Geoconservation Research

Original Article

Rocky Start of Dinosaur National Monument (USA), the World's First Dinosaur Geoconservation Site

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Abstract

The quarry museum at Dinosaur National Monument, which straddles the border between the American states of Colorado and Utah, is the classic geoconservation site where visitors can see real dinosaur bones embedded in rock and protected from the weather by a concrete and glass structure. The site was found by the Carnegie Museum in August 1909 and became a geotourist site within days of its discovery. Within a decade, visitors from as far as New Zealand traveled the rough, deeply rutted dirt roads to see dinosaur bones in the ground for themselves. Fearing that the site would be taken over by others, the Carnegie Museum attempted twice to take the legal possession of the land. The second attempt had consequences far beyond what the Museum intended when the federal government declared the site as Dinosaur National Monument in 1915, thus taking ultimate control from the Carnegie Museum. Historical records and other archival data (correspondence, diaries, reports, newspapers, hand drawn maps, etc.) are used to show that the unfolding of events was anything but smooth. It was marked by misunderstanding, conflicting goals, impatience, covetousness, miscommunication, unrealistic expectation, intrigue, and some paranoia, which came together in unexpected ways for both the Carnegie Museum and the federal government.

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Introduction

Dinosaur National Monument (DNM), which straddles the border between the American states of Colorado and Utah (Fig. 1A), is the archetype paleontological geoconservation site. Established in 1915 by Presidential proclamation, the monument originally encompassed 80 acres (0.33 square km) around the dinosaur quarry (Fig. 1B). In 1938, another Presidential proclamation expanded the monument to approximately 200,000 acres (809 square km) by incorporating the scenic canyons of the Yampa and Green Rivers (Fig. 1C). In 1958, a long planned visitor center and museum opened at the quarry. Built over a portion of the bone bed, visitors could to watch technicians expose dinosaur bones in relief. This enclosed quarry wall (Fig. 2) has been widely imitated (e.g., Zigong Dinosaur Museum and Zhucheng Dinosaur Park, China). Although work on the quarry wall was completed around 1999, over 300,000 visit the monument each year to see the quarry, hike the canyons, and raft the river rapids.

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I examine the events that led to the initial designation of the quarry as a national monument based on historic records left by the paleontologists who discovered and excavated the fossil deposit, and by federal officials who had authority over the public lands where the quarry was located ('public lands' are tracts of land that are controlled by the US government on behalf of the American public; the subject is often very contentious due to competing interests). Previous accounts of the Monument's history include White (1967), Colbert (1968), Beidleman (1966; although no date is given on the manuscript, it was determined from the Beidleman correspondence in the DNM archives), McIntosh (1977), McInnis (1982), Harvey (1986, 1991), Chure & McIntosh (1990), Mehls (1990), Neel (1990, 2007), Spalding (1993), Elder (1999), and West, et al. (2001); most of these accounts are brief, being a few pages long (e.g., Elder 1999), the exception being those of Harvey and Neel. While these accounts are generally similar, such as the discovery of the site by Earl Douglass of the Carnegie Museum in August 1909, in others they differ considerably. For example, Douglass was not involved in persuading President Wilson to designate the site a national monument contrary Harvey (1986). In reality, Douglass was surprised by the sudden announcement as is discussed below. What has generally not been appreciated is that in the years after Earl Douglass found the dinosaur site in 1909, was a struggle marked by paranoia, misunderstanding, intrigue, impatience, miscommunication, conflicting goals, and unrealistic expectations, which all came together in unexpected ways. Even after the monument was established in October 1915, many of these issues did not go away.

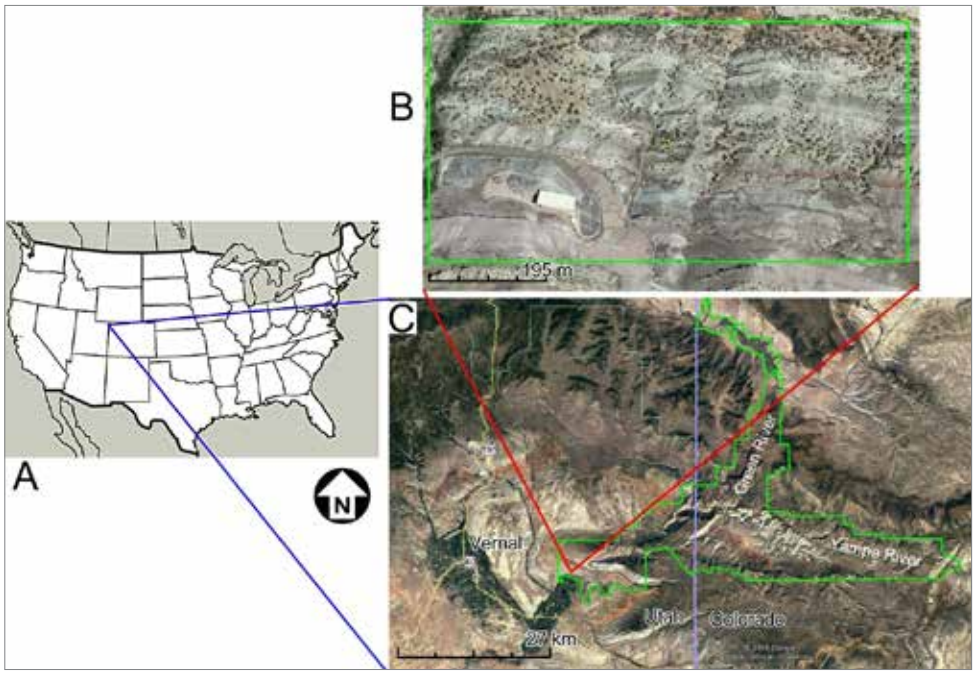

Figure 1. A, map showing location of Dinosaur National Monument. B, the original 1915 boundary was only 80 acres. This is also the same as the Carnegie Placer Claim of 1911. White structure is the current quarry building. C, the present boundary of the monument straddles the Colorado-Utah border. B and C modified from Google Earth.

Figure 2. View of the quarry face today as is exposed in the quarry building. The reaction by visitors to the original excavation in 1909 is probably what stimulated Earl Douglass to push for such a museum. This has since become the archetype dinosaur geoconservation site.

Materials and Methods

Various Utah newspaper record events beginning with the discovery of the first bones in 1909. These newspaper articles were usually written by unnamed reporters, so are referenced in the text by the name of the newspaper and the date. These may be found at the Utah Digital Newspaper archives: digitalnewspapers.org. An important source for the early history of Dinosaur National Monument is the manuscript "Administrative History: Dinosaur National Monument" by R.G. Beidleman (1966). This report preserves quotations from correspondence that is now missing; some quotes used are from this document as noted. Other important unpublished archival documents at Dinosaur National Monument include: A.C. Boyle (1938) "Report relating to status of project, Dinosaur National Monument, Jensen, Utah"; J. Lombard (1952) "Statement of objectives, quarry museum development, Dinosaur National Monument"; and R.W. Toll (1929) "Report to the Director, National Park Service on Dinosaur National Monument." Other archival material at Dinosaur National Monument is cited as "DNM archive".

Much of the archival data of Earl Douglass (correspondence, diaries, field notes, etc.) is now available through the online collections of the Special Collections, J. Willard Marriott Library, University of Utah: collections.lib.utah.edu; a few documents remain undigitized. Other records of Douglass and Carnegie Museum directors William Holland and Douglas Stewart are available at the Carnegie Mellon University Libraries (CML) Digital Collections: digitalcollections.library.cmu.edu/portal/browse.jsp. Other correspondences with the Carnegie Museum are held in Department of Paleontology, Carnegie Museum,

Pittsburgh, Pennsylvania. Citation of correspondence is given by the writer to the recipient and the date the letter was written (e.g., Holland to Douglass, 12 January, 1916). The two mining claims filed by Douglass for the land encompassing the Carnegie Quarry are filed with the Utah Division of Archives and Records, Salt Lake City. Pertinent historic General Land Office records are from glorecords.blm.gov/default.aspx. The General Land Survey was the precursor to the Bureau of Land Management, and was responsible for oversight of public land.

Sadly, some of the pre-1930 documents pertinent to the early history of DNM are now missing (Ellen Alers, Smithsonian Institution Archives Assistant Archivist, personal communication 18 April, 2018; Khaleel Saba, NPS Intermountain Region Museum Services Program, personal communication 21 March, 2018; Joseph Schwarz, National Archives, personal communication 28 March, 2018) and are quoted from cited references. Quotes given are sometimes long. This is in opposition to the more traditional synopsis presented in historical articles because I believe it to be important to have the facts and tone of the statements on record, as well as avoid the slanted and incomplete synopsis of the historian; these are pointed out below. Dollar amounts are converted to 2018 values and given in brackets as [$*.** in 2018 dollars] based on the online inflation calculator in2013dollars.com. Other inflation calculators give similar amounts.

Dinosaur National Monument and the Antiquities Act

Set in the context of the Progressive Era (1890-1920) of American history, the establishment of Dinosaur National Monument took place at a time when there was recognition for the Nation to conserve resources, including historic, natural and scenic (Rothman 1993; Browning 2003). It was the 23rd national monument created by Presidential proclamation under the authority of the Act for the Preservation of American Antiquities, more commonly known as the Antiquities Act (Appendix I). The Act was passed by the 59th United States Congress in 1906 in response to the growing concern for the unauthorized excavation and damage to the archaeological resources in the American Southwest (Lee 1970 [2001], Rothman 1993; Browning 2003). Passage of the Act by Congress was an acknowledgement that the legislative process for setting public land aside as a national park (such as Yellowstone National Park) was slow and time consuming, especially for sites in need of urgent protection (Lee 1970 [2001], Rothman 1993). Furthermore, it also acknowledged that some public land areas needing protection were too small and not significant enough to be made national parks.

National parks are areas set aside by the U.S. Congress for areas having some outstanding scenic feature or natural phenomena, such as the canyon at Grand Canyon National Park or the geysers at Yellowstone National Park. The principal qualities of Parks are their "inspirational, educational, and recreational values." In contrast, national monuments are areas set aside by proclamation of the U.S. President because they contain objects of historic, prehistoric, or scientific interest. For example, Devils Tower National Monument features a monolithic volcanic neck. In the case of DNM, it was set aside as a national monument because the dinosaur bones were considered to be of having "great scientific interest and value" (see Appendix II).

Discovery (1909-1910)

Earl Douglass of the Carnegie Museum of Natural History discovered the extraordinary dinosaur bonebed that is now the Carnegie Quarry at DNM, Utah, on Tuesday, 17 August, 1909. Douglass wrote in his diary:

"At last in the top of the ledge where the softer overlying [sandstone] beds form a divide -- a kind of saddle, I saw eight of the tail bones of a Brontosaurus in exact position. It was a beautiful sight. Part of the ledge had weathered away and several of the vertebrae had weathered out and the beautifully petrified centra lay on the ground. It is by far the best looking Dinosaur prospect I have ever found. The part exposed is worth preserving anyway" (Douglass diary, 17 August, 1909; see Fig. 3 and 4).

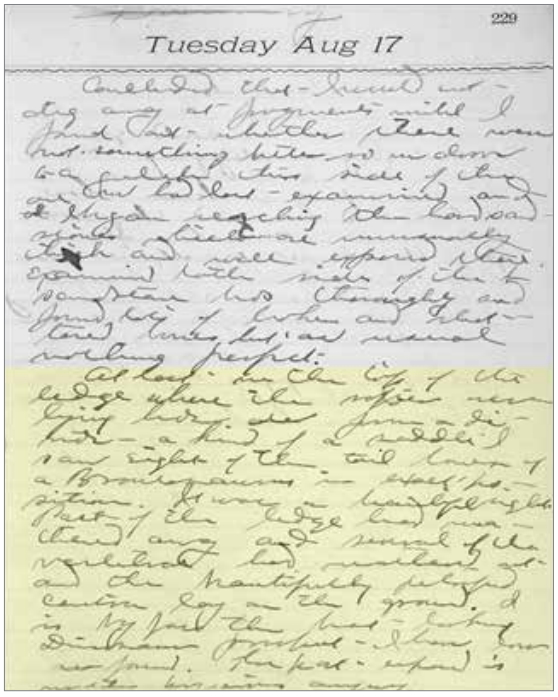

Figure 3. Page from Douglass' diary in which he reports the discovery of the caudal vertebrae at the site that would become the Carnegie Quarry. See text for script.

Figure 4. Earl Douglass with his hands on the articulated caudal vertebrae mentioned in his diary.

Douglass understood immediately that this discovery would be of interest to the local community and had the local newspaper in Vernal, Utah, announce a few days later that: "The remains of a Dinosaur, a prehistoric animal reptile, have just been unearthed by Earl Douglas [sic], of the Carnegie museum of Pittsburg… Mr. Douglas will not begin to remove any part of it until next Sunday,

in order to give Vernal people a chance to see it and all those who avail themselves of the opportunity will witness a show of a lifetime" (Vernal Express, Friday 20,, August, 1909). People did indeed show up as Douglass noted in his diary (22 August, 1909), "Today two loads of people came from Vernal to see the Dinosaur and there were several loads from other places… For a time, the rocks that never had the impress of a woman's foot and seldom that of a man swarmed with people of all ages. Mothers and grandmothers ascended the steep, almost dangerous slopes, with babes and there were men and women well along in years." (Fig. 5A). A few weeks later as word spread of the discovery visitors arrived from as far as California (Beidleman 1966). Years later, Douglass wrote to Holland, "Hundreds, if not thousands of people from this and other states have visited the quarry. In one day last fall about sixteen autos were here when a delegation visited the basin from Salt Lake City. In my opinion it is utterly impossible to do work of this kind here without it becoming public." (Douglass to Holland, 24 December, 1915). Visitors "included students, teachers, professors and tourists." (Douglass to Holland, 10 March, 1917).

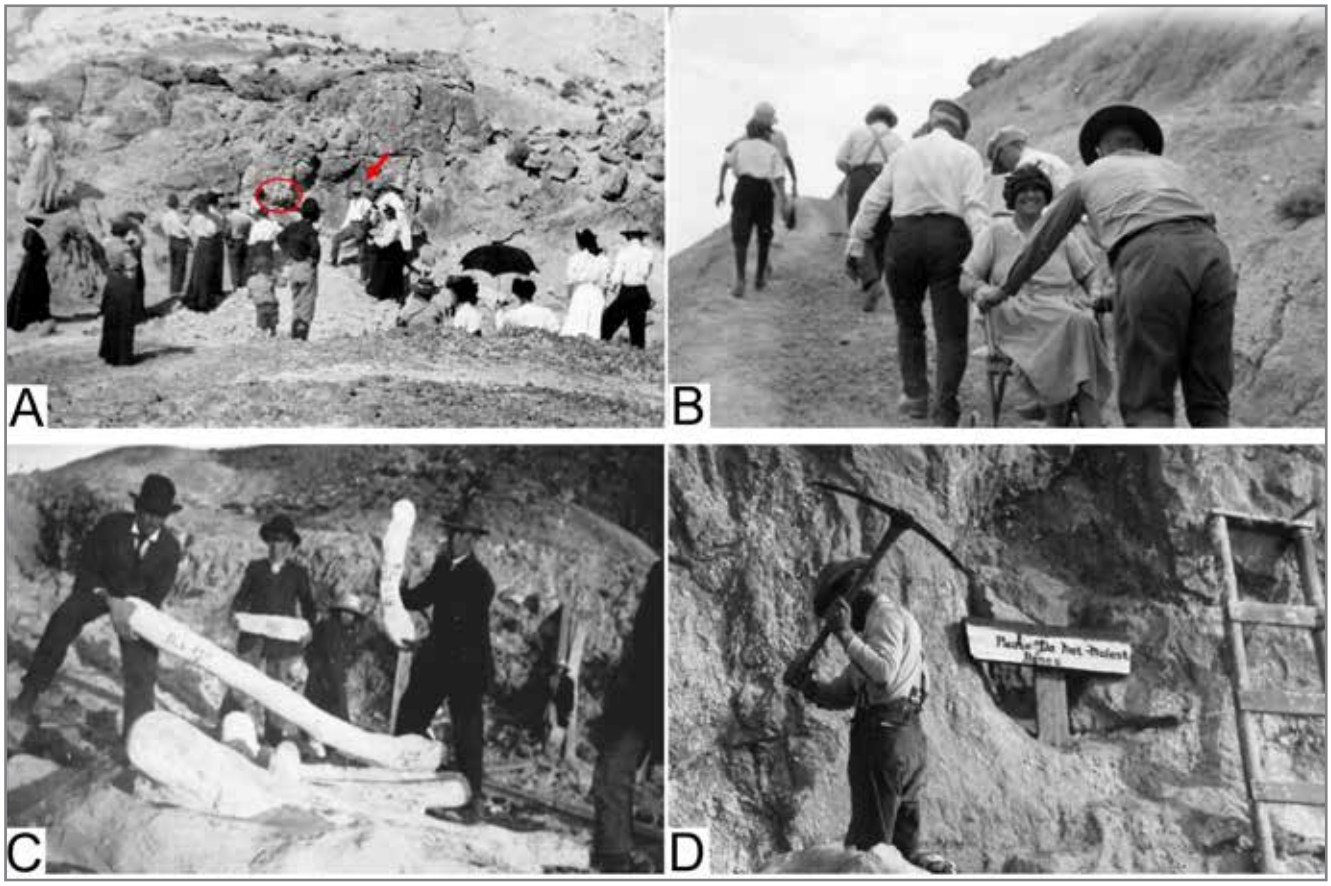

Figure 5. A, the first visitors to see dinosaur bones as they lay in the rock (circled), Sunday, 22 August, 1909. Some of the visitors are dressed in their finest clothes. B, People continued to visit the site during the years the Carnegie Museum was excavating. Here, three people help a woman in a wheelchair up the dirt road to the quarry. (DNM archives). C, Visitors posing with plaster of Paris encased bones (courtesy Uintah County Library). D, Sign telling people "Please do not molest bones".

Visitors continued to show up throughout the fourteen years that the Carnegie Museum was excavating, especially after the site was declared Dinosaur National Monument in 1915 (Fig. 5B). As a mineral inspector for the General Land Office noted, " …it is interesting to note that an increasing and large number of people are visiting this monument even though it is located in a place quite far removed from the regular lines of travel." (Mineral Inspector Hamman to the Commissioner of the General Land Office, Salt Lake City, 13 December, 1916, in Beidleman 1966). Douglass recorded people from New Zealand among the visitors (Beidleman 1966). Although Douglass welcomed these visitors, they did cause some problems (Fig. 5C) and it was necessary to post a sign not to "molest" the fossils (Fig. 5D) because there was no way to control the people.

It is remarkable that so many people traveled over the unimproved dirt roads during the early years. The difficulty of getting from Vernal to the quarry was described by a reporter from the Vernal Express (12 August, 1912):

"The employees of the Vernal Express made a pilgrimage to the famous Jensen quarry last Monday. The party took the Brush creek road. At the point where the Sunshine ranch canal caused a slide of the hillside and partially destroyed the Burns bench canal, the road is in a dangerous condition. The first rig, a single buggy, got over safely but the second, a double, white top rig in which were riding the women and children, dropped into the bog hole on the lower side just as the other wheels struck a sunken log with the result that the outfit was tipped over, and by the narrowest margin, and because the [horse] team did not take fright, the women and children and others in the tip-over were not plunged over the brink in to Brush creek… Mrs. Young was quite badly hurt but was able to stay with the party during the day after being cared for at the ranch of [William] Neal not far away."

Even Carnegie Museum director Holland wrote of his bad experience during a rain storm as he was leaving from visiting Douglass: "The water came down for about seven or eight minutes in sheets… [T]

he roads beyond this point were converted for the most part into gumbo, and just before getting into Jensen the machine [car] skidded and went down into a ditch and we had to get assistance to extricate it from its plight." (Holland to Douglass, 9 June, 1915). Not until the 1930s was the road to the quarry improved.

This curiosity to see actual dinosaur bones as they lay in the rocks is what made Dinosaur National Monument so unique in the first place and why it continues to be a major attraction today.

The Carnegie Museum's Land Claims (1909–1915)

Douglass first became aware of the possibility of some other entity legally taking possession of the site a few months after its discovery as he wrote to Carnegie Museum director Holland (14 November, 1909): "We have taken up the land, 20 acres, 80 by 40 rods, as a mining claim and have it recorded. A man acquainted with mining laws said someone could come, post a notice and drive us off so we thought it would be safer to take the legal steps." The claim was filed under the General Mining Act of 1872 code on placer claims (30 U.S. Code section 35): "Claims usually called 'placers,' including all forms of deposit, excepting veins of quartz, or other rock in place…" The 20-acre (80,937 sq. m) size of the claim was made under the code on subdivisions of 10-acre tracts (30 U.S. Code section 36, 3 March, 1891):

"NOTICE IS HEREBY GIVEN that the undersigned has located Twenty acres placer mining ground bear – lime– lime-fossil and other valuable minerals, situated on the North side of the Green River about 2000 feet in a Easterly direction from N.E. corner of Sec. 34, in No mining district Uinta County, State of Utah and described as follows…

THE MINING CLAIM SHALL BE KNOWN AS THE BRONTOSAURUS MINING CLAIM.

Located this 12 day of October 1909. Name of locators Earl Douglass."

The claim was officially filed at the General Land Office in Washington DC on 21 October, 1909. It is important to note here that the claim stated that the dinosaur bones were a "valuable mineral." This emphasis would change in the second mining claim filed as discussed below. Holland notified Andrew Carnegie, the major financer of the Carnegie Museum, of this claim in a letter describing his visit to the dinosaur quarry: " We have filed a placer claim upon which we are going to prove up and take title to the top of this mountain." (Holland to Carnegie, 30 April, 1910).

The decision to file the quarry as a mining claim was not without precedent for the Carnegie Museum. It had in fact, twice filed such claims in 1899 for sites in Wyoming, the most important of which was the dinosaur excavation at Sheep Creek:

"Know all men by these presents, That we the undersigned, citizens of the United States, over the age of twenty-one years, under the provisions of the Act of Congress entitled 'An act to promote the development of the mining resources of the United States' approved May 10, 1872, and the acts and parts of acts amendatory thereof and supplementary thereto, and the laws of the State of Wyoming, and in accordance with the local customs and rules of miners, have this day claimed and located, and by these presents do claim and locate, the following described placer mining ground, containing a valuable deposit of Fossil Bones and consisting of Twenty (20) acres, for mining purposes … situated in the No Name Mining District, Albany County, and State of Wyoming County, and State of Wyoming, together with all and singular the water and timber rights incident thereto, and all rights, franchises, easements and privileges thereunto belonging or in any wise appertaining.

This location and claim shall be known as the Brontosaur placer mining claim, and is claimed and located on the ground, this Twenty Fifth day of September, A.D. 1899 by Jacob Wortman."

This claim was accepted and filed by the County Clerk on 3 October, 1899 (CML Digital Collections).

Douglass had reasons to be concerned when he filed his first claim. University of Utah geology professor Frederick Pack read of the dinosaur discovery near Vernal and unsuccessfully sought to get funds for collecting dinosaurs from the state legislature. Pack was vocal about what he felt was the looting of Utah's fossils after a Carnegie Museum news release appeared on 3 January, 1910: "Press received from Pittsburg, Pa., by THE TELEGRAM today state that the director of the Carnegie museum has announced the discovery in Utah by a Carnegie exploring party of the bones of three specimens of dinosaurian." Pack was quoted in the article:

"…the location of these bones had been known at the university for a long time but on account of lack of funds nothing had ever been done toward excavating them. It is known that there are other bones of specimens of peculiar and mammoth [i.e. 'large'] animals in other portions of the state and the university will make an effort to get them as soon as it can afford to. At the last session of the state legislature a bill was introduced asking for an appropriation for the university to carry on this work but it was killed just about the time that its passage was predicted. A similar bill will be presented at the next session of the lawmakers. 'It's a downright shame that the University of Utah can't get hold of these specimens,' said Professor Pack of the geological department this morning. 'These discoveries are not only important to Utah but the entire world and I do not like to see the findings taken out of the state. We should retain them here for a great museum someday." (Salt Lake Telegram, Monday 3 January, 1910).

Pack would continue agitate for the state to keep the bones in the state:

"EMBARGO ON 'BONES' SOUGHT BY GEOLOGIST – Fred Pack, head of the department of geology at the University of Utah, and other scientists of the state, will ask the next Legislature to prevent or regulate shipments of the skeletons of prehistoric animals out of Utah. This announcement was made last night by Professor Pack, who says it would be a measure of neglect, chargeable to the people of the state, if all available skeletons are permitted to be quarried out for the purpose of mounting them in eastern museums." (Salt Lake Herald, 13 November, 1916).

There was, however, a very strong incentive for the state legislature not to interfere with the Carnegie Museum excavations by either preventing the dinosaurs from leaving the state or to fund a takeover of the quarry. Andrew Carnegie had already embarked on his library building program, which eventually resulted in 1,688 public libraries in 1,419 communities throughout the United States (Jones 1997). By the time of the Douglass discovery, there were already four Carnegie Libraries in Utah, at a cost of $58,500 [$1,542,188 in 2018 dollars). An additional nineteen would eventually be built in the state before the library building program ended in 1929. It is no wonder then that despite Pack's continued agitation for access to the quarry (e.g., Vernal Express, 11 November, 1919), the state legislature never passed legislation.

A second claim for the Douglass dinosaur quarry was made under the act of 4 August, 1892, which expanded the mining act of 1872 to include a portion of the Timber and Stone Act of 1878 (3 June, 1878, 45th Congress, chapter 151, 20 Statute 89; 43 U.S. Code 311 et seq.).

The revised act placed "lands chiefly valuable for building stone within the provisions of said law [mining act of 1872] by authoring a placer entry of such lands." (General Lands Office 1909, p. 33). The purpose of the original Timber and Stone Act was to find economical purposes for timber and stone on public lands deemed unfit for farming. By buying the land from the government, the owner was expected to show development through harvesting of trees or quarrying of rock. An important qualifier to the Act was that it did not prevent anyone from later laying a claim for the land to mine for gold, silver, cinnabar, copper, or coal. This qualifier would play an important role on the eventual fate of the quarry.

Douglass began the multistage process for the second claim on 27 May, 1911, with the emphasis on the quarry as a source of stone:

"Notice is Hereby Given, that the undersigned have located One Hundred and sixty (160) acres placer mining ground bearing stone for quarry purposes, situated in no organized mining district, in Uinta County, State of Utah…

This mining claim shall be known as CARNEGIE MUSEUM.

Name of locators Wm. J. Holland, Arthur Coggeshall, O.A. Peterson, Earl Douglass, Douglas Stewart, Louis Coggeshall, Pearl Douglass, T.W. O'Donnell".

Although the mining act specified "building stone", Douglass (or more likely Thomas O'Donnell, the Vernal lawyer representing the Carnegie Museum in filing the placer claim), attempted to skirt that restriction by excluding the word "building." Because the placer law only allowed 20 acres per person (General Land Office 1909, paragraph 29), it was necessary to list other claimants to reach the maximum 160 acres. The claim was recorded on 29 May, 1911. The claim was amended almost a year later (3 April, 1912):

NOTICE IS HEREBY GIVEN, that the undersigned desire to amend their notice of location, and hereby, by amendment, locate eighty (80) acres of the former one hundred sixty (160) acres located by them, and which location was made on the 27th day of May, 1911; and they do hereby locate eighty (80) acres of placer mining ground, bearing stone for quarry purposes, situated in no organized mining District, in Uintah County, State of Utah…."

Douglass was slow with the final step for the claim prompting some prodding by museum director Holland (letter to Douglass, 9 December, 1911): "As we have taken steps to secure possession of the property, it seems to me that it would be well for us to continue the process to completion." Why Holland felt the first claim made in 1909 was insufficient was never stated in writing. When Douglass did attempt to complete the filing, he was confronted by resistance from the county surveyor responsible for recording all claims. The surveyor cited the 1906 Antiquities "Law" [Act] as grounds for rejecting the claim (Holland to Douglass, 12 February, 1912). Holland was emphatic that fossils did not fall under that law:

"The law cited by the County Surveyor has no relevance whatever. I was perfectly cognizant of the passing of the law and was one of the parties who labored to secure the passage of the act. It was intended to preserve, as the law states, 'ruins, monuments, and historic or prehistoric antiquities', and had special reference to the dwelling houses of the Indians who occupied the mesas, and had nothing to do with fossils. The Government, the Geological Surveyor, and nobody else ever imagined fossils in rock came under the head of monuments or American antiquities. The claim is too preposterous to be considered for one moment. It is a most outrageous piece of quibbling. We are engaged in quarrying fossil bones, and the opening we have made is a quarry and it is quarry land, and we take it under the law made and provided as has been done in scores of cases before…

… no attempt made to do anything but carry out my orders, to wit, to file on that land and dig under the law, which is perfectly plain. The land should be obtained in our name as a 'quarry claim' at once, and I do not see what all this fuss is about. Find out where the nearest U. S. land office is and file your claim and complete the business transaction. Your friend the County Surveyor, or whoever it was, is completely wrong." (Holland to Douglass, 12 February, 1912).

Holland boasted of his involvement in the passage of the Act is exaggerated. His name does not appear in the documents relating to the development of the Act.

Holland added a postscript in the letter to Douglass stating that he had written to the Secretary of the Interior and to the Secretary of the Smithsonian Charles Walcott, the head of the United States Geological Survey when the Antiquities Act was passed, asking them each to write a letter confirming that the Antiquities law does not apply to fossil rock. The reply Holland got was not the one he was expecting. First Secretary of the Interior Samuel Adams wrote back that the "deposits in Uintah County cannot be taken under the mining laws or the timber and stone laws" (Adams to Holland, 11 March, 1912). This was followed by a letter authorizing the Carnegie Museum to excavate:

"Pursuant to their application of March 12, 1912, and under the provisions of the act of Congress approved June 8, 1906 (34 Stat., 225) [i.e., the Antiquities Act], Dr. W. J. Holland, Director of the Carnegie Museum, Prof. Earl Douglass, Prof. O. A. Peterson, and their assistants duly appointed and in the employment of the Carnegie Museum for said purpose are hereby authorized and permitted to enter upon the public lands of the United States in Uinta County, Utah, for the examination and exploration of same for fossils or the remains of prehistoric reptiles and to take from such land and permanently preserve for the use of the Carnegie Museum, such remains and fossils of scientific interest as may be found therein." (Adams to Holland, 15 March, 1912).

The Antiquities Act had a provision for obtaining permits for the excavation of non-renewable archaeological and paleontological resources, a crucial point glossed over by Neel (1990, 2007 footnote 5). The issuance of permits given in section 3 of the Act was the federal government's method of validating and regulating who could or could not excavate, investigate, and remove objects from public lands (Browning 2003). Between 1906 and 1935, 338 permits were issued, of which 64 were for paleontological excavations, including nine to the Carnegie Museum for work at the dinosaur quarry (1908, 1912, 1916–1922; Browning 2003). Thus, contrary to Beidleman (1966, unpaginated "The Carnegie Museum Quarry Permits"), Dinosaur National Monument was not "unique among national monuments as one from which articles of scientific interest could actually be removed." Permits were in fact issued for excavations at archaeological national monuments (e.g., permit issued on 16 June, 1919 for the American Museum of Natural History to excavate at Pueblo Bonito at Chaco Canyon National Monument, Mather 1919).

The fact that Douglass had not previously finalized the mining claim drew Holland's ire in the same letter in which he reprimands the surveyor:

"I ordered you some time ago to complete filing our claim under the law provided for the taking up of 'quarry-land.' We have done more than enough work as required by the law, and under the law as I

understand it, all that remains for us to do is to pay $2.50 an acre for the land. I want you to take up the two 40's as you suggested doing in your letter. That would be 80, which at $2.50 an acre would amount to $200 [$4,974 in 2018], and you are, hereby authorized to take a deed for this, property in the name of W. J. Holland, Director of the Carnegie Museum, as I told you in my former letter, and to pay $200, and give your check, notifying us that you have given your check, and we wi1l meet the draft. There is no use of having any nonsense or further foolishness about this matter." (Holland to Douglass, 12 February, 1912).

Holland laid out his reason for wanting the museum to take ownership of the land in a separate letter, "I do not propose to be annoyed by a repetition of the experience I had in Nebraska, where, after working for several years on a piece of land of this sort, another man stepped in and claimed it, having settled in the neighborhood." (Holland to Douglass, 12 March, 1912). In this story, Holland was referring to the case where rancher Harold Cook staked a homestead on land that incorporated sites being excavated by the Carnegie Museum (Vetter 2008). The land was initially in the public domain when the museum started excavating a deposit of Lower Miocene bones in August 1904. By staking a homestead claim, the hill became the property of Cook, who then controlled access.

Despite getting a letter in March 1912 from First Assistant Secretary Adams stating that the mining claim would not be valid, he wrote nothing of this to either Douglass or to the lawyer O'Donnell. Perhaps he thought the General Land Office would have a different interpretation and allowed Douglass to proceed. Douglass completed the final step to the filing and soon after Edgar Harmston, a government mineral surveyor, made a survey of the Carnegie Museum placer claim (Duchesne Record, 12 July, 1912). His report to the Commissioner of the General Land Office in Washington D.C., would eventually have profound impact on the status of the quarry as we shall see below (see paragraph 167 of the General Land Office Regulations 1909, for details of what went into such reports).

In August 1912, the lawyer Thomas O'Donnell, asked that everyone, the "locators", to "quickclaim", or relinquish their stake in the placer claim to Earl Douglass. Douglass would then act as the representative for everyone listed in the claim filing (see above). Once the patent, or legal title, to the claim was received from the Department of the Interior, then Douglass could transfer the deed over to the Carnegie Museum (O'Donnell to Holland, 16 August, 1912).

Douglass eventually received from Hull a plat (i.e., map showing the legal boundaries) made by Edgar Harmston's survey for the "Carnegie Museum Placer". Under the law, Douglass had to post notice of the claim in the Vernal Express for 60 days (Douglass to Holland, 24 January, 1913) thereby letting everyone know the land is being claimed and giving time for challenges. The notice first appeared on 31 January, 1913 and stated: "Earl Douglass … has made application for a patent for eighty (80) acres of land containing stone of commercial value and rock in place, and which said land is known and designated as the Carnegie Museum Placer Claim…" This was followed by a lengthy legal description of the boundaries. The $200 fee for the Douglass claim was finally paid on 3 April, 1913 (Douglass to Stewart, 3 April, 1913). Douglass had previously stated that the whole process of getting a patent for the claim was taking long because of "red tape" (i.e., excessive bureaucracy) (Douglass to Holland, 30 January, 1913).

Unfortunately for Douglass and Holland, there was a change in Commissioners of the General Land Office a few months later. Clay Tallman replaced the more lenient Fred Dennett on 5 June, 1913. Whereas Dennett accepted the mining claim filed by Douglass in 1909, Tallman felt that the new application did not meet the requirements of the law as he noted in a letter to Charles DeMoisy, the registrar in the Vernal Land Office:

"In the matter of mineral entry 04764, made April 5, 1913, by Earl Douglass, for the Carnegie Museum placer claim, survey 6206, the only statement made by claimant, regarding the mineral deposits on this claim, is [that the] "…mining claim containing stone of commercial value, and rock in place and other mineral". This statement is very meager, and insufficient to satisfy the requirements of the regulations under paragraph 60, which provides that if the mineral be a building stone, or other deposit than gold, claimed under the placer laws, claimant must describe fully the kind, nature, and extent of the deposit, stating the reasons why same is by him regarded as a valuable mineral claim.

There is given some idea of the nature of the deposit in the report of the mineral surveyor, by the statement that, "This claim is adapted for mining for the fossil remains of dinosaurs and other prehistoric animals x x x [sic]. The ridge, shown upon the accompanying plat as Fossil Reef, contains fossil remains of prehistoric animals throughout its entire length upon this claim, but at no other point in such abundance as at the point at which the open cut shown upon the plat is being excavated".

The land appears to be valuable and to be desired chiefly because of the presence of the remains of the prehistoric animals which may be sold to museums or other parties, probably at a large profit over the cost of removing the substance. There is no mining law under which lands containing such deposits may be located and entered. The placer mining laws, in so far as they relate to deposits of stone, apply to lands valuable for material used in building…

Accordingly, in the absence of showing that mineral, sufficient in quantity to justify a prudent man to develop a valuable mine, as actually been discovered within the limits of this claim, the entry must be canceled and the location declared null and void." (Commissioner to DeMoisy, 24 July, 1913).

The " regulations under paragraph 60" mentioned by Tallman refers to the regulations the General Land Office (1909) used to ensure compliance to the mining act.

DeMoisy wrote to Douglass that it was necessary for him "to furnish a further showing as to the mineral character of your Mineral Entry, Serial No. 04764, for the Carnegie Museum placer claim, survey No. 6206…" (DeMoisy to Douglass, 21 August, 1913). Douglass was given thirty days in which to respond, otherwise the claim would be cancelled. Douglass quickly responded stating that he was acting under orders of the Carnegie Museum in submitting the claim and that there were two points as to why this was done (letter to the Commissioner of the General Land Office, 17 September, 1913). First, the submission was to be a test case to have the Secretary of the Interior declare:

"that petrified or mineralized bones are minerals. The fact that the mineral substance preserves the forms of dead animals has been by the [Carnegie Museum] Director claimed as in his judgment not militating (if the matter is considered in its true light) against regarding the substance as mineral. Coal is fossil vegetable matter, but no one will dispute that coal is a mineral. The bones that we have been extracting from this quarry are fossil matter from which all of the animal substance has been removed and has been replaced by silicon or lime, which no one will dispute are minerals."

The second point was:

"My motive for inserting 'building stone as found on spot', was to conform to the language of the law… The statement that there is valuable building stone on the tract in question is absolutely true, and a prudent man might utilize it for building purposes. Furthermore, there is a deposit of limestone upon the tract which could be utilized for the making of lime, which is otherwise scarce in the region. My motive in filing claim in the way I did was to comply with the form of the law so far as I was personally concerned."

Douglass also added that museums needed to gain control of the site of excavations:

"Past experience has in several cases shown us that after having made discoveries of importance and valuable to science, other parties [the Cook incident], learning-of this fact, have come in and gained possession of the land upon which our discoveries have been made, have purchased land under various claims as grazing tracts or as farm land, and then have turned around and compelled us, after we have expended a large amount of money in developing the territory, to pay tribute to them for permission to carry on the work which we originally began.

… Now the time has come, in the judgment of the Director of the Museum, when an attempt should be made to protect the rights of institutions which are willing to invest large sums for the advancement of science, either by obtaining a ruling such as I have suggested, or by securing supplementary legislation."

In the response to the appeal by Douglass, the First Assistant Secretary Andrieus A. Jones revealed what Surveyor Harmston's report included:

"This claim is adapted for mining for the fossil remains of dinosaurs and other prehistoric animals * * * [sic] the ridge shown upon the accompanying plat as Fossil Reef, contains fossil remains of prehistoric animals throughout its entire length upon this claim, but at no other point in such abundance as at the point at which the open cut show upon the plat is being excavated."

Jones then continues:

"The record discloses that the fossil remains of the prehistoric animals have been excavated for uses in scientific investigation. The Commissioner held that they are not subject to entry under the mining laws of the United States…

The mineral character of the land is established when it is shown to have upon or within it such substance as –

(a) is recognized as mineral, according to its chemical composition, by standard authorities on the subject; or–

(b) is classified as a mineral product in trade or commerce; or–

(c) such substance … as possess economic value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts…

The question as to whether fossils could be considered minerals under the mining law had been raised previously on behalf of the Carnegie Museum in 1899. In that case, Stephen Downey, a real estate lawyer from Laramie, Wyoming, was hired by the Carnegie Museum to file mining claims for dinosaur sites in Wyoming. One of these was the Sheep Creek site mentioned previously. Downey telegraphed the General Land Office in Washington on 29 April, 1899, as to whether fossil deposits could be claimed under the mining law. In reply, Downey was told

"On February 8, 1898, the Secretary [of the Interior] had before him on appeal a case entitled The South Dakota Mining Company V. McDonald, in which this question arose, but no final decision was reached, the case being returned for a further hearing, and it has not yet been returned to the Department. I suppose the question will be, if the land is suitable for agricultural purposes at all, whether it is of more value for that purpose than for the sale or exhibition of the fossils thereon, as I am inclined to believe that fossils would be regarded as a species of mineral but, as I before said, the question is still an open one, never having been finally determined by the Department." (Dawson to Downey, 29 April, 1899).

Jones in his letter to Douglass also that the Carnegie quarry was

"…analogous in principle to that of South Dakota Mining Company v. McDonald (30 L. D. 357), in which it was held that, syllabus D-25353, Land not shown to contain deposits, in paying quantities, of any of the mineral substances usually developed by mining operations but which appears to be valuable and to be desired by the parties attempting to secure title thereto chiefly because of a cave or cavern the entrance to which is situated thereon, and for the crystalline deposits, and formations of various kinds … which are made the subject of sale by the parties not as minerals but as natural curiosities, is not mineral land within the meaning of the mining laws.

The decision of the Commissioner holding that the character of the deposit here claimed is not a mineral within the meaning of the mining laws is correct and the action in cancelling the mineral entry is hereby confirmed." (response of Jones to Douglass, 6 August, 1915).

Douglass passed the document on to Holland with the comment:

"Notwithstanding the decision it seems to me it [i.e., the claim] comes plainly within the law. It is emphatically for "scientific purposes" and the material is most certainly mineral as could be easily shown by an analysis of their chemical constituents. No Mineralogist, Geologist, or chemist could claim that they are now anything else.

If we could get a reopening of the case and get to work on the matter we could surely crush such a decision by the weight of evidence -- testimonies of scientists, quotations from works of authorities, chemical analyses etc. We probably have trouble only with mining men who are not supposed to know what mineral is.

I cannot help believing that if we can get the personal attention of the Secretary himself the decision would be reversed. It is not just that men should be able to get hold of the mineral wealth of the earth for personal gain and educational institutions not be able to obtain it for scientific purposes for the enlightenment of the people.

We do not want to push this thing through without the weight of your authority, knowledge, and prestige, yet if there should be delay on account of the distance or your absence from home or from any other cause I will act as I am sure you would wish me to act and be sure that our plea for a reopening of the case is presented in time.

You could save considerable time by writing or wiring directly to Thos. W. O'Donnell, Attorney, Vernal, Utah, and he could phone to me or write.

I think you agree with me that this is a very import question not only to us but to science at large." (Douglass to Holland, 28 August, 1915)

Holland followed through with Douglass's suggestion that he contact the lawyer O'Donnell to get a rehearing the case (Holland telegram to O'Donnell, 16 September, 1915). O'Donnell prepared a lengthy legal brief in which he wrote:

"(1) That the Secretary erred, in holding that the character of the deposit here claimed is not mineral within the meaning of the mining law.

(2) That the Secretary erred in holding that the mineral was not such a substance as possesses an economic value for use in sciences.

… The controlling factor herein in this case, and in determining the question of whether or not this claim is such as to be subject to patent, is not whether the mineral therein contained is within the 'present' meaning of the mining laws, but whether or not its mineral elements are such as to be susceptible of being extracted and possessing an economic value for use in the sciences (as found under subdivision 'C' of the Secretary's decision given). We take it from the application made for patent herein, and on file, and from the fact that fossils of dinosaurs and other prehistoric animals are being mined here and elsewhere in this country, the Secretary will take judicial notice of the fact that such fossils are of mineral substance, and possess all of the characteristics chemicals and otherwise, sufficient to designate and classify them as mineral... [T]he said fossils are not being made the subject of barter and sale, but are being mined, preserved and restored for the benefit and advantage of science, and their usefulness and economic value comes clearly within the premises set forth in subdivision 'C' of Section 98 (heretofore quoted).

We are convinced that this claim possesses mineral deposits in the nature of mineral fossils, in sufficient quantity to justify its development; that it is land which is 'chiefly valuable' for other than agricultural purposes, and that as such land it is chiefly valuable for its deposits of a mineral character which are useful in the interests of and to the advantage of science…" (Donnell to the Secretary of the Interior, 18 September, 1915, quoted in Beidleman 1966).

Douglass renewed a suggestion to Holland that he thought would strengthen their case: "Perhaps you have thought of the matter and acted on it but if not do you not think it best, to have a chemical analysis made of fossil bone from the quarry so as to put our case beyond dispute if we get a rehearing or review of the case? That, if no other evidence ought to settle the matter, and nothing but arbitrary stubbornness would keep us from our right." (Douglass to Holland, 6 October, 1915). Little did Douglass know that the area had been declared a national monument two days earlier.

Dinosaur Quarry Becomes a National Monument (1915)

In Washington, the First Assistant Secretary of the Interior Andrieus A. Jones was sympathetic to Douglass in his attempt to protect the Carnegie dinosaur quarry (Jones to Douglass, 6 August, 1915). The same day Jones wrote to Douglass notifying him that the mining claim had been cancelled, he also wrote to Frank Lane, the Secretary of the Interior, recommending that the land be set aside as a national monument as a way of protecting the site (Beidleman 1966). The Secretary requested that Frank Bond, Chief Clerk of the General Land Office prepare a proclamation for Presidential signature. Bond was responsible for national monuments on Department of the Interior managed lands, as well as to evaluate national monument proposals (Rothman 1994). Bond prepared the proclamation and passed it on Clay Tallman, Commissioner of the General land Office on 21 August, 1915, with a memo expressing concern about the appropriateness of making the site a national monument:

" I think the National Monument Act [i.e., the Antiquities Act of 1906], while broad enough in its expression to cover this case, was not intended to protect objects solely for the time it would take to remove them. A fossil quarry can have no interest or value other than that which attaches to the objects removed there from and when this removal is accomplished there will remain no excuse for perpetuating the reservation. In all other National Monument Reservations, the objects protected are not intended to be removed, but rather made accessible for the benefit of science. With this end in view, the historic and prehistoric ruins of the several existing monuments are restored, or are to be restored by the most competent authority, to their original condition as far as possible, thus making the reservation not only more attractive and profitable for study and observation, but also permanent in the place where erected.

As stated in the letter to the President, the lands included within this monument are already covered by coal and phosphate withdrawals, so that with the rejecting of mineral entries [i.e., the Douglass mineral claim] no other form of entry is possible therein as long as these withdrawals stand and further only such excavations can lawfully be made as may be authorized by Departmental permits granted for the purpose. If there is a possibility that the withdrawals for coal and phosphate may be vacated, then the fossil deposit could be protected until its treasury were removed under the Act of June 25, 1910, and it seems to me that this withdrawal would be more fitting than the creation of a National Monument, and equally protective.

There is one other consideration which should occupy or attention in connection with the creation of National Monuments and that is granting permits to unofficial persons or institutions to excavate and restore, or pull down and cart away. The National Monuments should continue to be small National Parks, administered for the education and enjoyment of the people and to promote this end, I believe this Department [i.e., Interior] can profitably confer, and I hope, enter into formal agreements with other Departments and the Smithsonian Institution, not to issue permits either for the development or destructive purposes within these reserves [i.e., national monuments]." (quoted in Beidleman 1966).

Some of the objections raised by Bond about excavations are similar to those raised about authorized archaeological excavations that William Douglass wrote on 3 March, 1909 to the Commissioner of the General Land Office in Washington (Rothman 1994). The reference to the Act of June 25, 1910 in Bond's memo about the proposed monument was to the Withdrawal of Public Lands Act (chapter 421, §1, 36 Statute 847), whereby the President could " temporarily withdraw from settlement, location, sale, or entry any of the public lands of the United States... and reserve the same [land] for water-power sites, irrigation, classification of lands, or other public purposes to be specified in the orders of withdrawals, and such withdrawals or reservations [i.e., land set aside for a specific purpose] shall remain in force until revoked by him or by an Act of Congress." Applying this act would, from Bond's point of view, allow the President to restrict who could access the land the dinosaur quarry occupied, and thus avoid establishing a national monument that would be stripped of the fossils it was supposed to protect.

Endorsing Bond's memo, General Land Office Commissioner Clay Tallman sent it and the proclamation to First Assistant Secretary Jones on 24 August, 1915 for consideration. Jones passed on the proclamation, and presumably the memo, to Secretary Lane, who a month later passed the proclamation to President Wilson along with a cover letter explaining the need for a national monument:

"This reservation [i.e., the national monument] is created to prevent unauthorized excavation and removal from the reefs [i.e., ridge of rock] of Juratrias rocks, here partially exposed, of the fossil remains of Dinosaur and other early reptilian forms of great scientific value and

paleontological interest. These fossil beds have been partially exploited by the Carnegie Museum, Pittsburgh, through a permit issued by this Department [Interior] on March 15, 1912. Recently an attempt to obtain title from the Government through the medium of an entry [i.e., claim] under the mining laws was prevented by cancellation of the entry while other forms of entry are temporarily prevented by the coal and phosphate withdrawals covering the tract, it is deemed best to create a permanent reservation under the provisions of the act referred to [i.e., Antiquities Act].

These tremendous fossil remains, probably of the Jurastrias period, exemplify some of the extraordinary forms of early reptilian life on the globe. They should not be lost to science by the haphazard and unauthorized excavations of speculators or vandals, nor should the best of them, I think, be scattered among institutions of learning the world over, until this Government has in its great museum [i.e., Smithsonian Institution], a full representation of the principal and most extraordinary types." (Lane to President Wilson, 27 September, 1915, in Beidleman 1966).

Jones and Lane undoubtedly discussed the Bond memo, which may explain the month-long lag between Jones passing all the documents to Lane, and Lane submitting the proclamation to President Wilson. The cover letter lays out three points why the Withdrawal of Public Lands Act as recommended by Bond was not used to protect the Carnegie Quarry. First, was the desire to establish a permanent, not temporary solution towards the preservation of the fossils on public land. Second, was to prevent unauthorized excavation or vandalism of the fossils. Third, was to ensure that the Smithsonian Institution had an opportunity to add specimens from the quarry to its collection. This latter point suggests that Jones and/or Lane had discussions with Secretary Walcott of the Smithsonian Institution prior to the writing of the proclamation.

Douglass was caught unaware when the 80 acres covered by the land claim was established as Dinosaur National Monument by the signature of President Wilson on 4 October, 1915 (Appendix II). Douglass wrote to Holland:

"There is a persistent report in the newspapers that President Wilson, by proclamation has made the Dinosaur Quarry a National Monument. As I have had no notification of the fact from any authority I am in the dark as to how this, if true, will affect the Carnegie Museum and our work at the quarry. I surmise, however, that the question of patenting the land took you to Washington to see Secretary Lane and that it ended by requesting the president to proclaim it a National Monument. If so I feel that our interests are safe. I see another possibility; that it may have come from Utah with a design to shut us out here. I know that for a long time some [Frederick Pack] have wished to retain the material, or part of the material, here, and to get a skeleton for the state museum. Yet this idea seems idle as there surely is not influence enough in the state to shut us off so quickly without a chance to do anything for ourselves." (Douglass to Holland, 25 October, 1915).

The monument designation was confirmed when Douglass received official notice from Jones that the claim rehearing has been rejected: "In this connection [the appeal], however, your attention is directed to the fact that by proclamation of 4 October, 1915, the area included in your claim was created into a national monument for the purpose of preserving the remains or fossils on account of which the location was made." (Jones to Douglass, 16 November, 1915). The official notice of the cancellation of the claim was published in Decisions of the Department of the Interior in Cases Relating to Public Lands (Hesselman 1916).

Even after a month, Douglass still did not understand how the national monument came into being, "I am as much in the dark as to how it came about as ever" (30 November, 1915). Holland was evidently caught by surprise too, as he wrote Douglas:

"I can only say that I think there has been some underhanded work going on – though in this surmise I may be mistaken. The Carnegie Museum never requested that that hole in the ground which we have made should be set aside as a national monument. In your early correspondence about the matter you informed me that the man in the Land Office at Vernal had suggested that that ought to be done. If he has undertaken to act as the representative of the Carnegie Museum in the premises he has simply transcended his rights and authority…

I shall, as soon as I possibly can, go to Washington and make application for permission to conclude our work in that region without interference on the part of people who would like to rob us, if they could, of the results of our expenditures of labor and money." (Holland to Douglass, 30 November, 1915).

In the same letter, Holland was quite scathing regarding the establishment of the national monument:

"… The hole we have made on that hillside is not different from holes we might have made in other places where there are fossils, and to set aside a bit of barren ground whenever there are fossils contained in it as a national monument strikes me as one of the most absurd proceedings imaginable… There are ten thousand other places in the mountains of the West where there are fossils sticking out of the rock, which the rustics, who live on the land, are unable to distinguish from ordinary pebbles, and which are just as well worthy of being consecrated as 'national monuments' as is this spot. The trouble with the whole matter is that there has been too much talk about the whole thing, and about our business, and a horribly exaggerated frame of mind has been thereby induced on the part of the ignorant rural population in that part of the world as well as in the minds of ignorant officialdom generally. Whatever value is attached to the spot is due to the fact that Mr. Carnegie's money gave an opportunity for you to show your energy in getting out the remains. When they are out, as you know, there will be nothing left but a hole in the ground. Wonderful monument!... I will go down to Washington as I can and if possible get an interview 'with President Wilson and the Secretary of the Interior, and get things fixed up. The whole thing suggests to me that a kindergarten for the education of officials ought to be started in Washington, – but you do not need to repeat what I have said. This is strictly for private consumption and not to be talked about." (Holland to Douglass, 30 November, 1915).

In response to this letter, Douglass was more philosophical in his reply to Holland and was willing to accept that the national monument was a done deal:

"… But the thing has been fully decided and I understand there is no appeal in heaven or earth ...

But it has become wholly a practical matter and I suppose it isn't necessary that we understand the technicalities if we are permitted to get what we were after. I think there is no doubt that the Secretary will grant us a permit if we make proper application.

I hope that you will be able to see personally to the matter as there might be some advantage gained and a better understanding. Sometimes a personal face to face discussion of the matter makes things look differently." (Douglass to Holland, 10 December, 1915).

Holland made a trip to Washington and met with the Secretary of the Interior on New Year's Day to discuss the establishment of the national monument. What he learned mollified him, as he wrote to Douglass:

"While in Washington I made it a point to call upon the Secretary of the Interior, and to run down the matter of our tenure of the land in which we have been working for the past years. I had the whole file of papers before me, and read all the correspondence. Without attempting to go over the multiplicity of details involved in the matter, I may epitomize by saying that the making of the land covered by our "Mineral Claim" into a "National Monument" was based, as it was explained to me, upon the fact that after having disallowed our claim, the only way to protect us from designing private individuals was to withdraw the land in the way which has been done." (Holland to Douglass, 1 January, 1916).

He elaborated more in another letter:

"Everything so far as our work in the quarry is concerned is all right now at Washington. It has been explained to me that all of these lands in that immediate vicinity have been withdrawn from occupation because they are supposed to contain coal and phosphate deposits, and that the only way to protect us in our rights was to withdraw the portion covered by our mineral claim and set it apart as a national monument under the law of 1906." (Holland to Douglass, 12 January, 1916).

The land on which the quarry sat was indeed part of the Coal Land Withdrawal–Utah No. 1 signed on 7 July, 1910 by President Taft (McPhaul, Acting Assistant Commissioner of the General Land Office, Washington DC, to the Register and Receiver, General Land Office in Salt Lake City, 21 July, 1910). It also occupied land set aside as Phosphate Reserve No. 24, Utah No. 3, signed on 11 May, 1915 by President Wilson. The withdrawals meant no other claim could be made on the land and that if anyone wanted to mine the coal or phosphate, they could force the Carnegie Museum off the land. Coal was in fact being extracted from the Bowen Mine along Brush Creek in the Upper Cretaceous (Turonian) Frontier Formation, a mere 8.3 km (5.8 miles) west of the quarry at the southwestern corner of the Split Mountain Anticline (Gale 1910). Douglass relied on that coal as he noted in his diary: "Joe [Ainge] went this morning to get a load of coal at the coal bank on Brush Creek." (Douglass diary, 11 January, 1910).

Thus, making the quarry land into a national monument superseded the coal and phosphate withdrawals, thereby protected the Carnegie Museum's interest. It was certainly not a "legal blockade by the GLO masked certain professional jealousies among scientists and their institutions. The government's refusal of the land purchase had been deliberate, an effort to protect scientific resources from falling into the hands of private museums" as claimed by Harvey (1991, p. 249-250). Nor was creation of the monument in response to a supposed "stiff refusal" by the Carnegie Museum for a cast of the Diplodocus carnegii requested by the National Museum (Harvey 1991). Andrew Carnegie, not Carnegie Museum Director Holland determined who would get a cast of that skeleton:

" Mr. Carnegie declined to allow replicas to be presented to more than one Museum in one country, and even declined to allow one to be presented to the National Museum at Washington, saying that the existence of the original in the great Museum which bears his name at Pittsburgh was enough." (Holland to Don A.L. Herrera, 1 October, 1928).

Even so, the Carnegie Museum provided the Smithsonian with casts to complete the mount of the Diplodocus skeleton they excavated from DNM in 1923 after the Carnegie Museum stopped work there (Gilmore 1924). Holland (23 October, 1923), in fact, wrote to Mrs. Carnegie that casts will be sent "in order to set their specimen upon its feet", which is certainly a sign of cooperation between museums.

Dinosaur National Monument: Setting Policy (1915)

When Jones wrote to Douglass rejecting the claim appeal, he suggested to Douglass that the Carnegie Museum submit an application to continue excavating as allowed by the Antiquities Act (Jones to Douglass, 16 November, 1915). Douglass sent a telegram to Holland suggesting he do that (Douglass telegram to Holland, 29 November, 1915). Holland wrote the Department of the Interior on 6 December, 1915 for a permit to continue the work. Because there was not an immediate response Holland felt that there must be scheming against the Carnegie Museum as he wrote to Douglass rather crudely: "I wish to know, however, where you think we are likely to be met with opposition in our activities [to get a permit]. That there is a 'nigger in the woodpile' somewhere, I am very sure." (Holland to Douglass, 13 December, 1915). The American idiom 'nigger in the woodpile' originates in the Nineteenth Century when it referred to hiding escaped slaves under piles of firewood. It later came to mean some fact of considerable importance that is kept hidden, i.e., not disclosed (Conforth 2013). Its usage has fallen off in the latter half of the Twentieth Century as using an inappropriate slang for a black person.

Holland again wrote of his suspicions to Douglass:

"As I think I wrote you in my last letter, I have made application to the Secretary of the Interior for permission to carry on our work, and I have requested the head of the Geological Survey and also Dr. Walcott [Secretary of the Smithsonian Institution], to put in a laboring oar on our behalf, so that our wishes may be complied with. I have heard nothing from Walcott or from Dr. Smith of the Survey, and not a line has been received from the Secretary of the Interior. I wonder what kind of a 'nigger' has crawled into our woodpile, or whether the delay is simply due to the fact that we are dealing with large bodies, which traditionally move very slowly." (Holland to Douglass, 16 December 1915).

There were in fact some maneuverings that had been going on in Washington D.C., but not due to "intense competition" between the Carnegie Museum and Smithsonian Institution contrary to Harvey (1991) or Neel (2007). The famous feud and rivalry between O.C. Marsh and E.D. Cope (Shor 1974) was becoming a thing of the past. One of the last "feuds" over fossil sites involved one of O.C. Marsh's former collectors, Bill Reed, the University of Wyoming where he worked, Wilbur Knight also of the University of Wyoming, and the Carnegie Museum (Reed, Holland, Wortman letters 1898-1899, Carnegie Museum archives; see also Rhea 2001). Instead, the Progressive Era saw steady increase in cooperation among museums culminating with the establishment of the American Association of Museums 1906 (Freece 2009). Holland wrote of this to Andrew Carnegie, "…your Museum in Pittsburgh led in the movement to create the American Association of Museums for the express purpose of avoiding unnecessary duplication of work… We are not "robbing" other museums, but in the spirit of amity stand in relations of exchange with all museums throughout the world." (Holland to Carnegie, 8 April, 1913). Further evidence of this cooperation among museums is seen by the exchange of casts, specimens, personnel, and access to specimens for research (e.g., Hatcher to Holland, 31 January, 1902; 30 April, 1902). Henry Osborn of the American Museum of

Natural History, even arranged for the Carnegie Museum to obtain a fossil skull from the Smithsonian Institution to complete a mounted skeleton (Osborn to Lucas, 26 June, 1903 and Lucas to Osborn, 30 July, 1903).

During Holland's meeting with the Secretary of the Interior on New Year's Day, he also learned the cause for the delay in getting a response to his request for a permit:

"Now it happens that under the act of 1906 the oversight of the so-called "National Monuments" has been relegated to the Bureau of Ethnology. Therefore, all the papers, including my application for permission to continue our work went over to that Bureau. They recognized that dinosaurs are not archeological objects. The papers were accordingly sent over to the Geological Survey and to Dr. Walcott of the Smithsonian Institution. Walcott has been busy, and so has George Otis Smith, the head of the Geological Survey. I saw both of them and urged prompt action, and both of them have assured me that they will do their part, and recommend that we be allowed to go on with our work." (Holland to Douglass, 1 January, 1916).

Holland's request for a permit highlighted that the Department of the Interior had not yet established regulations for national monuments. The Assistant Secretary of the Interior Stephen Mather contacted Walcott on 11 December, 1915 asking for help developing a "general policy of granting permits to individuals or organizations to collect on Government ground, fossils or other objects that were of scientific rather than commercial value" (Beidleman 1966). Walcott was still thinking about this when he had a meeting with Holland on New Year's Day. As Holland related in a letter,

"… it appears that certain parties in Utah [Frederick Pack at the University of Utah, Browning 2003] some years ago obtained a permit to carry on excavations under the Act of 1906, and then failed to use it, but held it as a means of preventing other parties from entering upon the territory. The permit was accordingly cancelled, whereupon the parties raised a howl and sent Senator Smoot and some other people to Walcott and raised a row in his office, but without effect. Walcott asked me to state what my judgment in such matters was. I told him that permits should not be issued for more than two years, with the right of renewal, if real work is being done. He agreed with me that this was a sensible view of the matter, and I think that the permit, if issued to us, will contain such a proviso. "Holland to Douglass, 1 January, 1916).

Walcott passed on Holland's recommendation for a two-year time limit for permits to Mather and added that "it would not be just but desirable to permit the Carnegie Museum to continue the excavations which would permit the removal of the bones already exposed and also to continue the excavations under a permit having a time limit on it." In addition, the right of renewal could be made "provided that the work was carried on in good faith (Walcott to Mather, 3 January, 1915, in Beidleman 1966). Holland got what he wanted, so it seems doubtful that the time limit on permits was a ploy by Walcott to make it possible for the Smithsonian to move in at the end of a permit cycle when it had the funds contrary to Beidleman (1966) and Harvey (1991).

A permission letter to Holland was written on 8 January 1916 by Bo Sweeney, Assistant Secretary of the Interior that set forth some conditions, but with only a one-year limit:

" The Department duly received your application of December 6, 1915, requesting in behalf of the Carnegie Museum, Department of the Carnegie Institute of Pittsburgh, Pennsylvania, permission to gather and remove from the area embraced within the Dinosaur National Monument, Utah, set a side by proclamation of the President dated October 4, 1915, fossils and other objects of scientific interest, with a view to their permanent preservation in the Carnegie Museum at Pittsburgh."

The Secretary of the Smithsonian Institution, in accordance with the regulations of this Department, having recommended that the Museum be permitted to continue the excavations inaugurated by it prior to the creation of the said national monument, the Carnegie Museum, through its duly authorized representatives, is hereby granted authority, pursuant to the act of June 8, 1906 (34 Stat., 225) and to interdepartmental regulations dated December 28, 1906 (copies herewith), to conduct such examinations and excavations and to gather such fossils and objects of scientific interest as it may desire during the year 1916 within the said Dinosaur National Monument. All work under this permit is to be conducted under the general supervision of the Director of the Carnegie Museum, who shall have the right to designate such persons experienced in archeological research to carry on the work.

At the expiration of this permit, the requirements of the regulations above mentioned having been faithfully observed, the Department will favorably consider a renewal thereof, if desired, during the year 1917. At the conclusion of the year 1916, a list describing the specimens collected and the work done and a plat [i.e., quarry map] showing the locality from which said specimens were taken should be forwarded to the Secretary of the Smithsonian, and a copy thereof forwarded to this Department for its information and record."

Holland wrote to Douglass about the permit and pointed out some of the conditions it set forth:

"You will observe that at the expiration of the year 1916 an application from us to continue our work will be considered, and so on from time to time, until we may finally adjudge that it is no longer expedient for us to carry on our work in that spot. I wish especially to call your attention to the fact that at the end of the present year we will be required to exhibit a plat, which would be a reduced plan of the quarry [i.e., map of the quarry], with such extensions as we may make during the present year, showing location of various bones contained therein." (Holland to Douglass, 12 January, 1916).

Now that he understood the reason for the creation of the monument and had a hand in creating permit policy, Holland's cooperative tone towards the Department of the Interior was very different from the combative tone in his letters to Douglass in November and December 1915. He was very conscientious of the obligations under the permit and pressed this with Douglass:

"I am very anxious that everything should be accomplished that can be accomplished to secure a good representation of what remains in that quarry, but you must understand that permission to continue our work there will depend wholly on the manner in which the work we are doing approves itself to the authorities at Washington. They have in their communications indicated that we can continue from year to year to carry on our work provided the work is prosecuted with vigor. I look to you to see that this is done." (Holland to Douglass, 3 April, 1916)

At Douglass' prompting to avoid a lag between the end of the permit and the issuance of another (Douglass to Holland, 9 November, 1916), Holland writes to Walcott well before the end of the year (29 November, 1916) imploring that permission be given to continue excavating in 1917, especially in that several skeletons were exposed and some were

partially collected previously. Walcott writes to Holland that he would recommend to the Department of the Interior that permission should be given; this was approved in early January 1917.

The Smithsonian and University of Utah Take Over (1919–1924)

On 25 August, 1916 responsibility of Dinosaur National Monument transferred from General Land Office to the newly formed National Park Service (NPS). However, the Park Service did not take over issuance of permits until 1919, when they issued their first permit to Holland (Mather 1919, p. 120). Permission to continue excavations at DNM would be repeatedly granted until the Carnegie Museum decided to halt operations at the end of 1922 when that permit expired. The decision to halt further work was not due to financial reasons after the death of Andrew Carnegie in 1919 as has been stated (e.g., West et al. 2001). Carnegie's wife, for example, paid the expenses for a cast of Diplodocus carnegii installed at the National Museum of Mexico in 1930 as noted by Holland: "You understand of course that all the expenses are borne by Mrs. Carnegie through the subvention granted to me by the Carnegie Corporation…" (Holland to Ochoterena, 10 December 1929).

The decision to halt work did not come suddenly, but had been considered by Holland for some time as related by Douglass: "The question of continuing operations had been considered at intervals ever since the beginning" (Douglass annual report for 1923). But each time, a new discovery or more articulated specimen would lure the museum to continue the work. In 1917 however, Holland for the first time was seriously considering stopping work because of the discouraging results as he related to Douglass: "a good deal of the material is, as you are aware, extremely fragmentary. The truth is that this is becoming what we know as a 'general quarry.'" (Holland to Douglass, 27 June, 1917). This was followed a few months later with "I do not imagine that the place [east end of quarry] is going to yield us much more in the future than it has in the past. A good deal of the stuff which we have here appears to be more or less in the nature of flotsam and jetsam, and [fossil preparator] Arthur and the boys are pretty well discouraged with what they find out in opening the packages [i.e., plaster jackets]." (Holland to Douglass, 14 November, 1917). A few months later he wrote to Douglass, "I have made application to the Government for the renewal of permission to work during the coming year [1918] but this will be in my judgment the last year we shall wish to work in the quarry…" (Holland to Douglass, 7 January, 1918). Holland of course changed his mind and permit renewal was submitted several more years because of the discovery of additional skulls and skeletons in the east end.

Word leaked about the possibility of the Carnegie Museum pulling out at the end of 1919 and Pack, at the University of Utah, wrote to Utah U.S. Senator Reed Smoot:

"I am informed that the Carnegie people have obtained just about all the material they need and are about to abandon the quarry, or will do so in the near future…

Now, just as soon as the Carnegie people are through with their work we are anxious to get permission to do some excavating for ourselves. If we so not take the matter in hand at present we are fearful that one or more of several undesirable things might happen. The Government might permit the Monument to go back to the public domain… Or the Government might give some other institution permission to work the quarry.

These materials [i.e., the dinosaur bones] naturally belong to Utah first, and the University is anxious to get some of them. I am going to ask you if you would kindly take this matter up with Dr. Walcott and explain to him that the University of Utah is anxious to follow up the excavating just as soon as the Carnegie people are through, and that at the proper time, whenever that may arrive, we will be anxious to make formal application." (Pack to Smoot, 6 November, 1919, quoted in Beidleman 1966).

The matter was brought to the attention of Acting Director Arno Crammerer of the newly formed NPS, who in turn contact Holland. Holland replied:

"…I do not know in what way Senator Smoot of the authorities of the University of Utah have learned that we are 'about to abandon it, or will do so in the near future.' So far as I am aware no communication was received from this office – the only place where a definite decision in this matter can be made…"

…We shall eventually, no doubt, wish to desist, especially as the work is becoming increasingly difficult and expensive, but that time has not yet arrived." (Holland to Crammer, 2 December, 1919, quoted in Beidleman 1966).

A few years later there was talk again about the Carnegie Museum leaving and William Anderson, secretary of the Vernal Commercial Club (forerunner of the Chamber of Commerce) wrote to the Secretary of the Interior: "Again I wish to call your attention to the conditions at the Jensen, Dinosaur National Monument. I am well informed that in all probability the Carnagie [sic] people will discontinue work there soon and then the place will be left open to any kind of vandalism." (Anderson to the Secretary of the Interior, 2 November, 1921). The letters were sent to Holland, who directed his ire on Douglass as being the probable source of the rumor:

"1. It appears from correspondence which I have had with the Secretary of the Interior that certain parties at Vernal appear to know more about the administration of our affairs than I know myself. They have been writing to the Secretary of the Interior informing him that they have been informed that the Carnegie Museum is about to abandon its work in the quarry. What the source of their information has been I do not know. It is pretty plain that "somebody has been talking." Inasmuch as the matter is wholly in my hands I have been a little astonished to read some of the correspondence which has been addressed to the Secretary of the Interior, which he has very properly submitted to me. It will be time enough for the people in that neighborhood to talk when I shall have officially announced my purpose.

2. …While I have intimated to you in times past that you need not expect that this work would be continued indefinitely and forever I have not yet authorized you or anybody else to say that the Carnegie Museum is about to abandon this work. It will be time enough to speak of an abandonment of the work when I have notified you formally that the work shall be abandoned." (Holland to Douglass, 30 November, 1921).

In June 1922, Holland retired and Douglas Stewart became the director. One of his first acts was to send Carnegie Museum paleontologists Olaf Peterson and Arthur Coggeshall in August to make an assessment of the quarry and to report back to him. Stewart mentioned the possibility of closing the quarry but did not elaborate (Stewart to Douglass, 8 July, 1922). Stewart, in his reply to Coggeshall's report, acknowledged the recommendation that Douglass finish the excavation of a *Stegosaurus* and a small dinosaur skeleton, but to leave the two partially exposed specimens of *Diplodocus* to the Smithsonian to excavate (Stewart to Coggeshall, 6 September, 1922).

Douglass had meanwhile written to Pack surreptitiously that the Carnegie Museum would be abandoning the quarry:

"…it will undoubtedly be of some benefit to you to know what is in the air so that you can be prepared to take advantage of it if the wind should blow that way as it may soon."

I believe that I told you that when the time arrived that the Carnegie Museum should discontinue work at the quarry I would try to help you to get a skeleton. It was my idea that the museum would work up a define line and then if affairs were organized and arrangements completed a party could begin excavating with the object of getting a Dinosaur for the state…

…the new director of the museum [Stewart] would be glad to have one of the above-named skeletons [Diplodocus] remain in the state provided that it would be properly taken care of and would be made available for exhibition and comparative study. I, of course have nothing to say at present as to part compensation for a share of the large expense of excavating to uncover these skeletons but I am sure the museum would be very fair in this respect. As the skeletons are already found and partly uncovered it would be a saving of many hundreds of dollars, if not thousands, to you.

As this is a national monument the arrangement would involve a three-sided agreement of authorities of the Carnegie Museum, representatives of the University of Utah or who may be designated, and the secretary of the Smithsonian Institution, who, I believe, represents 'the government' in the matter..

I write to you early, and thus privately, that you may be forewarned and perhaps be better ready to avail yourself of the opportunity if it is offered. There are other museums, like the U. S. National Museum, the American Museum of Natural History, etc. which undoubtedly desire a skeleton of one of these large Dinosaurs but whether or not they would be forthcoming with the funds I cannot say.

As soon as there is an official offer, or sooner, I wish to urge upon you the desirability if not the necessity of your making a trip to the quarry accompanied by such men as you think best so that you may see things for yourself and be better able to make plans. I assure you that we would be glad to see you here at any time." (Douglass letter to Pack, 25 September, 1922 quoted in Beidleman 1966).

Pack replied:

"Permit me to thank you very kindly for your unofficial letter of September 25. Friends such as you are far between … Personally and as an officer of the University of Utah I wish to thank you for the interesting information which your letter contains. We shall wait with some impatience the proposal which you think may be made to us and try to be prepared to accept it when it comes." (Pack to Holland, 5 October, 1922 in Beidleman 1966).

The Smithsonian Institution was supposed to take over the quarry after the first of the year (1923), but they had no funds for the excavation and had to submit a bill to Congress for a special, one-time appropriation (Stewart to Douglass, 13 February, 1923; Vernal Express 23 February, 1923). Funds were needed because the annual Congressional appropriation for the Smithsonian was only for maintenance of the various departments of the Smithsonian, not for research, field work or publication (Walcott 1923). Because of the uncertainty of funding, Walcott proposed to Utah Senator Smoot a joint excavation with the University of Utah providing the funding and the Smithsonian providing the experienced personnel. The collection would then be divided between the parties (Beidleman 1966). The University declined the partnership (Salt Lake Telegram, 10 October, 1923) but that no longer mattered to the Smithsonian because it got its funding and the team worked the site from 24 May to 8 August, 1923 (Gilmore 1924) after getting an excavation permit (Browning 2003).

The University of Utah applied for a permit, which was granted on 28 August, 1923 (Beidleman 1966). The University began its excavation under Douglass's direction on 7 November, 1923 but he did not participate much after that because he was collecting from the Eocene Green River Shales for the Carnegie Museum (Douglass, annual report on field work, 25 June, 1924). Work at the quarry stopped at the end of the permit and it sat idle for many years after that.

Developing The Quarry for The Public (1924–Present)

It is debatable whether DNM was a monument in name only meant to be a temporary solution to protect the quarry until the Smithsonian could excavate their own skeleton as alleged by Neel (2007). Certainly Holland thought it was temporary as he had written to Douglass: "the place ought to be abandoned and turned back to the public domain. This was the original intention." (Holland to Douglass, 7 June, 1920). It was also an option that Pack from the University of Utah considered might happen (Pack to Smoot, 6 November, 1919, in Beidleman 1966). But it is uncertain if that was the intent of the Department of the Interior. There were other options available to protect the quarry as noted in the Bond memo mentioned previously, such as denying permits to mine coal or phosphate in the area near the quarry or by having the President remove the area from the coal and phosphate reserves and setting the land aside temporarily under the 25 July, 1910 Public Land Withdrawal Act. For whatever reason, the Department of the Interior decided to go the national monument route. It was certainly a gamble that not all bone would be removed.

Both Harvey (1991) and Neel (2007) make a point that the NPS, created in 1916, did nothing to develop DNM for visitors after the University of Utah left. The problem lay in that the Antiquities Act made no provisions for funding national monuments created by the President (Rothman 1994); funding was controlled by Congress. Initially, most national monuments had custodians who were either local ranchers acting as volunteer guardians or were paid a nominal $1 per month (Cameron 1922). In 1924, DNM was one of ten national monuments without any on-site custodian, including the archaeologically important Hovenweep in southeastern Utah (Mather 1924; an archaeological site established as the Yucca House National Monument in 1919, located in southwestern Colorado, is still an undeveloped national monument relying on a local rancher to guard the site). For most of the undeveloped national monuments, the NPS relied on posted warning signs notifying the public against trespassing to protect the areas from vandalism or illegal excavations (Rothman 1994). Such signs were sent to Douglass in June 1922 but were already known to be ineffective (Rothman 1994; receipt for the signs in Douglass correspondence, Marriot Library Douglass Collection). The majority of the national monuments at this time, not just DNM, were relegated to second-class status to the ever increasingly popular national parks (Rothman 1994). The NPS was counting on the difficulty in getting to the quarry, as well as difficult in excavating dinosaur bones from the hard rock as the main deterrent for DNM.

As for abolishing Dinosaur National Monument after work at the quarry ceased, the NPS had to know that the Antiquities Act did not have a provision for abolishing a national monument and doing so would require an act of Congress. In writing about the issue of who had the authority to abolish national monuments, the Attorneys General Homer Cummings wrote on Sept. 26, 1938: "The Antiquities Act of June 8, 1906, 34 Stat. 225, authorizing the President to establish national monuments, does not authorize him to abolish them after they have been established." This matter arose from the proposed abolishment of Castle Pinckney National Monument in South Carolina.

Over the years Congress has abolish various national monuments, which

were either redesignated as national parks, national preserves, national historic sites, or were transferred to the state in which they were located to become state parks. The only fossil-based national monument to be abolished by Congress, Fossil Cycad National Monument in 1957, does give an indication of what could have happened to DNM had the intent been to merely to save the quarry until the Smithsonian could remove a dinosaur skeleton. Fossil Cycad National Monument (FCNM) in southwestern South Dakota was created on 21 October, 1922 by President Harding based on a bill introduced by State Senator Peter Norbeck. The land had been donated specifically for a national monument by Yale paleobotanist George Weiland, who had previously taken ownership of the land under the Extended Homestead Act (Santucci and Ghist 2014). Acting on the advice of Walcott, the Department of the Interior endorsed the establishment of a national monument to save the site just like they did for the Carnegie Museum dinosaur quarry.

Unlike DNM, however, Fossil Cycad National Monument was never a tourist draw for several reasons: there was no excavation occurring that visitors could watch, most people had never heard of cycads and such fossils did not have the attraction that "dinosaurs" had, and there was nothing left for visitors to see if they did visit. It is not quite correct that FCNM lost its reason for existing through years of neglect as stated by Santucci and Ghist (2014), In reality, it should never have been made a national monument in the first place because all of the fossils had been removed by Weiland before the land was donated by him (Santucci and Ghist 2014). Because there was not a strong support for maintaining the national monument from the local communities as there was for DNM, the NPS requested that South Dakota Congressman E. Berry introduce a bill to Congress to abolish FCNM. Senate Bill 1161, "An Act to abolish the Fossil Cycad National Monument, South Dakota, and for other purposes" was signed into law on 1 August, 1956 and became effective 1 September, 1957. The land was turned over to the Bureau of Land Management.

What probably saved DNM from being abolished was the local support for the monument by the local community and business leaders, and Utah state government (state legislatures and governors) and State Congressmen. In contrast, FCNM only had George Weiland and South Dakota Senator Peter Norbeck as advocates and when they died the there was no one to defend FCNM. From the very beginning, there was a great deal of interest in the dinosaur quarry, an interest encouraged by Earl Douglass through his lectures around the state and his open invitation to visitors. As a result, "The people of Utah have shown an unusual interest in the 'finds' here. Perhaps there is a little more than an average of state pride here also. Hundreds, if not thousands of people from this and other states have visited the quarry. In one day last fall about sixteen autos were here when a delegation visited the basin from Salt Lake City." (Douglass to Holland, 24 December, 1915).

It was undoubtedly the strong support in Utah for the monument that prevented it from being abolished. One very powerful advocate was Utah Senator Reed Smoot (1903 to 1933), Chairman of the Senate Committee on Public Lands and Surveys (also called the Public Lands Committee),

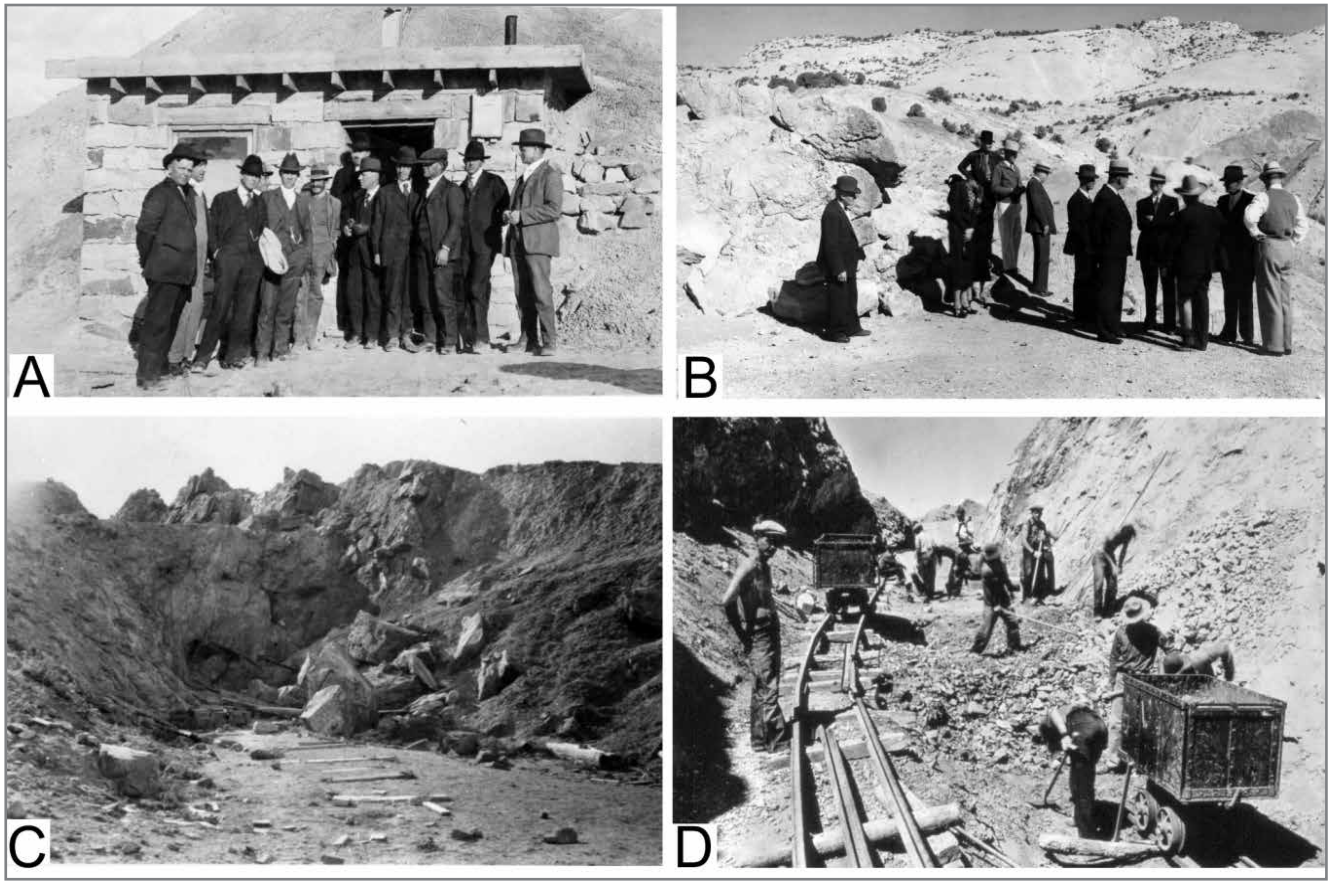

Figure 6. A, Congressman Don Colton (right) and delegates visiting Earl Douglass (left of center in light colored hat). Colton was a strong supporter of developing Dinosaur National Monument as a tourist destination. Photograph taken around 1926. (DNM archives). B, one of several site visits sponsored by the National Park Service in the 1930s to assess developing DNM (DNM archives). C, condition of the quarry around 1931 showing rock slide due to unstable bentonitic mudstone underlying steeply dipping sandstone. (DNM archives). D, WPA workers removing the overburden by widening and deepening the quarry trench. (DNM archives).

and who was one of the sponsors of the bill that established the NPS. Another ally was U.S. Representative Don Colton (1921 to 1933), who had strong ties to Vernal having spent part of his early life there and who was a strong supporter of the Monument (Fig. 6A). He too served on the Senate Committee on Public Lands and Surveys. Thus, it was difficult for the National Park to abolish the monument without there being considerable opposition, unlike with Fossil Cycad National Monument where there was none. The Department of the Interior was very much aware of the political power of Smoot when it created Dinosaur National Monument and would certainly not have done so as a temporary measure to protect the fossils until they were completely removed.

Douglass saw the educational possibilities of the dinosaur quarry very early, probably as a result of the interest shown when he opened the quarry to visitors in August 1909. He envisioned a display at the Carnegie Museum, writing to Holland: "Say if this nest of dinosaurs could be mounted in relief in a great block in the position in which they were found it would be the greatest group on Earth" (14 November, 1909, to Holland; see Fig. 7). Douglass modified and expanded upon the idea several years later in his notes suggesting a large museum at the site devoted to dinosaurs, both mounted and as found, and life-size reconstructions in diorama settings:

"With trained men and money we might make one of the great exhibits of the world and perhaps we will be permitted to do it. We may be dreaming and that is all right. Dreams come before reality if our dreams are not all realized. But wouldn't it be great to have a new museum built on museum principles and have one great hall for Dinosaurs! Mounted skeletons, in position of life, skeletons mounted on tables for scientific demonstration and study, restorations of the beasts life size, restorations in native haunts, restorations showing the circumstances and tragedies of their deaths and burials, restorations or pictures showing their resurrection (Douglass Notebook 5, 14 August, 1912).

When rumors about the Carnegie Museum possibly leaving the quarry began to circulate, there was an increase push to get a museum at the site. Vernal Commercial Club secretary, William Anderson wrote to the Department of the Interior of their desire:

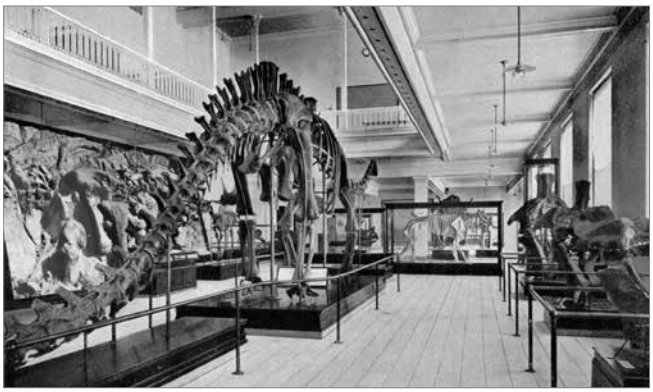

Figure 7. Hypothetical digital reconstruction of a "nest of dinosaurs" (left wall) at the Carnegie Museum as envisioned by Earl Douglass in a letter to Holland. The large, articulated skeleton is that of Diplodocus carnegii from Sheep Creek, Wyoming.

"We have been wondering for some time why the Government didn't do something to preserve this natural wonder [Dinosaur National Monument] and to put it into shape for people to visit it and get the benefits that they are entitled to in one of the National reserves…. The place should be fixed up and a good road constructed in order that the public could go and view the wonders of nature and return in safety, and too, without having the opportunity of carrying any part of the exhibit away. This matter is particularly urgent, therefore, we specially request that you give it some immediate attention else it may be necessary that we appeal to Congress for the action necessary." (Anderson to National Park Service, 2 November, 1921).

NPS Acting Director Crammerer sent the letter to Holland for comment and his reply back shows that Douglass was never able to get Holland's support an on-site museum because that would mean leaving specimens uncollected:

"….Douglass, who is of a somewhat poetic temperament…wrote to me to suggest that the scene of his immortal labors ought to be marked by the erection on the ground of a stately edifice [i.e., building] in which there should be assembled plaster casts of the dinosaurs which we have extracted from the spot. This might involve an expenditure at this particular "hole in the ground" of a very formidable sum of money…

…no doubt the erection of such a building would give employment to some of the unemployed in Vernal and might enhance the value of certain acres at present covered with sage-brush in that vicinity. I do not, however, think that the people of the United States would be justified in undertaking any such wild scheme.

… the whole thing sums itself up in saying that it is questionable whether the United States Government would be justified in appropriating money simply to preserve intact what is in truth only a "hole in the ground", so that people living twenty-five miles away may have a place to which to resort to gratify their curiosity when they have nothing else to do.

When we get done with our work of taking up the bones which we find in the quarry there will be nothing left there, and in my humble judgment, as a citizen of the United States and as a heavy tax-payer, I could think of nothing more scandalous than a proposal to do what has been suggested, unless the method of the "Pork barrel" is to prevail." (Holland to Crammer, 8 November, 1921 in Beidleman 1966).

Fortunately other influential men were more supportive of Douglass' vision, such as George Smith, Director of the U.S. Geological Survey. Smith wrote to Stephen Mather in January 1916, a few months before Mather became the first director of the National Park Service:

"The Dinosaur National Monument should, if it is not despoiled, become in fact a real monument of great educational and paleontological interest with easy access to the tourist. One can conceive of the impressiveness and instructiveness to the tourist of seeing partly uncovered and, in some cases, protruding from the surfaces and edges of the strata the bones and skeletons of the monsters, lying where they were buried many millions of years ago… There is, therefore, reason for the perpetuation of the Dinosaur National Monument as a fact rather than a name." (Smith to Mather, 15 December, 1916 in Beidleman 1966).

The failure of the NPS to develop DNM or other monuments in the 1920s was not due to a lack of interest, but money. Mather (1924, p. 7) wrote that "Congress has not granted funds for the construction and equipment of museums in the national parks…. most of the museum construction, equipment, and materials that we now have has been secured with the aid of private funds." Aware of this problem, State Representative Colton repeatedly submitted bills to Congress for the development of Dinosaur at ever increasing amounts. The largest bill, for $100,000 [$1,406,729 in 2018 dollars], was submitted in 1926 with the support of other Utah senators (Vernal Express, 22 January, 1926). Before Mather could support this bill, he needed assurance from Douglass that there were enough dinosaur bones left to make it worthwhile. Douglass replied that when the University of Utah stopped, bone was visible on three sides of a large portion of rock that was left (Douglass to Mather, 30 January, 1926). Reassured, Mather supported the bill and wrote: "House of Representatives bill 7672, 'A bill to provide for the protection

of the Dinosaur National Monument, and for other purposes.' This bill proposes that $100,000 be made available to protect the monument and to excavate and prepare for exhibition at the monument a fossil dinosaur." (Mather 1926, p. 57). Unfortunately, all of the proposed funding bills failed for one reason or another. An alternative source for funding was mentioned during a visit to Zion National Park by Hermon Bumpus, chairman of the Committee on Museums for the NPS and the first president of the American Association of Museums. Bumpus suggested that perhaps funding for a new museum could come from the Laura Spelman Rockefeller Foundation (Roosevelt Standard, 26 July, 1928); the foundation had previously funded a museum at Yosemite National Park among others. This funding source never materialized for unknown reasons.

Despite these setbacks, Douglass and many others continued to solicit support across the country, including the Chamber of Commerce in California and Congressman Henry Temple of Pennsylvania, who was on the Coordinating Committee on National Parks and Forest (Douglass to Temple, 21 January, 1926). Site visits were planned by the NPS in 1926 and 1927 (Demaray to Douglass, 24 August, 1926; Crammerer to Colton, 20 January, 1927), but these fell through due to conflicts of time, illness, etc. Eventually, however, Roger Toll, Superintendent of Yellowstone National Park, visited DNM on 14 October, 1929 (DNM archives). Toll also served as the NPS Director's field assistant to visit and evaluate some of the undeveloped or proposed parks and monuments (Santucci and Ghist 2014). In his brief report of his visit, he noted the difficulty of getting to the quarry, and that once there that "there is nothing of interest to visitors in the quarry… The monument could be made of real interest and general, as well as scientific interest, but considerable expenditure would be required and it is doubtful if the number of visitors that could be expected would justify the development at the present time." He continues optimistically what could be done, including a museum at the site because of the picturesque setting, a mounted dinosaur skeleton in the museum, bas-relief of bones on the quarry face, and additional exhibits, including scale models of dinosaurs from the site showing the skeleton on one side and fleshed-out on the other. He closes with "The monument has a future value as an educational exhibit."

With such a positive recommendation (glossed over by Neel 2007), the NPS hosted several meetings, commissioned several studies and site visits during the 1930s and 1940s (Fig. 6B). These latter events are all the more remarkable because the United States was deeply involved in the wars in the Pacific and in Europe. One of the first major meetings was a series held in Washington DC in March 1931 about the future of Dinosaur National Monument (Vernal Express, 2 April, 1931). In attendance were Barnum Brown representing the American Museum of Natural History, H.C. Bryant, director of education for the National Park Service, Frank Oastler, who oversaw education programing in the National Park Service, and Hermon Bumpus from the National Park Service. Utah Congressman Don Colton was invited to some of the meetings. A ten-point agreement was reached in which the American Museum of Natural History would invest money and personnel in exchange for overseeing the work for developing the quarry and having first rights for any complete skeletons uncovered. The state of Utah would provide money for the museum building, and the NPS would provide a ranger naturalist, develop roads, parking, and housing. What was unknown to the other participants, however, was that Brown was planning to stack things in the American Museum's favor as he reported to museum directory Henry Osborn. His plan was to develop the quarry "nearly three times the dimension [originally envisioned] in order to give us greater latitude in examination, selections and preservation of material to be actually housed in the Museum [AMNH]" (quote in Dingus and Norell 2010, p. 241).

Unfortunately, the funds needed to implement the plan could not be raised because the country was in the financial crisis of the Great Depression (1929-1942). Nevertheless, this time in American history provided beneficial to DNM and to other monuments and parks because of the large labor pool made available under President Franklin Roosevelt's New Deal programs (1933-1942). The NPS was in a fortunate position in 1933 to begin immediate work on improving DNM because it had a working plan, "An Outline of Development for Dinosaur National Monument" written in 1931 by W.P. Weber to use as a guide (Boyle 1938, DNM archives). President Roosevelt created the Civil Works Administration on 9 November, 1933 and by 15 December work began on the much-needed improvement of the approach road to the quarry. By the first week of January 1934 work started on clearing the debris at the quarry (Fig. 6C) and then the overburden covering the bone-bearing strata (Fig. 6D). This work of removing the overburden and widening the trench continued under men temporarily hired by the Transient Relief Service, which was later transferred to the Works Progress Administration (Beidleman 1966). The on-site supervisor during this work was Albert Boyle, who was made Acting Custodian of Dinosaur National Monument by NPS Director Crammerer in July 1935 (DNM archives).

Boyle was instrumental in getting the first museum built in 1936 (Fig. 8A, B; Vernal Express, 20 August, 1936; DNM archives), although this was not at the quarry because of the overburden removal project. Plans for developing DNM continued to be refined during this time and it became apparent that the rugged 80 acres did not provide adequate flat space for campsites, housing, etc. (Beidleman 1966). As part of a site visit on 26 June, 1931, a side trip was made to the nearby Split Mountain Gorge. This inspection party included some of the men at the March 1931 meetings in Washington DC, as well as several others from the NPS and Utah. A recommendation was made to expand the monument boundaries to include Split Mountain Gorge. There was also discussion by some people in Utah and Colorado of making a new adjacent national monument encompassing the canyons of the Yampa and Green Rivers. The decision instead was to expand the boundaries of the monument. This was done by Presidential proclamation on 14 July, 1938 by President Franklin Roosevelt using the Antiquities Act. Another act in 1960 made some minor adjustments to the boundaries (Fig. 1C).

A second museum of sorts (called the "Tin Shed") was built directly on a portion of the quarry face in 1951 (Fig. 8C-E). The intent at this time was to determine whether bone was abundant enough to warrant a larger, more permanent structure (Lombard 1952, DNM archives). The shed protected the fossils as they were exposed and also allowed work to continue during the winter. A more permanent building was finally erected over the quarry in the mid-1950s as part of the National Park Service Mission 66 plan as detailed by Allaback (2000). The architectural design was highly controversial at the time for its ultra-modern use of glass, steel, and a concrete ramp that spiraled around a cylindrical office tower (Fig. 8F, G). Construction was completed in 1958 to encompass 585 m^2 of the bonebed. Unfortunately, structural problems due to unstable bedrock required closure of the building in 2006. A new site museum was erected in 2010-2011 over the quarry face (Fig. 8H, see also Fig. 2 for interior view).

Conclusions

The dinosaur quarry at Dinosaur National Monument is considered the premier geoconservation site. Since its discovery in 1909, people from around the world have flocked to the quarry museum to see dinosaur bones in their natural setting (for statistics on visitation see https://irma.nps.gov/Stats/Reports/Park/DINO).

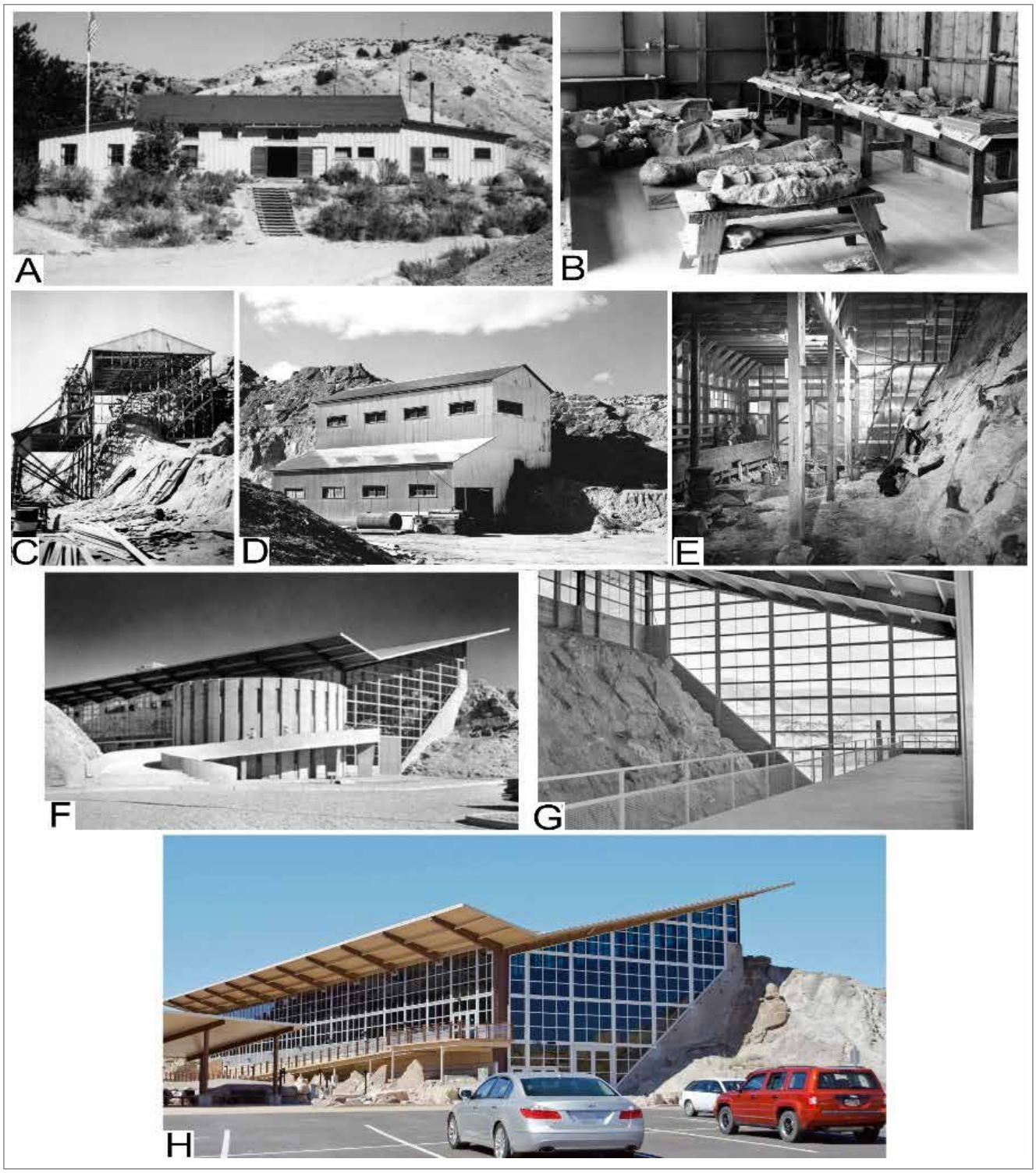

Figure 8. Museums at Dinosaur National Monument through time. A, external view of the first museum built in the 1930s. (DNM archives). B, interior showing displays of dinosaur bones. (DNM archives). C, construction of the temporary quarry museum around 1951. This view shows how the building incorporated a portion of the quarry wall. (DNM archives). D, exterior view of the completed "tin shed". (DNM archives). E, interior view showing work being done on the quarry wall. Most of the lighting came from rows of windows. An on-site ranger explains the work to visitors (left). (DNM archives), F. first permanent quarry museum and visitor center completed in 1958. (DNM archives). G. inside view just before work started on the quarry wall. (DNM archives). H, serious foundation problems required a new quarry museum, which opened in 2011 (photograph by "InSapphoWeTrust", Wikipedia, creative commons license).

The establishment of a national monument for a site of dinosaur bones was a novelty at the time of its creation. The initial purpose was to control access to the bone deposit from real or imagined threats of others taking over from the Carnegie Museum. The attitude of museum director Holland was initially derisive, but he eventually accepted that a national monument status was better than his attempts at staking a mining claim. Holland never accepted Earl Douglass's vision for the site as a tourist attraction. He considered the national monument status as something temporary until nothing was left but

a "hole in the ground." For Douglass it would always be more.

In the years after the establishment of Dinosaur National Monument, the numbers of visitors increased as they came to see dinosaur bones in the ground for themselves. Visitors became so common that Douglas posted a notice in the local newspaper giving hours for tours and stating that a small fee was required to pay for a guide (Vernal Express, 16 June, 1922). The monument even remained popular during the Great Depression, with visitors appearing despite the fact that there was little for them to see (Vernal Express, 20 October, 1938). NPS statistics record 5,088 visitors in 1937, 8,897 in 1938, 10,220 in 1939, in 1940, and in 1941 when the Great Depression official ended with the United States entry into the war. This great interest by the public to see dinosaur bones in the rock would eventually push the NPS to fulfilling Earl Douglass' dream of an in-situ display housed in a protective building.

Conflict of Interest

Authors declare that they have no competing interest

Acknowledgments

Foremost, I thank Ms. Mahshid Pezeshki for the invitation to contribute to this first issue of Geoconservation Research. Elizabeth Hill, Carnegie Museum of Natural History, did an amazing job of transcribing Douglass's terrible penmanship in the archived correspondence, notebook and diary. Diane Iverson, granddaughter of Earl Douglass provided a wealth of photographs to Evan Hall and Sue Ann Bilbey, and they in turn made digital copies available to me. Review comments by Michael Benton, Susan Neel and Vachik Hairapetian greatly improved the initial version of this manuscript.

This publication is the fifth in a series on Dinosaur National Monument by me. The first, Carpenter (1994), described the juvenile Dryosaurus CM 11340. The second, Carpenter & Wilson (2008), described a new species of Camptosaurus, C. aphanoecetes. The third, Carpenter (2013), dealt with the taphonomy and sedimentology of the Carnegie Quarry. The fourth, Carpenter & Lamanna (2015), demonstrated that Uteodon McDonald 2011 is a chimera of Dryosaurus sp. and Camptosaurus aphanoecetes.

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Appendix I.

AN ACT FOR THE PRESERVATION OF AMERICAN ANTIQUITIES, APPROVED JUNE 8, 1906 (54 STAT. 225)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the department of the Government having jurisdiction over the lands on which said antiquities are situated, shall, upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

Sec. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected; Provided, that when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tracts, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

Sec. 3. That permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and War to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe; Provided. That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

Sec. 4. That the Secretaries of the departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this act.

Appendix II

By THE PRESIDENT OF THE UNITED STATES OF AMERICA: A PROCLAMATION

Preamble. Whereas, in section twenty-six, township four south, range twenty-three east of the. Salt Lake meridian, Utah, there is located an extraordinary deposit of Dinosaurian and other gigantic reptilian remains of the Juratrias period, which are of great scientific interest and value, and it appears that the public interest would be promoted by reserving these deposits as a National Monument, together with as much land as may be needed for the protection thereof.

Now therefore, I, Woodrow Wilson President of the United States of America, by virtue of the power in me vested by Section two of the act of Congress entitled, "An Act for the Preservation of American Antiquities", approved June 8, 1906, do hereby set aside as the Dinosaur National Monument, the unsurveyed northwest quarter of the southeast quarter and the northeast quarter of the southwest quarter of section twenty-six, township four south, range twenty-three east, Salt Lake meridian, Utah, as shown upon the diagram hereto attached and made a part of this proclamation.

While it appears that the lands embraced within this proposed reserve have heretofore been withdrawn as coal and phosphate lands, the creation of this monument will prevent the use of the lands for the purposes for which said withdrawals were made. Warning is hereby expressly given to all unauthorized persons not to appropriate, excavate, injure or destroy any of the fossil remains contained within the deposits hereby reserved and declared to be a National Monument or to locate or settle upon any of the lands reserved and made a part of this monument by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the city of Washington, this fourth day of October, in the year of our Lord one thousand nine hundred and fifteen and the Independence of the United States the one hundred and fortieth.

WOODROW WILSON.