A Museum of Ideas: Evolution Education at the Peabody Museum during the 1920s

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ILLUSTRATIONS

In the summer of 1925, the infamous Scopes Trial raged in Dayton, Tennessee. On trial was a substitute teacher, John Scopes, who had taught Darwinian evolution and, as the press boiled it down, the idea that man was related to monkeys.[1] Prosecutors argued that the young teacher violated the state's Butler Act, passed earlier that year making it a misdemeanor to teach any idea that challenged the Bible's account of divine creation.[2] A widely publicized and heated debate emerged surrounding this fundamentalist versus evolutionist origin of life conflict. *Summer for the Gods*, Edward J. Larson's popular account of the trial sums up the dispute: "For Christians, [organic evolution] posed a conflict with the account of Genesis, which declared that God formed the heavens, the earth and all kinds of living things in six days, culminating in the creation of Adam and Eve as the forebears of all human beings."[3] However, in the first two decades of the twentieth century, prominent museums at universities like Yale were already expanding programs in paleontology and sponsoring the study of fossils through academic classes, museum exhibits, and fieldwork. Discoveries in the fossil record had begun to produce concrete evidence in support of evolutionists' theories of gradual, organic change that undermined such biblical interpretations.[4]

Just a few months later on December 24th, 1925, curators of the newly constructed Peabody Museum of Natural History at Yale held a dedication ceremony after eight years of

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[1] Edward Larson, *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion*, (Cambridge: Harvard University Press, 1997), 7.

[2] Larson, *Summer for the Gods*, 50.

[3] Larson, *Summer for the Gods*, 15.

design debates and financial postponements related to World War I. Finally, in January 1926, the natural history museum opened to the public, featuring exhibits designed to illustrate the results of evolutionary pressures on different types of life, including man. *The Peabody Museum Guide,* published in 1927, explained that the museum contained only a small assortment of the museum's fossils "selected mainly for [their] significance in the general scheme: with a view to create a 'museum of ideas' rather than an exhibition of specimens."[5] Further, at that time the president of Yale, James Angell, encouraged museum officials to communicate with public schools in the area so that the exhibits could be used as teaching tools. In a letter to the director of the museum he noted, "A university has a peculiar opportunity to broaden greatly the common vision of the values of a museum in our general community life."[6] To fulfill this broader public mission, Peabody museum director Richard Lull invited public classrooms to explore evolution within the museum's walls using child-friendly exhibits and guest lectures.

Newspapers and journalists anticipated that controversy might arise surrounding the opening of the museum's exhibits, but the institution encountered almost no condemnation for displaying the organic evolution of man. In fact, earlier in the 1920s, the museum had sparked public curiosity, not controversy, regarding reconciliation of Christian principles and evolutionary history. Before the museum had even been built, the Chinese Students Christian Association wrote to the museum for suggestions on how to resolve religious faith with

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[5] *General Guide to the Exhibition Halls of the Peabody Museum of Natural History* (New Haven: Yale Peabody Museum of Natural History,1927), 6

[6] James Angell, letter to Richard S. Lull, 5 March 1923, *Yale Peabody Museum Archives, Vertebrate Paleontology Collection, Lull correspondence* (hereafter YPMA, Lull).

evidence for evolution.[7] Some local New Haven pastors even congratulated the staff of the Peabody on their bold steps toward public education in science.

The question that comes to the forefront of this juxtaposition of the Scopes trial and the museum's re-opening is: What influences affecting the construction of the Peabody Museum led to its overt depiction of human evolution? Richard Lull was ultimately responsible for the museum's theme and after he assumed directorship of the museum in 1922, he suggested to the president of Yale and fellow curators that the redesign of the exhibits be based on observable, evolutionary truths. In 1922, he successfully convinced his colleagues of this and the exhibition was completed in 1925. Lull, who was well known for promulgating simplified explanations of evolution, published *Ways of Life*, a text that summarized the laws of evolution in simplified terms and released the book in 1925, the same year that the Peabody opened its exhibits to the public. In his book's preface, Lull invited the "layman to judge for himself as to the reasonableness of teaching this department of science,"[8] and then called them forth to observe visual confirmation in the halls of the Peabody. Further, it is clear that Lull deliberately reworked the museum's layout in reaction to uproar against teaching evolution in public schools and redesigned the museum exhibits so that they acted as visual proof for human evolution.

In addition to Lull's ambition, close analysis reveals that the Peabody experienced little protest partly because the museum-going experience was engineered such that it displayed the science of human evolution but never explicitly denounced biblical interpretation. Another significant factor that reinforced the Peabody's success was its position within a prestigious university in an urban, northeastern city, where acceptance of evolution tended to be

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[7] The Chinese Students Christian Association in North America, letter to Richard S. Lull, 6 March 1918, YPMA, Lull

[8] Richard S. Lull, *The Ways of Life* (New York: Harper & Brothers, 1925), xi.

mainstream. The following narrative addresses and dissects the previous inquiries on how and why the Peabody Museum of Natural History became the first natural history museum to depict human origins in terms of organic evolution during this period of intellectual controversy.

A hundred years earlier, at the start of the nineteenth century, a large institution like the Peabody Museum of Natural History would not likely have existed, but even if it had, it would not have been open to the public. Buildings housing individual collections of fossils and ancient artifacts in both America and Europe were not regarded as public spaces but private property owned and managed by wealthy men, sometimes royalty, who engaged in fossil collecting as an interactive hobby.[9] The subsequent purpose of these collections became to classify, survey and inventory "what there was in a new and unfamiliar environment."[10] As more exotic artifacts and fossils returned from explorations around the globe and public curiosity heightened about what these items meant, museums were transformed into public spaces to house and display new relics.

Near the end of the nineteenth century, universities began to erect large establishments to exhibit and study such collections. Paralleling the rise of hobby collecting, universities like Columbia and Yale developed academic programs in evolutionary history and geology that utilized the museums' collections as teaching tools. Knowledgeable experts like Lull, along with graduate students in these fields, created commentaries that critiqued existing theories of organic change and interpreted implications of the fossil record and geological data. Their observations served to verify or debunk popular theoretical explanations of evolution like Darwin's natural selection, orthogenesis, and creationism. Laurence Coleman, in his 1939

[9] Laurence V. Coleman, *The Museum in America* (Washington D.C: The American Association of Museums, 1939), 1:50.

[10] Coleman, 50.

series of books titled *The Museum in America*, explains how an increase in fossil collecting galvanized the development of educational programs at large academic institutions. He writes, "After the middle of [the nineteenth century] the issue of evolution came along…and science turned from picking apart to putting together."[11] Curators of the Peabody Museum in the late 1800s and early 1900s did just that.

Natural history museums and their prospective universities often partook in deliberating the meaning of fossils collected in the field in relation to competing evolutionary theories. Yale University's geology department fueled the investigation of evolution by offering a course called Organic Evolution that utilized the collections amassed by the Peabody's curators and other free-lance collectors. This course, taught by Richard Lull, was oriented toward the Peabody's flourishing vertebrate paleontological collections and espoused the idea that all life is related and evolved slowly, over millions of years. As the science on evolution became more verifiable, different theories of evolution pervaded the public sphere and eventually entered the exhibits of the Peabody. Near the end of the nineteenth century, Charles Darwin's well-publicized theory of natural selection had stirred public awareness about organic evolution and remained a contentious and highly debated topic, often criticized as an undeveloped theory, lacking proof. In fact, at the turn of the century, many scientists and academics, who fully supported the idea of evolution, nonetheless questioned whether Darwin had found the actual mechanism by which this process occurred, and if so, wondered whether there was room at all to incorporate the tenets of Christianity?[12]

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[11] Coleman, 50

[12] Henry V. Arnold, *School books in relation to evolution and early condition of man, including essays on the glacial and prehistoric archeology* (Larimore: H.V. Arnold, 1923), 91.

One thread running through this story involves the struggle of academics pursuing scientific truths while staying loyal to their religious beliefs. The Scopes Trial represented the culmination of this universal struggle and precipitated a national debate that forced all Americans to contemplate whether science and religion could coexist. However, this debate between natural historians and fundamentalists extends back into the mid 1700's, a century before Darwin's time, when naturalists began to question how fossilized remnants of extinct life, along with the planet's seemingly infinite geological history, could be reconciled with Christian claims. Various natural historians theorized explanations accounting for the evidence of evolution. Georges Cuvier, a French zoologist working during the end of the eighteenth century, was one of the first to observe a "specially progressive trend in nature" in which species strove toward very specific and perfected forms.[13] Ultimately, accumulated observations of phenomena like abrupt extinctions and the sudden appearances of new life forms destabilized Cuvier's theory, but at the same time offered his successors tantalizing clues about a random, punctuated and branched progression of life. Though Cuvier died vehemently opposed to any form of evolutionary theory, his meticulous study and classification of fossils based on morphological links foreshadowed a transition toward modern theories of organic evolution in the late nineteenth century.[14]

Charles Lyell was an English geologist who studied how the earth's formations and geological strata changed over time. He devised the theory of uniformitarianism around the time of Cuvier's death in the 1830s. In his book *Principles of Geology*, he outlined environmental evidence supporting his theory, which posited that the earth had undergone slow and gradual changes since inception, and that the earth was much older than the Bible

[13] Peter J. Bowler, *Fossils and Progress: paleontology and the idea of progressive evolution in the nineteenth century* (New York: Science History Publications, 1976), 22.

[14] Bowler, 18.

suggested. He also showed how geological transformations, such as volcanic eruptions and earthquakes that had impacted the earth over time and how these events influenced the evolution of life. During his life, many of Lyell's colleagues attempted to reconcile new evidence for evolution with Christian beliefs and attacked Lyell for disparaging his own faith. Peter Bowler, author of *Fossil and Progress*, explains that devotion to religion overruled scientific beliefs and, "For the vast majority of naturalists in the 1830s, the idea of the transmutation of species was dead—their work was built firmly on the assumption that each organic form was miraculously created by the Deity."[15] However, as expeditions turned up more fossils, natural historians faced problems reconciling the fossil record either "with the belief in a series of perfectly designed creations or with the concept of a universal plan aimed at the production of man."[16] More evidence also refuted earlier naturalists' perspective that organisms changed by means of a linear progression and the idea that life could be understood in terms of a generalized hierarchy of significance. Though Lyell's theory did not receive immediate acclaim, he worked in close contact with an aspiring naturalist named Charles Darwin, who applied Lyell's theories to the study of his own fossils collected during a global expedition. It was on this expedition that he began to compose an environmental interpretation that would fundamentally challenge contemporary scientific theories.

Charles Darwin, the first naturalist to ever publish an explanation of evolution excluding any reference to God, produced a theory that continued to create controversy in the 1920s. Today we naturally associate evolution with Darwin's theory of natural selection as outlined in his seminal book *The Origin of Species*. His text includes detailed sketches and descriptions of fossil evidence to buttress his two-fold theory. First, he concluded that

[15] Bowler, 45.
[16] Bowler, 12.

individuals less suited to the environment were less likely to survive and less likely to reproduce whereas, individuals more suited to their environments were more likely to survive and more likely to reproduce, passing on their environmental success. Second, he wrote that this gradual process allowed populations to adapt to their environments over time, and ultimately, after numerous generations, this process created new species. Because of the immense body of fossil-based evidence supporting these two trends, the theory of natural selection could not be seen in any way other than in direct opposition to creationism. As such, Darwin's theory sustained intense attack from both religious figures as well as fellow naturalists striving to reconcile scientific proof of organic change with the biblical account of creation. Ronald Rainger, in his 1991 review of vertebrate paleontology and museums titled *Agenda for Antiquity: Henry Fairfield Osborn & Vertebrate Paleontology at the American Museum of Natural History*, documents that Darwin, who eventually became a self-proclaimed agnostic, "sought directly for a naturalistic explanation that would owe nothing to the Creator's immediate activity and benevolence."[18] In the late nineteenth century, even though Darwinism was perhaps the most well-known evolutionary position, many alternative ideas touting a progression of life idea competed with natural selection in attempts to unite an explanation for the diversity of life with theological accounts.

In the nineteenth century, among the alternative theories put forth to rival Charles Darwin's hypothesis, orthogenesis was one that coexisted with natural selection but differed chiefly by allowing God into the equation. It also provided explanations for certain phenomena or evolutionary tendencies that natural selection did not. In his textbook *Organic Evolution*, Richard Lull outlined a common critique of natural selection: that the mechanism

[18] Bowler, 117.

did not account for the plethora of highly complex organisms so well adapted to their own environments and failed to explain certain trends like the complete disappearance of anatomical structures. He reported that supporters of orthogenesis believed that "the lines of evolution were not miscellaneous and haphazard but were confined to a few definite directions, determined at their initial states not by natural selection."[19] This theory, sometimes referred to as "oriented evolution," assessed transformations in species not as random events, but as the product of a predetermined, and perhaps divine plan. In light of this critique on Darwinism, orthogenesis shows that "general tendencies" affecting how species changed were predictable and most often unidirectional.[20] George Simpson, a successful paleontologist who had Lull as a professor at Yale, subscribed to this theory and interpreted the tendency for horses, as their size increased, to exhibit a decrease in the number of digits over time as evidence for guided evolution.[21] Even though naturalists who believed that all changes caused by orthogenesis were physically and naturally plausible, it is easy to see how their view could attribute certain scientific trends to God's will. In response to critics of orthogenesis who attempted to debunk the idea of "general tendencies," Simpson wrote, "some paleontologists have become so impressed by the frequent trend for animals to become larger… they have tried to work it the other way around. If they find, say a Pleistocene bison that is… larger than a recent bison, then they conclude that it is not ancestral to later bison because it is larger." He criticized, not Darwinism, but a naturalist's tendency to misinterpret fossil evidence to fit only one theoretical explanation.

[19] Richard S. Lull, *Organic Evolution* (New York: The MacMillan Company, 1947), 152.
[20] Lull, *Organic Evolution*, 151.
[21] George G. Simpson, *Meaning of Evolution* (New Haven: Yale University Press, 1952), 131.

In the late nineteenth century, professors at Yale were expanding their own natural science departments in hopes of deconstructing this intellectual debate. The Peabody Museum, originally located on the corner of High and Elm Streets, got its start through philanthropy and luck. In the late 1800s, Othniel Charles Marsh, an avid collector and fossil specialist, urged his great uncle, George Peabody, to donate $150,000 to fund the construction of a museum to house his and his colleagues' burgeoning collections, which included dinosaurs, ancient mammals, and other vertebrates. In a letter to the professors of the geology department at Yale, the well-known philanthropist agreed to front the money in hopes of advancing science. He stated, "The rapid advance which natural science is now making renders it necessary to provide for the future requirements of such a museum."[23] Despite his patronage, George Peabody had little to do with the final outcome of the museum and allowed his grand nephew Marsh to oversee its establishment. Ronald Rainger refers to Marsh as a "wealthy and ambitious [man]," who "spent thousands of dollars collecting and paying collectors to ransack the western United States in search of fossils."[24] After his uncle's death, Marsh poured his own income into the struggling museum and the maintenance of its collections until the day he died in 1899. Remembered for the expeditions that produced his impressive fossils, Marsh and his collections are still frequently studied and viewable on exhibit today.[25]

The original Yale Peabody Museum, which opened its doors in 1876, became famous for Marsh's collection and was often used as a teaching tool for geology and paleontology

[23] Zelda Edelson, "The Peabody Museum of Natural History: The Early Years, a Documentary View," *Discovery* 12, no. 1 (1976): 5.

[24] Rainger, 11.

[25] Charles Schuchert, "The Rise of Natural History Museums," speech for the dedicatory exercises at the new Peabody Museum (26 December 1925). Reprinted in *The Yale Alumni Weekly* (1 January 1926): 419.

programs at Yale. Simpson frequently studied the artifacts as a graduate student in vertebrate paleontology at Yale. In his biography, he recollects how Marsh and the other curators at the Peabody came to follow "what was at first the more popular line… [the idea] that the fossil record was fully in agreement with Darwin's assumption that in the long run natural selection must give rise to progress."[26] However, the 1890s building had been originally constructed solely to house and display the small collections, not to arrange them in an evolutionarily accurate manner. This was to change. Near the turn of the century, as collections grew and the museum overflowed with specimens returned from expeditions out west, it became apparent that the three-story building, 115 feet by 100 feet, designed by J.C. Cady, just wasn't large enough.[27] After its construction in 1876, Marsh spent the remainder of his years trying to garner financial support for the expansion and renovation of the museum that was struggling to house the huge Yale Peabody collection. But at the time of his death in 1898, he had consumed most of his family inheritance augmenting the museum's collections, and conserving the artifacts, and few funds remained to extend the museum's capacity.[28] On October 18th, 1907, *The New York Times* ran an article titled "A Yale Ceiling Falls," which described how a piece of the Peabody Museum ceiling collapsed destroying "a number of valuable specimens." Though the director of the Peabody assured reporters that the damage was repairable, the article speculated, "The most serious feature of the accident lies in the

[26] Simpson, *Concession to the Improbable*, 17.
[27] Edelson, *Discovery* 1976, 15.
[28] "Important Gift to Yale: Professor Marsh presents his scientific collections to the University," *Yale Alumni Weekly*, (January 20, 1898): 1.

suggestion it conveys that the building is faultily constructed."[29] This article conveyed what had long been a significant source of stress for the museum's director and curators.

The years between Marsh's death in 1899 and the time that the ceiling fell on the prized specimens were eventful. Charles Schuchert, who would eventually become the museum director, recognized that the museum needed to be reorganized and renovated in order that the little space could be most efficiently used. In a letter to a fellow professor, Schuchert "stressed that one of the most urgent requirements of the existing institution was the 'completion of the Yale University Museum.'"[31] During the following years many attempts were made to gain funds to repair the museum. On June 8th of 1905, director Schuchert and the Peabody treasurer suggested the "transfer the Peabody Museum to the Hillhouse property." In hopes of receiving a Carnegie Foundation grant as so many other museums were doing at the time, the University treasurer agreed to inquire about "adequate amount of land and a sum of money sufficient to replace the cost of the existing building."[32] However, just like the faulty ceiling, efforts to acquire sufficient funds for the museum from a Carnegie donation fell through.

The Peabody's luck changed drastically in 1909 when a generous donor named Margaret Olivia Slocum Sage presented $650,000 to the Peabody trustees to purchase a Hillhouse property for the future location of the museum. The museum still lacked funds necessary for the actual construction of the building, but on Christmas of 1916, nineteen years after Marsh's death, the treasurer of the University announced to Charles Schuchert, now

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[29] "A Yale Ceiling Falls," *The New York Times,* 18 October 1907 [newspaper online]; available from http://proquest.umi.com/pqdweb?index=3&did=104997771&SrchMode=1&sid=1&Fmt=10&VInst=PROD&VType=PQD&RQT=309&VName=HNP&TS=1174959504&clientId=13766; Internet; accessed 26 March 2007.

[31] Zelda Edelson, "The Ordeal of the Peabody Museum: The Struggle for a Building, 1882-1925," *Discovery* 14, no. 2 (1979): 33.

[32] Edelson, *Discovery* 1979, 33.

director, that Mrs. Stephen V. Harkness had "pledged a magnificent sum to erect dormitories for Yale," and circumstantially, these new dormitories were to be built on the plot of land that was home to the existing Peabody Museum. In light of this generous donation, the University treasurer agreed with Schuchert to increase the existing reconstruction budget of the museum from $250,000 to $750,000 to cover its relocation to the Hillhouse property already purchased by Ms. Sage. The only stipulation was that the present museum had to be vacated by July of the following year, requiring all of the specimens to be placed in storage pending construction of the new building. [33] Schuchert, curators, and colleagues were both appreciative but overwhelmed by the prodigious task of moving out of the museum in a mere few months. In an academic summary report for 1916 through 1917, the curators recollected that "to see the splendid and rare specimens, large and small, dismantled and packed away in boxes and drawers, took out of them for the time being most of their hopes of a greater museum."[34] Though it was not noted in the report, the theory of evolution would also be transported from the minds and beliefs of the Peabody staff to the museum's new home at the top of Hillhouse Avenue. The old Peabody museum was torn down shortly after the final loads of equipment and specimens were removed.[35]

Plans for the design of the new museum, which commenced in January 1917, remained independent from debates about the museum's exhibit layout, especially involving evolution. Most of the decisions regarding the new building pertained to adequate space for the existing fossil collections and room for future expansion. A special committee appointed by the Peabody's treasurer drafted a detailed report outlining what requirements were

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[33] Edelson, *Discovery* 1979, 34.

[34] "Peabody Museum: Report of the Curators," *Reports of the President and Secretary of Yale University and of the Deans and Directors* (Concord: The Rumford Press, 1917), 337.

[35] Edelson, *Discovery* 1979, 34.

necessary for the new museum's success. The committee outlined a total of fifteen proposals pertaining to construction of museum, including the following: the "university shall erect at its expense on the southeast corner of the Pierson Sage Square a new fireproof building for the museum, containing a floor space of at least thirty-eight thousand square feet and shall set aside land there to be occupied by the said building and future additions."[36] It was also decided to begin building at the "earliest possible date approved by the Trustees."[37] After these decisions, the committee began collaborating with the architects, Day and Klauder, and museum curators on adequate space propositions, material choices and other construction details for the future museum. Because the museum staff was pressed for time to move out of the current building, they wanted construction on the new building to begin immediately so that items could be transferred into the new structure instead of being put in storage. This did not happen.

1917 marked another significant event for Peabody staff. After vowing to remain isolated from the War raging in Europe, a series of unprovoked submarine attacks on US merchant ships compelled Woodrow Wilson to request that Congress declare war on Germany, which it did on April 6, 1917.[38] In light of the economic impact of wartime on material costs, the Trustees of the Peabody and the museum director concurred in postponing construction of the new museum until after the war. Minutes of the special committee, detailed the decision to "reserve the right to ask the university to defer beginning work on or letting contracts for the new building for a period of one or possibly two years from July 1,

[36] Charles, Schuchert, "Minutes of the meeting of the Special Committee" (Schuchert's personal scrapbook, 12 March 1917), 1. Yale Peabody Museum Archives, (hereafter YPMA, Schuchert).
[37] Schuchert, "Minutes of the meeting of the Special Committee," (12 March 1917), 2, YPMA, Schuchert.
[38] Michael S. Neiberg, *Fighting the Great War* (Cambridge: Harvard University Press, 2005) 235.

1917."[39] And this is just what happened. In a letter dated May 2nd, 1917, Charles Schuchert, director of the museum, broke the news to his architects that building would indeed be postponed because the "undertaking was too important to be rushed through in a few weeks…. And war prices have already cut down our plans one-fifth with the probability of further restrictions." Schuchert's decision was a turning point for the fate of the Peabody Museum. Had the United States not entered the War and suffered from cost inflation, the decision to rearrange the museum's layout so that its exhibits displayed evolution might never have been made. Perhaps fortuitously, the museum's construction was postponed indefinitely, allowing for an unusually long planning period and the transfer of decision-making power from Schuchert to Lull. Lull, who supervised the museum's vertebrate paleontology department and taught an acclaimed class on organic evolution at the University, was thus put in a position to mount an argument for the secularized view on the origin of life.

As life sciences like biology, chemistry and earth science became more compartmentalized in the early twentieth century, demand arose for high school and college textbooks distinct to each specialty. Edward Larson explains in his examination of the Scopes Trial that, "Textbooks typically became more Darwinian in the new century…especially after the newly organized field of biology began to replace separate courses on botany and zoology in the high school curriculum.[41] A pamphlet published by Henry V. Arnold in 1923 observed the transitioning content in public textbooks and its inclusion of scientific explanations of human origins. This pamphlet outlined how in late nineteenth-century textbooks, the origin of the human race began with Adam and Eve in the Garden of Eden and attested that their

[39] Schuchert, "Minutes of the meeting of the Special Committee" (12 March 1917), 2, YPMA, Schuchert.
[41] Larson, *Summer for the Gods*, 23.

decedents "spread as they increased over the whole face of the earth."[42] As evolution became mainstream, turn-of-the-century texts adopted more Darwinian explanations. Hinman's 1888 textbook *Eclectic Physical Geography* contained an illustration of the evolution of higher primates to man maintaining, "the resemblance between man and the manlike apes is indeed much closer than may be appreciated from this sketch, for even such details of structure between the hand and the foot of man are found to be also well marked in the higher members of the monkey tribe."[43] George Hunter's 1914 *A Civic Biology,* the high school biology textbook under attack in the Scopes Trial, was celebrated for its a simplified explanation of evolution in which "new species of plants and animals [arose] suddenly by 'mutations' or steps."[44] In terms of human evolution, Hunter positioned humans with "apelike mammals because of numerous points of structural likeness," and later attested that, "if we follow the early history of man upon the earth, we find that at first he must have been little better than one of the lower animals."[45] To many Americans, evolutionary education of this sort, was not a contentious topic; however to southern citizens of Bible Belt towns like Dayton, Tennessee, it was a crime.

This emerging academic trend advocating explanations of human origins devoid of God infuriated those who believed that proper education must correspond with the Bible's account. Charles Israel, in his text examining education in the antebellum South, explains that the "Fundamentalist crusade against theological liberalism and the teaching of evolution in public schools," began during the years following the Civil War and "had its greatest success in the American South particularly in Tennessee."[46] He documents how vehemently southern

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[42] Arnold, 53

[43] Russell Hinman, *Eclectic Physical Geography* (New York: American Book Company, 1888), 351.

[44] George Hunter, *A Civic Biology* (New York: American Book Company, 1914), 253.

[45] Hunter, 196.

[46] Charles Israel, *Before Scopes: Evangelicalism, Education and Evolution in Tennessee, 1870-1925* (Athens: The University of Georgia Press, 2004), 3.

Baptists and Methodists reacted to national regulation of public schools because it threatened "the cultural authority of ministers," and "forced citizens to reexamine this emerging notion of the secular state and their role and that of religion in the state."[47] Regarding the Scopes Trial, Tennessee Protestants condemned John Scopes for using *A Civic Biology,* a textbook known for crediting Darwin with unearthing the scientific mechanism behind human origin and evolution.[48] In reaction to the uproar surrounding such secularized textbooks in fundamentalist communities, many scientists and academics began to publish general interest books illustrating the empirical facts and promoting evolution awareness and acceptance.

In addition to maintaining the department of vertebrate paleontology at the Peabody Museum, Richard Lull published books and journal articles that presented the idea of evolution to his students and to the general public. Two of his most popular books, *Organic Evolution* and *Ways of Life*, became authoritative in the field, and in each, Lull did not explicitly endorse Darwin's theory, but used natural selection to represent his own viewpoints on evolution. In *Ways of Life*, he stated:

> The foremost evolutionary fact in the minds of most biologists is natural selection, as Darwin named it. It may be defined as the survival of the most fit, with the inheritance of those adaptations wherein fitness lies. It acts in the main upon small, uncontrolled variations, either eliminating those individuals whose adaptations are out of harmony with environmental needs, allowing others to survive and hand down their adaptive variations to their progeny, or selecting the fitter to survive.[49]

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[47] Israel, 12
[48] Larson, *Summer for the Gods*, 23
[49] Lull, *Ways of Life*, 94.

By referencing Darwin in his illustration of evolutionary factors, we see that Lull considered Darwin's theory the most logical and empirically-based explanation. In fact, Lull's texts were rarely criticized or critiqued because, though he referenced Darwin's theory more frequently than others, he never claimed one theory as fact over the others.[50] By taking this type of general inclusive approach to the topic, Lull became known as an evolutionary expert and often received letters from both national and international groups asking for his opinion regarding the rise of proof for evolutionary truths. For example, in a letter dated January 10, 1919, the president of the Young Men's Christian Association of Yokohama, Japan, asked for Lull's advice in reconciling their faith in religion with Lull's text, *Organic Evolution*. Confiding in Lull, he wrote, "In my work with boys and young men I have found occasion many times to tell the story of creation simply but in accordance with the evolutionary viewpoint. I have found it not only interests but that they want more."[51] This correspondence alluded to rising public curiosity, not necessarily protest, about how religion and science might coexist.

Lull's pioneering textbook, *Ways of Life*, which outlined the evidence for evolution, soon became the leading resource in college classrooms around the country. At Yale, his book, along with the museum's abundant collection of fossils and artifacts, served as the basis for the interactive and fossil-based graduate program in vertebrate paleontology. Rainger, author of *Agenda for Antiquity*, explained that at the turn of the century, "courses on biology and geology included material on fossil vertebrates but few students chose or were encouraged to choose that subject as a field of specialization."[52] He noted that at Yale,

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[50] Rainger, 21.

[51] The Young Man's Christian Association of Yokobama, Japan, letter to Richard S. Lull 22 January 1919, YPMA, Lull.

[52] Rainger, 21

between 1900 and 1925, almost fifty students majored in geology, whereas only two received PhDs in vertebrate paleontology. This was the case at many other prestigious institutions like Columbia, Princeton, and the University of Chicago. George Gaylord Simpson, a student of Lull's, wrote in his autobiography, "Teachers and colleagues all accepted the truth of evolution but few of them were Darwinians, or Neo-Darwinians, in any precise sense. Most of those who were theoretically minded at all were divided."[53] At Yale, he continued, his, "major professor, Lull, taught a highly popular course on evolution and wrote what was then the leading textbook on the subject. In effect he gave equal billing to all the conflicting theories on the causes of evolution, but he personally espoused none of them."[54] While not endorsing one particular theory, Lull presented all the existing explanations of organic evolution in an enlightening and inspiring way such that his teaching style drew in students from other fields. A *New York Times* article estimated that up to 75 percent of the Yale Divinity School students had taken this famous course during their years at Yale.[55] Though scientists did not always agree on evolution's specifics, Lull effectively showed that most agreed on its existence.

Despite evolution's entrenchment in university curricula across the country, debate about evolution's appropriateness in public school education climbed to the top of the Peabody's agenda during the museum planning process. In a letter to Lull, Yale President Angell expressed his view: "I can see these institutions as primary teaching research institutions but with very definite and great educational obligations to the interest of the

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[53] Simpson, *Concession to the Improbable*, 114

[54] Simpson, *Concession to the Improbable,* 114.

[55] "Lull in 'Ways of Life' Cites Scientific Facts to Support Evolution," *The Washington Post*, 31May 1925 [newspaper online]; available from http://proquest. umi.com/pqdweb?index=90&did=231058592&SrchMode=1&sid=7&Fmt=10&VInst=PROD&VType=PQD&RQT=309&VName=HNP&TS=1174957530&clientId=1376631; Internet; accessed 26 March 2007.

general public and particularly to the secondary schools."[56] Similarly, in a letter to Richard Lull, the secretary of the American Association of Museums discussed the role that natural history museums should play in congruence with "schools and libraries in educating young and old."[57] It was apparent then, that the Peabody, before it even materialized, was to play an integral part in changing public opinion about the authenticity of evolution

In the early twentieth-century, the Peabody was not the only natural history museum developing its collections and orienting exhibits toward public education. Rainger attests that, "Large public museums equipped with financial support and dedicated to public education became the most important centers for vertebrate paleontology."[58] As we know, during the 1890s, many philanthropists like George Peabody donated money to establish museum collections and funded excavation digs. The American Museum of Natural History, with the generous donation from Andrew Carnegie, was constructed in 1877 in part "to enhance New York's status as a cultural and educational center."[59] The museum, known for its elaborate exhibits and enormous collections, initially existed as an educational institution without subscribing to any specific evolutionary theory like the Peabody. And it was reported that during its dedication the president of Harvard delivered a speech "without mentioning Darwin's name, to hail 'the stupendous doctrine of hereditary transmission.'"[60] This speech is characteristic of the American Museum's tepid endorsement of Darwinism.

Henry Fairfield Osborn, the museum's fourth president, changed the fate of the American Museum in 1915. Osborn, also an avid eugenicist and orthogenecist, began his career at Princeton College in the 1880s studying vertebrate paleontological morphology. At

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[56] James Angell, letter to Richard S. Lull 5 March 1923, YPMA, Lull.
[57] Laurence Coleman, letter to Richard Lull 1 March 1923, YPMA, Lull.
[58] Rainger, 21
[59] Rainger, 55.
[60] Geoffrey Hellman, *Bankers Bones & Beetles: The First Century of The American Museum of Natural History* (New York: The Natural History Press, 1968), 27.

Princeton, he eventually founded an academic program similar to Lull's on organic evolution at Yale, but depicted evolution solely as the product of God.[61] Later, at the American Museum of Natural History, as director of the Department of Vertebrate Paleontology, Osborn founded another program of vertebrate paleontology that utilized the institution's collections to analyze and address questions of evolution. Rainger explains, "Having developed his evolutionary ideas…in the religious environment at Princeton College, Osborn could not accept an interpretation of the history of life based on a purely naturalistic mechanism that selected chance variations."[62] Though Osborn fervidly opposed any theory of evolution devoid of God, he did not disavow evolution's importance in the classroom. In the dedication of his book, *The Earth Speaks to Bryan,* which attacked William Jennings Bryan's fundamentalist-based prosecution in the Scopes Trial, he referred to Scopes as a "courageous teacher who elected to face squarely the issues that the youth of the state of Tennessee should be freely taught the truths of nature … and consistent with the highest ideals of religion."[63] Because Osborn maintained a position that attempted to merge both science and religion, he received much attention during the tumultuous years of the 1920s regarding evolution's place in schools.

Osborn's religious stance was evident at the American Museum. When Osborn became president of the American Museum of Natural History in 1908, he designed new exhibits to portray evolution from his own eugenic viewpoint of white, racial superiority.[64] For example, the environmental truths that Osborn sought to illustrate were not the observable products of natural selection, but were based on the principle that life forms evolved by means

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[61] Rainger, 22.
[62] Rainger, 125.
[63] Henry Fairfield Osborn, *The Earth Speaks to Bryan* (New York: Charles Scribner's Sons, 1925), dedication.
[64] Rainger, 65.

of orthogenesis or directed evolution. To Osborn, "any random, discontinuous change, [or] any change that was not fully predictable… could have no place in [his] interpretation of evolution or in his conception of nature, where everything operated strictly according to law and under the guidance of God."[65] Thus, within the halls of the American Museum of Natural History, Osborn imprinted the layout of new exhibits with his personal understanding of evolution, and his Hall of Man, constructed in 1915, contemporaneous with deliberations determining the design of the Peabody's layout, highlighted Osborn's idea of a human's place in nature.[66]

Osborn designed the American Museum's Hall of Man to be free of evidence supporting a human relationship to prehistoric races and primates. In his text *The Earth Speaks to Bryan*, Osborn clarified his stance on man's origin, asserting that, "man has not descended from any known kind of monkey or ape…and that man has a long independent, superior line of ascent of his own."[67] He even went so far as to arrange the exhibits in the new hall to underemphasize or omit vital evolutionary evidence. In one instance, in the construction of a "large case designed to define man's relationship to the primates," Osborn inserted a bust of a prehistoric man between the modern humans and primates as "a reflection of [his] belief that…the anthropoids had evolved separately from any species or race of the Hominidae."[68] In another instance, Osborn commissioned a painter to create a visual depiction of his perceptions of the origin of the Anglo-Saxon race. The artist was asked to paint three murals depicting the distinct evolutions of modern man, the white man, and other inferior races. To him, Osborn seemed only concerned with promoting the theory that "the earliest races had

[65] Rainger, 139.
[66] Rainger, 169.
[67] Osborn, 11.
[68] Rainger, 171.

not mixed with others." Osborn defended this deception as serving the higher purpose of illustrating to museum visitors, "that only by preserving nature and racial purity, could man halt the rapidly accelerating decline toward racial suicide and extinction."[69] Although Osborn manipulated his own institution's exhibit of man's origins, he is credited with developing an acclaimed vertebrate paleontology department at the American Museum that "flourished" because he "embraced [his own] objectives and directed his department and his own research" to help reestablish waning interest in a complex field.[70] Further, Osborn's actions were not uncommon. In an era when evolutionary truths were nebulous and contested, museum officials often used their exhibits to promulgate their own evolutionary viewpoints. Richard S. Lull, who was a contemporary of Osborn, similarly tailored the exhibits of the Peabody museum to reflect his own biases during the planning process.

Had the U.S. not entered the War in 1917, the Peabody Museum exhibits may have lacked all reference to evolutionary theory. Plans were nearly complete in November of 1918 when Schuchert approved the decision to postpone Peabody construction until the end of the war. Finally, in spring of 1921, building construction resumed after wartime impacts on construction costs had subsided, but it was apparent that Schuchert's loyalty to the project had dwindled in the interim. On November 28th, 1919 Schuchert sent a letter to the chairman of the Yale's Committee on Architectural Planning expressing his irritation over the protracted delay of the project. He wrote in 1917, "Before we abandoned the building, the Great War was upon us and even the price of building had gone from 28 cents in 1912 to 47 cents per cubic foot."[71] At the time, this type of increase was going to raise the cost of the

[69] Rainger, 177.
[70] Rainger, 23.
[71] Charles Schuchert, letter to J.V. Farwell, 28 November 1919, YPMA, Schuchert.

museum from $750,000 to nearly $900,000.[72] Schuchert continued, explaining that before the old museum was destroyed, the Philadelphia based architects Day and Klauder had drawn up plans for the new building when museum officials rejected their initial design because its façade did not pass muster in keeping with its prominent location on the corner of Sachem Street and Whitney Avenue. Following this setback, Schuchert, the Peabody treasurer, and architects, including Yale University advising architect Jas Gamble Rogers, then drew up a more acceptable plan, (see Figures 1 and 2), that met the institution's standards but also required more money.[73] Between 1917 and 1922, Schuchert's frustrations with the project dominated his correspondences and personal notes. In letter to a friend, he confessed: after "architect Day died and the war proceeded in a thoroughly cavalier way with building prices…[I have] neither an architect to consult nor a pocket book thick enough to meet needs. In other words [I am] in the condition of the church mouse having beautiful and sacred ideas but nothing to live on!"[74] Schuchert's troubles were alleviated in 1921, when Yale agreed to commence financing the construction, and because of the war economics, the museum fund had almost $900,000 to spend on its project.[75]

[72] Charles Schuchert, letter to J.V. Farwell, 28 November 1919, YPMA, Schuchert.
[73] "Peabody Museum: Report of the Curators," *Reports of the President and Secretary of Yale University and of the Deans and Directors* (Concord: The Rumford Press, 1920), 381.
[74] Charles Schuchert, letter to J.V. Farwell, 28 November 1919, YPMA, Schuchert.
[75] Edelson, *Discovery* 1979, 35.

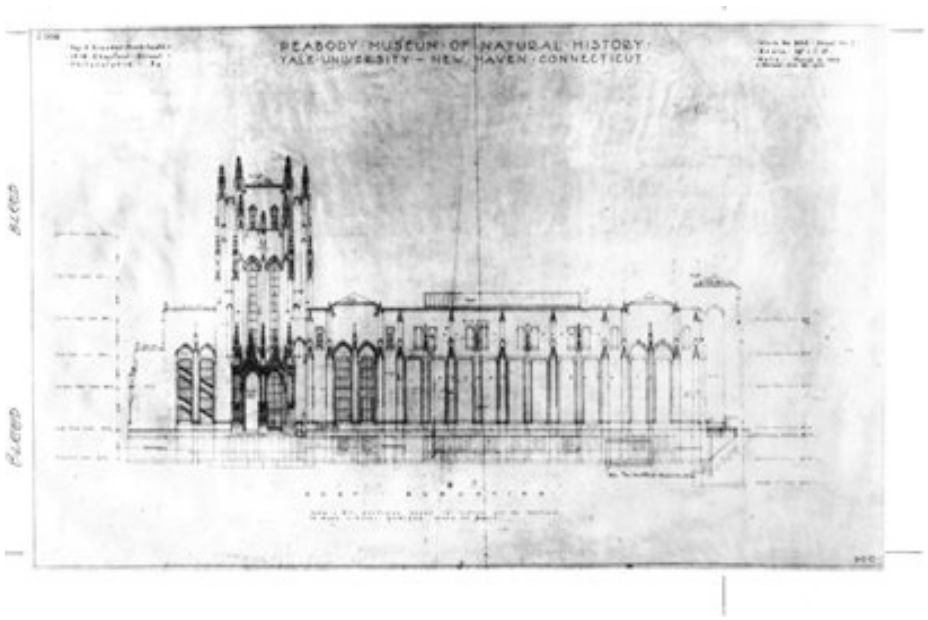

Figure 1: Architectural Sketch of proposed Peabody façade.

1922 was very productive for the Peabody Museum staff however financial problems and structural setbacks since the Harkness donation had worn heavily on the museum's staff. At the start of the year, correspondence flowed between Philadelphia and New Haven, from the architects' office to Schuchert's, outlining different ideas for the exhibit layout of the three-story building. One version of the plan drawn up in January of 1921 included an auditorium seating approximately 500 people; it was later cut out to reserve space and money. Many such deliberations took place between the architect, Peabody trustees, the University treasurer, and museum curators negotiating space requirements for their departments. Professor Richard Lull, as curator of vertebrate paleontology, was vocal among these conferences and presented drawings and exhibit schemes.[76] His opinion carried special weight because, as Yale President Angell explained, the department "emphasized the fact that the greatest value of the Museum was in the Marsh Collections of paleontology, and that they

[76] Charles Schuchert, "Minutes of the meeting of the Peabody trustees" (16 February, 1922), 1, YPMA, Shuchert.

should have a leading consideration, since the greater scientific reputation of the Peabody museum came through them."[77] The decision to focus the museum on its most-well known collections offered Lull special authority in determining the layout of the museum. In a few months, this authority would be greatly increased.

Figure 2: Drawing of proposed new building by Charles Z. Klauder

The fate of the Peabody Museum took another turn on March of 1922 when a letter from Charles Schuchert reached President Angell's office announcing his impending retirement. Schuchert wrote with regret, "As I am to be away from New Haven during the next four to six weeks, and as I am this year on sabbatical leave, and have but one year more to serve before I shall ask to be made emeritus, I think it for the best that you relieve me of all responsibility in connection with the building program of the museum." Following this announcement, Schuchert suggested who he felt was most able to succeed him and continued, "I will help in an advisory capacity, but as I am soon to retire from all University duties, it is

[77] Schuchert, "Minutes of the meeting of the Peabody trustees" (16 February 1922), 1, YPMA.

only fair that the building responsibility be assumed by one of those who are to work in it. Probably Professor Lull is best equipped for this duty and both he and professor Coe are willing to assume it."[78] Shortly after receiving this letter, trustees voted to induct Professor Richard Lull into the directorship of the museum and at once, Lull resumed planning.

As Henry Fairfield Osborn had done almost ten years earlier in the construction of the American Museum's Hall of Man, Lull now had the power to state his views and redesign the layout of the Peabody in accordance with his own evolutionary beliefs. Lull was made director in early 1922; President Angell, at a trustees meeting on February 22, urged him to orient the museum's focuses: "first [on] research, second [on] teaching, and third [on the] exhibition of collections so adjusted to not only provide material for teaching at Yale, but as well to cooperate with the New Haven public schools, and finally to interest the public in general."[79] These goals not only reflected those of Angell, but were also closely aligned with a text that Lull was assembling during the years leading up to the museum's opening.

To quell the skittishness regarding tensions about evolution in schools, Lull, as an academic authority on organic change, took charge and produced a comprehensive evolution text directed at the general public. *Ways of Life* published in 1925, candidly referenced the anti-evolution sentiment rampant in rural Tennessee and other southern states in the early 1920s. In it, Lull presented the existing and undisputed evidence in support of evolution by means similar to natural selection. The same year, 1925 saw both the dedication of the new Peabody Museum and the sentencing of John Scopes, who was ultimately found guilty[80]. The timely appearance of Lull's book was no coincidence given that he referenced both events in its preface. He wrote, "The discussion which has lately arisen in the United States over the

[78] Charles Schuchert, letter to James Angell, 6 March 1922, YPMA, Schuchert.
[79] Schuchert, "Minutes of the meeting of the Peabody trustees"(16 February 1922), 1, YPMA, Schuchert.
[80] Larson, *Summer for the Gods*, 192.

acceptance of a belief in Organic Evolution, as opposed to the Direct Creation doctrine as interpreted by the Fundamentalists, has reached rather alarming proportions when the teaching of our science becomes a subject for legislative action."[81] Lull directly addressed evolution skeptics, and inserted a direct challenge to those who consider teaching evolution a crime. He also anticipated that his book would change many minds by showing "the futility of trying to explain such a record by the strict interpretation of Genesis" by drawing on the "great wealth of paleontological material in the Peabody Museum."[82] And in the conclusion of his 340 pages, he maintained that, "when one weighs dispassionately the great host of facts which science has presented, he sees at once the utter inadequacy of the older explanations of the coming species," and ultimately, concluded: "Direct creation is but a bit of ancient folklore."[83]

This monumental text was well received in academic realms and highly acclaimed in most literary reviews. A *Washington Post* review applauded his work, calling it a "comprehensive, condensed, temperate review of all the data thus far accumulated on man's physical history," but warned "it will contribute to the gayety of the nation by arousing the passionate protests of anti-evolutionists."[84] *Ways of Life* was acclaimed by other reviewers, including *The New York Times* and esteemed in educated circles as both an adequate verification of organic evolution, as well as a potent rebuttal to anti-evolutionists persecuting teachers in the south. Even as the book was being scrutinized, Lull was finalizing the three-

[81] Lull, *Ways of Life*, xi.
[82] Lull, *Ways of Life*, xii.
[83] Lull, *Ways of Life*, 338.
[84] "Lull in 'Ways of Life' Cites Scientific Facts to Support Evolution," *The Washington Post*, 31May 1925 [newspaper online]; available from http://proquestumi.com/pqdweb?index=90&did=23105859 2&SrchMode=1&sid==7&Fmt=10&VInst=PROD&VType=PQD&RQT=309&VName=HNP&TS=1174957530&cl ientId=1376631; Internet; accessed 26 March 2007.

year plan to incorporate evolution into the Peabody's exhibit presentation, not physically completed until 1925.

Figure 3: Construction of the Peabody Museum, 1924

If 1922 was a busy year for the curators of the Peabody Museum, the years from 1923, when ground was broken for the museum, to the beginning of 1926, when the museum was finally opened to the public, were more eventful. Figure 3 shows the process of constructing the museum without the aid of modern techniques and in 1924, at the time of this photograph, it was nearing its completion. Almost immediately after Lull assumed directorship of the museum, he began the process of redesign. In a meeting of the Executive Committee of the Peabody Museum on May 11, 1922, it was decided "that the exhibition of fossil plants, fossil and recent invertebrates and vertebrates, together with something of anthropology [would] be arranged so as to bring out the course of organic evolution in time and space."[85] He revamped the layout of the museum so that it led visitors through an interactive tour of how organic evolution occurred by positioning related groups of organisms in an evolutionarily accurate

[85] Charles Schuchert, "Minutes of the meeting of the Peabody trustees" (11 May 1922), 1, YPMA, Schuchert.

order. Though Schuchert departed as director of the museum in early 1922, he continued to document the museum's progress. In a letter to George MacCurdy, the curator of the anthropology department, he outlined the prodigious tasks that lay ahead of the museum. He informed his friend, who was vacationing abroad, of the anti-evolution uproar occurring in Tennessee and how it related to the new developments in the museum. He explained that "Bryan and the Baptists have gotten evolution all stirred up," but assured his correspondent that, "they cannot hurt evolution, but will do much harm in their following in bringing on arrested mental development."[86] Though Schuchert expressed concern regarding the impact of the Scopes Trial, he seemed reassured that Lull's plans to "arrange all the exhibition collections according to evolution," where the collections would be "blended into a general exhibit beginning with the chronology of fossil invertebrates…and ending in Man"[87] would be a bold step forward.

Frequent correspondence among curators from museums around the country helped to spread the word about the Peabody's anticipated grand opening. An article in the *Yale Alumni Weekly* in 1923 speculated about museum's anticipated impact on the Yale Community. It stated that "from its beauty, completeness, and cleverness of design, its future service to the University, the town and adjacent cities and educational institutions, the new museum will in every way fulfill and amplify the reputation which the Peabody Museum as an institution has ever brought to itself and to Yale."[88] Outside of Yale's publications, friends of the Peabody expressed excitement over the upcoming unveiling and its forward thinking conceptual design and offered support. In a letter to a friend dated October 1, 1923, Lull explained that

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[86] Charles Schuchert, letter to George MacCurdy, 14 June 1922, YPMA, Schuchert.
[87] Charles Schuchert, letter to George MacCurdy, 14 June 1922, YPMA, Schuchert.
[88] Richard Lull, "The New Peabody Museum: Yale's Greet Collections to be Installed in Building on Pierson-Sage Square," *The Yale Alumni Weekly*, 32 no. 34 (May 11, 1923): 1021.

construction of the building was completed and "the cases, furniture, and equipment have all been designed and will be ready for installation at once, so that next September should see the beginning of the moving in installation." Letters asking for installation suggestions were also sent to other prominent natural history museums nearby. Lull conversed frequently with the American Museum of Natural History's curators regarding how the institution had displayed certain specimens in its collections and kept in close contact its president, Dr. Frederic A. Lucas. At one point, Lull sent a few of the Peabody's curators to observe how the American Museum had positioned and situated certain specimens. In a letter of gratitude sent on March 24th, 1925, Lull reported to Lucas that the installation of the museum's specimens was only half finished, but conveyed his desire to have the museum complete enough so that it could open for the week of commencement in May.[89] As national newspapers also caught wind of the Peabody's ambitious endeavors, they generated stories on the museum's opening and how it would combine with fundamentalist perception.

Before the museum's dedication, various newspapers around the nation ran articles trying to gage public response to the museum's outspoken endorsement of organic evolution. Interest only increased after the Peabody opened temporarily for Yale Commencement week in May to graduates and their guests. The June 1, 1925 issue of *Time Magazine,* featuring a hand drawn portrait of Lull on its cover, applauded the defense of human evolution in his new book, *Ways of Life*. It reported that "The Fundamentalist attack on the teaching of Organic Evolution which has reached the state of legislative action called [Lull] forth…to lay the facts which Science has discovered before the public."[90] This acknowledgment drew attention to Lull's contributions as an evolution authority who publicized his belief that evolution

[89] Richard S. Lull, letter to Bashford Dean, 24 March 1925, YPMA, Lull.
[90] "Whence Man?" *Time Magazine*, 1 June 1925, 16.

belonged in schools. Likewise, The *New York Times* included an article reporting that the Peabody, under Lull's guidance, was to utilize "a new method…in displaying the specimens," where, in " the portrayal of man's origin, the Garden of Eden will be absent." The final paragraph of the *Times* article increased the conflict between evolutionists and fundamentalists by emphasizing Lull's intentions to "make available the rich stores it contains to the public school children of the State."[91] These two publications exemplify how, in regard to public debates at the turn of the century, the media often swayed their articles to elicit public responses about what roles museums should assume regarding education. Thus, nearing the end of 1925, word had gotten out. The official dedication ceremony was to be held on December 26, 1925 to which approximately 2000 scientists from all over the country were invited.[92]

The Peabody's staff received unanimous accolades at its dedication ceremony. Visitors arriving at the lofty brick building at the corner of Sachem Street and Whitney Avenue witnessed first hand the "dignity and large simplicity [that] marked the fine structure erected in Pierson-Sage Square, New Haven."[93] President James Angell expressed his elation at the completion of the project during his welcoming speech, and gushed, "I accept with pride and gratitude this building so skillfully designed to serve its great purposes." Crediting the institution's future community impact, he prophesied, "Here for generations to come, serious students will assemble for the intensive study of those profound and revealing chapters in

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[91] "Yale Moves Fossils to Peabody Museum," *The New York Times*, 13 March 1925 [newspaper online]; available from http://proquest.umi.com/pqdweb?index=0&did=104168492&SrchMode=1&sid=3&Fmt=10&VInst=PROD&VType=PQD&RQT=309&VName=HNP&TS=1174955804&clientId=13766; Internet; accessed 26 March 2007.

[92] "Yale Moves Fossils to Peabody Museum," *The New York Times*, 13 March 1925.

[93] Richard S. Lull, "The New Peabody Museum: Part I, Building and Equipment," Reprinted from *Museum Work* 7, no. 4, (1924): 107.

nature's history which are here written."[94] Lull expressed the utmost pleasure at the successful reception and in an article he wrote for *Museum Work*, a publication sent to many museums around the United States, he uncovered the floor plan depicting how the Peabody staff expected visitors to travel through the exhibits; this route is depicted in Figure 5. Lull wrote, "The arrangement of the exhibition halls on the first floor is such that a casual visitor is automatically routed through the exhibits in a natural order. A circuit starting to the rear of the entrance hall takes up the story at the beginning of the ascent of life closing with its climax in the Hall of Man."[95] The exhibits' representation of human evolution is pictured in Figure 4 and its controversial implications are vivid. As the 200 guests of the dedication ceremony filtered through the museum, they were the first to experience Lull's ambition. As was planned, the final destination on this route was the Peabody's controversial Hall of Man that illustrated the link between primates and prehistoric men with modern humans, referring to the two groups as close relatives.[96]

Figure 4: Exhibit in the Peabody's Hall of Man demonstrating human evolution.

[94] James Angell, "Presentation and Acceptance of the Museum," speech for the dedicatory exercises at the new Peabody Museum (26 December 1925). Reprinted in *The Yale Alumni Weekly* (1 January 1926): 422.

[95] Lull, "The New Peabody Museum, Part I, Building and Equipment," 110.

[96] Lull, "The New Peabody Museum, Part II, The Collections," Reprinted from *Museum Work*, 7, no. 5 (1925): 134.

When the Peabody Museum of Natural History officially opened its doors in January 1926, letters of interest continued to arrive from curious colleagues and friends of the museum. Ironically, one notable letter written by Frederic A. Lucas, represented how conservative colleagues of the Peabody might appreciate the bold step taken by the museum but disagree with the purpose. In his letter to Lull, Lucas expressed his congratulations but maintained that the Peabody's exposition of evolution was an unparalleled act to be discouraged. Further, he wrote by "showing the relations of animals to man…[Lull] calls attention to some of the things that museums do and do not."[97] Lucas's negative opinion of the museum was in the minority. Many newspapers from around the nation, including publications from Pittsburg, New York City, Indianapolis, and Denver, ran *a priori* analyses of the museum's divisive theme and most maintained that the focus on evolution was a successful endeavor. After touring the museum, a *New York Times* writer wrote a second review that included pictures of both the completed establishment and Director Lull. It commended the successful design of the exhibit that used "only such specimens as enabled him to reconstruct the story of evolution from the amoeba to man." The piece reported that as visitors entered the building, "an illuminated under water scene catches the eyes and leads to the beginning of the evolutionary story."[98] All of the articles published similar explanations of the museum's general layout, whereas only some addressed controversial implications of its ideas.

It is possible that some of the Peabody's acceptance stemmed from its position in a prestigious and established academic institution where progressive scientific and academic pursuits were encouraged. The previous *New York Times* article referenced above pointed to

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[97] Frederic A. Lucas, letter to Richard S. Lull 5 March 1925, YPMA, Lull.

[98] "New Yale Museum Depicts Evolution," *The New York Times*, 22 December 1925 [newspaper online]; available from http://proquest.umi.com/pqdweb?index=0&did=104198734&SrchMode=1&sid=4&Fmt=10&VInst=PROD&VType=PQD&RQT=309&VName=HNP&TS=1174956116&clientId=13766; Internet; accessed 26 March 2007.

the museum's role as an active center for education, "Because of its connection with Yale a major function of the museum is concerned with teaching, and there are rooms for study." In another instance, a colleague of Lull's congratulated his success, noting that twentieth-century university museums had the duty to instruct as well as exhibit.[99] Though national newspapers and colleagues of the museum thought the establishment was an undisputed sensation, how did the general public respond to the museum?

Little historical evidence remains about how the public initially reacted to the museum and whether the exhibits challenged religious attitudes. But Lull kept careful records of who visited his museum during its first year open. In mid-1926, Lull presented a report to the Peabody's trustees that outlined attendance of the museum and how the public perceived the idea of evolution. This report surmised that "the attendance of the public aggregated over 30,000 persons, there being as many as 5,800 on one day." It also noted the museum's newfound popularity within the New Haven community, especially within school classrooms, and that they had received "a great deal of interest has also been show in the work for children [in which] during the first four weeks of Museum activity, twenty-nine classes of public and private schools have been to the Museum for instruction." He clarified that these numbers did not include the children who have visited the museum independently.[100]

The museum staff expected that the public would have varying reactions to the implications of the different exhibits. Because the direction by which a person should travel was not regulated, a museum-goer could invent his own path around the museum and might potentially overlook the idea of evolution completely. Often visitors traveled backwards in time or missed the idea all together. In 1938, Mildred C. B. Porter, curator of the School

[99] Doris Dark, letter to Richard S. Lull, 23 February 1926, YPMA, Lull.

[100] Richard Lull, "Report on museum visitation" included in the *Minutes of the Executive Committee of the Peabody Museum*, (29 January 1926), YPMA.

Service Department of the Peabody, published a study that examined the different routes by which visitors explored the museum; she also tallied how much time a person spent viewing each exhibit. She concluded that visitors seldom paid equal attention to all of the exhibits and "the route taken by the average visitor was the reverse of that planned, in the guide book."[101] This intended route is depicted in Figure 5. The actual route through which visitors tended to follow is represented in Figure 6 and suggests that visitors often skipped the Hall of Invertebrates completely and subsequently misunderstood the intended purpose of the museum's layout. In a second study, Porter experimented with explanatory pamphlets and analyzed how information describing either "The Different Kinds of Animal Life" or "The Gradual Development of Animal Life" had an impact on one's visitation time. She concluded that a pamphlet explaining the evolutionary floor plan coincided with an average increase time spent the Hall of Man. She also documented that visitors who had access to information on the origin of life, through either pamphlets or exhibit labels, generally spent more time in the Hall of Man than in other exhibits.[102] This study, conducted nearly a decade after the Peabody opened its doors in 1926, confirms that the museum experienced enduring success and popularity not only for housing a collection of unique fossils, but for being the first museum using its collections to portray an evolutionary idea.

[101] Mildred C. B. Porter, "Behavior of the average visitor in the Peabody Museum of Natural History, Yale University," *Publications of the American Association of Museums,* no. 16, (1938): 15.

[102] Porter, 28

Figure 5: Mildred A. Porter's interpretation of the intended route of a Peabody visitor.

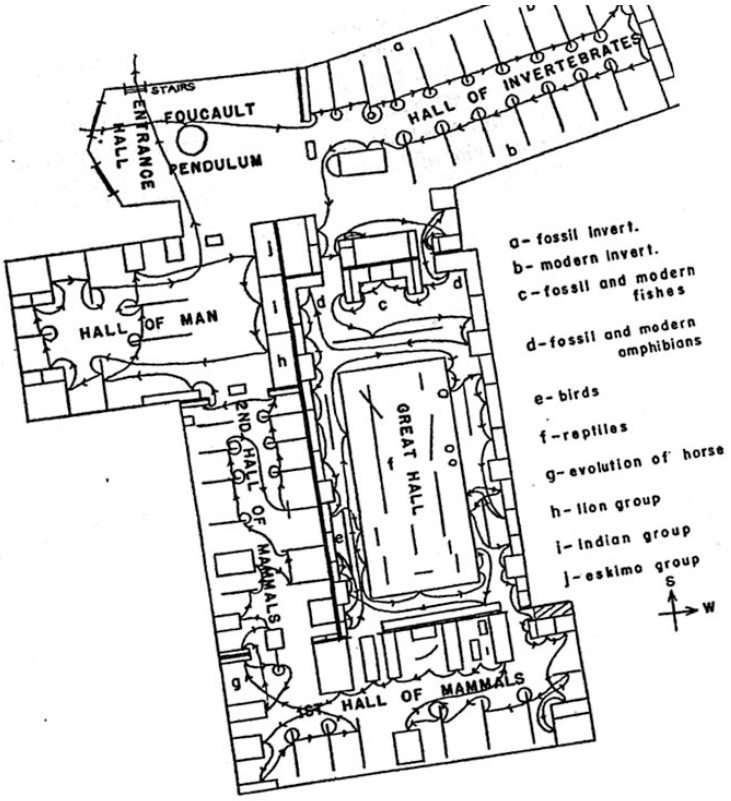
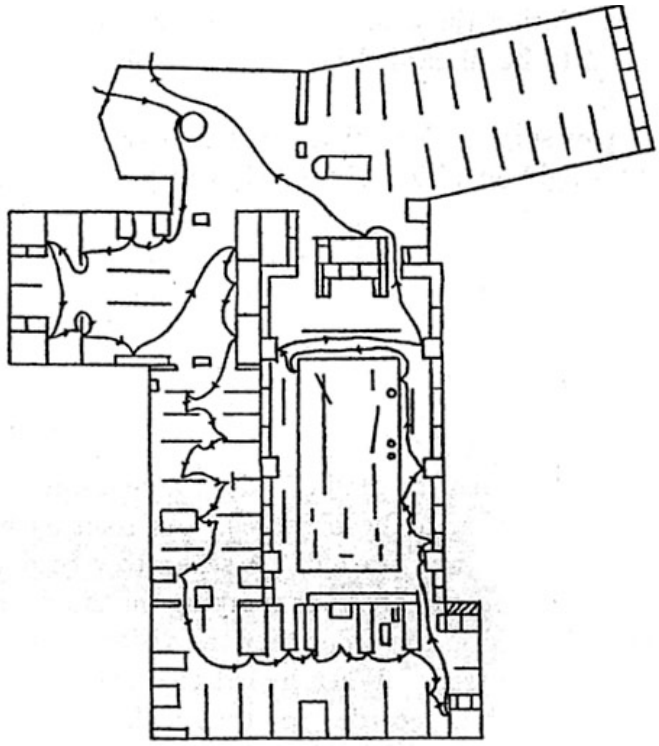


Figure 6: Porter's results showing the common route taken by Peabody visitors.



1925 was a year in which national perceptions regarding which scientific and religious principles should be included in public education were put to the test. In Tennessee, evolution had been banned from public high schools after a prolonged nationally-publicized trial where an otherwise innocent man was convicted of a misdemeanor. Larson, author of *Trial and Error: The American Controversy Over Creation and Evolution,* explains that similar debates about evolution's place in public schools had occurred in other southern cities prior to 1925. His analysis illuminates how southern Methodists and Baptists vehemently opposed non-Christian accounts of the origin of human beings and pressed their legislatures to enact anti-evolution education laws. In Oklahoma, one senator asserted, "I object to Darwin…or any so called evolutionists giving our children their spiritual life," and urged fellow senators to "leave their hellish teachings out."[103] This sentiment contrasted with that of urban Connecticut in 1925, when the Peabody Museum and its evolution exhibit landed at the forefront of public consciousness, lauded for its dedication to proving the preeminence of science. *The Peabody Guide*, published in 1927, clarified that the Museum's aim was proving, "the fact that the manifolds of life … did not arise as a service of special creations, each from a new 'mold,' but evolved slowly, one from the other, during an immensity of time."[104] Further, religious figures and Yale Divinity School students appreciated the museum's educational intentions and did not condemn the teaching of evolutionary truths. In fact, one New Haven minister, a close friend of Lull's, wrote to him stating that museums should follow the Peabody's example because "such [scientific] instruction would prove very valuable."[105] Nevertheless, conflicting

[103] Edward Larson, *Trial and Error: The American Controversy Over Creation and Evolution* (Oxford: Oxford University Press, 2003), 51.

[104] *General Guide to the Peabody Museum of Natural History*, 1927.

[105] "New Haven is to Teach Evolution in its School," *Stamford Connecticut Advocate,* 26 December 1925.

attitudes prevailed across the nation, and the remainder of the essay will address the socio-cultural factors that fueled the beliefs of those for and against evolution in education in the 1920s.

To understand this intellectual divide it is helpful to consider the Peabody's incorporation of evolution not as an isolated event in history, but as an example of shifting American belief systems. The assimilation of science and evolution into publications, academic and general interest books, school curricula, and now museum exhibits represented a transition away from Christian tendencies to rely on religious explanations in the Bible as fact. In New Haven, academics and the local public accepted Lull's pioneering installation as well as his text, *Ways of Life,* in part because they were conditioned by education to accept a secularized and scientifically based explanation. In rural southern towns like Dayton, Tennessee, by contrast, fundamentalists and anti-evolutionists zealously resisted the shift toward a 'modern' way of life, in which religion was segregated from every day experiences. Israel points out in his examination of religion in nineteenth-century southern states, that following the Great Revival in Kentucky and Tennessee in 1800, Methodists and Baptists promulgated Christianity to the point that it "radiated throughout the state and the rest of the South."[106] For them, religion dictated every aspect of life, and following the Confederate defeat of the Civil War, God's word offered support during the Reconstruction era, promoting "revivalism" and assuaging the secular defeat by "reaffirming white southerners as God's chosen people."[107]As education became more standardized throughout the United States, those who formerly looked only to the Bible for the truth were soon forced to incorporate

[106] Israel, 13.
[107] Israel, 15.

evolution into their belief systems. Generally speaking, secularized classrooms of the North assimilated implications of science more easily than fundamentalist, communities in the South.

The purpose of this account has been to delineate the progression of the Peabody Museum from a personal collection of artifacts to a renowned institution of scientific truth. Another goal of this paper has been to illustrate the vanguard work of Lull and other members of the Peabody staff, who were key figures in fostering national reconciliation of religion and science, an effort often overlooked. In a eulogy for Richard S. Lull, George Simpson referred to the museum as "a monument to Professor Lull," because its "extensive exhibitions were planned to reflect sound research and pedagogy …to attract and to serve not only the university but also the lower schools and the whole community."[108] In fact Lull's influential strides to minimize the intellectual gap between the beliefs of those in Dayton, Tennessee and the rest of the country set the standard for other institutions to follow. Still standing proud at the corner of Sachem Street and Whitney Avenue, the Peabody Museum of Natural History, a "museum of ideas," continues to enlighten its visitors with an interactive fossil-based circuit exhibiting the intricacies of evolution, an aspiration dreamed up and realized by Lull and his staff almost a century before.

Word Count: 10,613

[108] George G. Simpson. "Memorial to Richard Swann Lull (1867-1957*)," Proceeding Volume of the Geological Society of America, Annual Report for 1957,* May (1958), 127-134.

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A Peabody Museum internship in the summer of 2006 sparked my interest in the role that museums play in public education. I became fascinated with the art of transforming often esoteric and complicated scientific ideas, like evolution, into comprehensible visual representations of the way things are. Thus, the decision to write my senior thesis on evolution education in the Peabody Museum blossomed out of this experience and my newfound familiarity with the museum's exhibits and staff. My essay analyzes the presence of evolution in education in the United States in light of two distinct events: the Scopes Trial and the re-opening of the Peabody Museum, both in 1925. Therefore, the essay required a range of background research in otherwise unrelated areas. Such areas include the rise of natural history museums in the US, the debate between fundamentalists and evolutionists, and personal accounts on planning the reconstruction and reorganization of the new Peabody Museum. Primary sources like Richard S. Lull's correspondences, minutes from curatorial and committee meetings, and reactionary newspaper articles were very important in constructing the narrative and supporting my argument. Texts that were less useful include the autobiographies of paleontologists working at different museums who provided broad, sweeping overviews about the history of museums in America.

Regarding the rise of natural history museums, I first looked to texts that documented how art and history museums originated and the ways that natural history museums tailored their exhibits in intelligible and stimulating ways. Some of my research gravitated toward broad, sociological discussions about modern museums and their role in public education. Leah M. Melber and Linda M. Abrahams article "Science Education in U.S. Natural History

Museums" was an influential publication that illuminated the inner workings of science museums and how scientific exhibitions acted as a form of public education. Melber and Abrahams emphasized the value in providing visual evidence for difficult ideas, asserting "Little can rival direct interaction with authentic specimens – for the scientist and the general visitor alike."[109] Other texts such as Albert Eide Parr's *Mostly About Museums*, Laurence Coleman's three-volume work, *The Museum in America*, and Carla Yanni's *Nature's Museums* provided cursory overviews of the rise of museums in America and Europe, but were not specific enough to be useful in my account. Nonetheless, Yanni's book contained beautiful illustrations of floor plans from a few museums in Europe and showed that even then, architects often mapped the expected flow of visitors. Such texts were central in providing the intellectual foundation for a deeper examination of museum's historical role in public education.

I turned to other texts regarding the history of the conflict between Fundamentalists and Evolutionists, as I learned, extended back into the eighteenth century. Edward Larson's texts, *Summer for the Gods* and *Trial and Error: The American Controversy Over Creation and Evolution*, documented the Scopes Trial and how the trial was the culmination of a southern, anti-evolutionist movement brewing for almost a century. Peter Bowler's *Fossils in Progress* was an extremely insightful text that presented the rise of fields like paleontology, geology and natural history and demonstrated how advancements in these fields encroached on the Christian way of life. Likewise, Wilfred Edwards' *The Early History of Paleontology* nicely summarized the rise of paleontology from its existence as a scientific hobby to a well-respected academic field, and explained the implications of its newfound credibility. Edwards

[109] Leah M. Melber and Linda M. Abrahams. "Science Education in U.S. Natural History Museums." *Science and Education* 11 (2002): 51.

paralleled this topic by describing how natural history museums became intellectual resources for academic programs at prominent universities.

Narrower depictions of museum life were provided in individual biographies and autobiographies. Robert Rainger's *Agenda for Antiquity*, George Simpson's *Concession of the Improbable*, and Geoffrey Hellman's *Bankers Bones & Beetles: The First Century of The American Museum of Natural History* were a variety of the texts that introduced me to the founders and key players at time. They also divulged the social side of museum work and illuminated the particulars of managing and working in such an environment. An influential fact that I took home from these works was the extent to which staffs of US natural history museums were connected in regards exhibit design and specimen conservation.

The most engaging aspect of this project was weaving primary material, such as newspaper accounts, correspondences, minutes of meetings, architectural plans, evolutionary textbooks, speeches and journal articles, into the broader narrative. I was lucky in the fact that the majority of my research material was housed in the archives of the Peabody Museum. After constructing a good contextual basis for my essay using secondary sources, I spent the remainder of my days digging through records and correspondences in the Peabody's department of archives. Richard S. Lull's archives, housed in the Department of Vertebrate Paleontology, included his correspondences relating to his career as a professor of geology and as the director of the Peabody Museum. The organization of these documents was particularly helpful because of their arrangement in alphabetical order such that all letters and related documents from each individual were consolidated. I often found letters that commented on Lulls texts, *Ways of Life* and *Organic Evolution,* and his ambitions for the Peabody to contain an explanation of human evolution in light of the Scopes Trial. Through these texts, I was able to gage how the academic populace received his attempts to promote

the preeminence of science. Likewise, newspaper articles and reviews written about the Peabody's opening were also very helpful in illuminating the museum's reception.

I had the pleasure of meeting Barbara Narendra, director of the Yale Peabody Museum archives, who so generously amassed relevant archival documents pertaining to the museum's reconstruction. Among these materials were Schuchert's personal notes and correspondences, meeting minutes from committees on architecture, minutes from meetings of the director and curators and photos and architectural sketches. After assembling my primary materials, both personal and public, I was able to piece together a narrative of the Peabody's reconstruction from the perspectives of Lull and Schuchert in light of the anti-evolution events occurring in the South. The last document that I came across was the dissertation of Mildred Porter, published in 1938, which illuminated how Peabody visitors explored the museum compared to the intended route of museum curators designed in 1925. This work proved vital for my essay in providing empirical evidence supporting the argument that the Peabody's presentation of evolution was subtle and often overlooked.

Letters and personal reflections about the Peabody's reconstruction were crucial to my research because the heart of this paper involved the personal ambitions of influential characters like Richard Lull. It was my ambition to provide a multi-layered account of the museum's opening within a broader ideological framework of competing religious and secular views, however I could not have done it without the help of the Peabody Museum's encouraging staff.