unclear

Unknown (20/80)

NAS Naturalist	Born	Died	Born In	Evolution	Inequality
Henry Pickering Bowditch	1840	1911	Boston, MA	Unknown	Against
Samuel Franklin Emmons	1841	1911	Boston, MA	Unknown	Against
Jared Potter Kirtland	1793	1877	Wallingford, CT	Unknown	Against
Silas Weir Mitchell	1829	1914	Philadelphia, PA	Unknown	Against
Sereno Watson	1826	1892	E. Windsor Hill, CT	Unknown	Against
Horatio C Wood	1841	1920	Philadelphia, PA	Unknown	Against
Samuel Stehman Haldeman	1812	1880	Lancaster Co., PA	Unknown	For
John Edwards Holbrook	1794	1871	Beaufort, SC	Unknown	For
John Shaw Billings	1838	1913	Allensville, IN	Unknown	Unclear
George Hammell Cook	1818	1889	Hanover, NJ	Unknown	Unclear
John Call Dalton, Jr.	1825	1889	Chelmsford, MA	Unknown	Unclear
William More Gabb	1839	1878	Philadelphia, PA	Unknown	Unclear
Arnold Hague	1840	1917	Boston, MA	Unknown	Unclear
James Hall	1811	1898	Hingham, MA	Unknown	Unclear
Fielding Bradford Meek	1817	1876	Madison, IN	Unknown	Unclear
Louis Francois de Pourtalès	1824	1880	Neuchâtel, Switz.	Unknown	Unclear
Raphael Pumpelly	1837	1923	Owego, NY	Unknown	Unclear
Charles Sprague Sargent	1841	1927	Brookline, MA	Unknown	Unclear
William Starling Sullivant	1803	1873	Franklinton, OH	Unknown	Unclear
Edward Tuckerman	1817	1886	Boston, MA	Unknown	Unclear