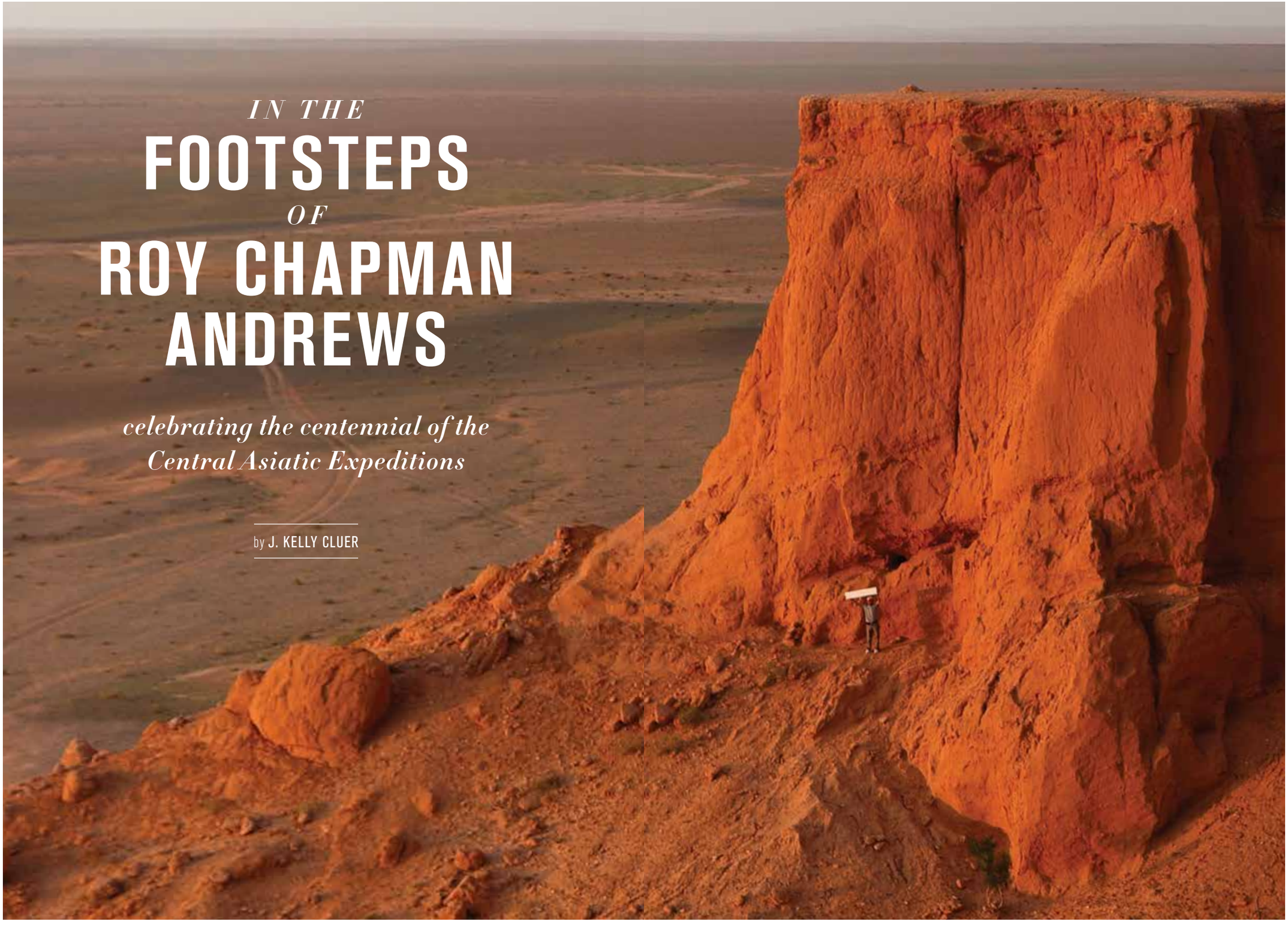
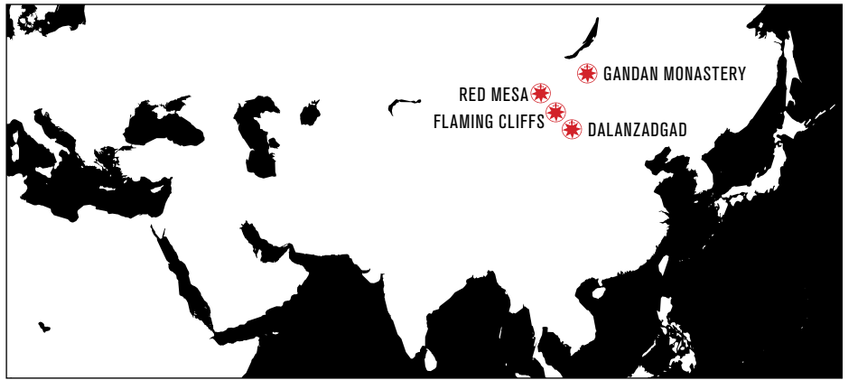


IN THE FOOTSTEPS *OF* ROY CHAPMAN ANDREWS

celebrating the centennial of the Central Asiatic Expeditions

by J. KELLY CLUER

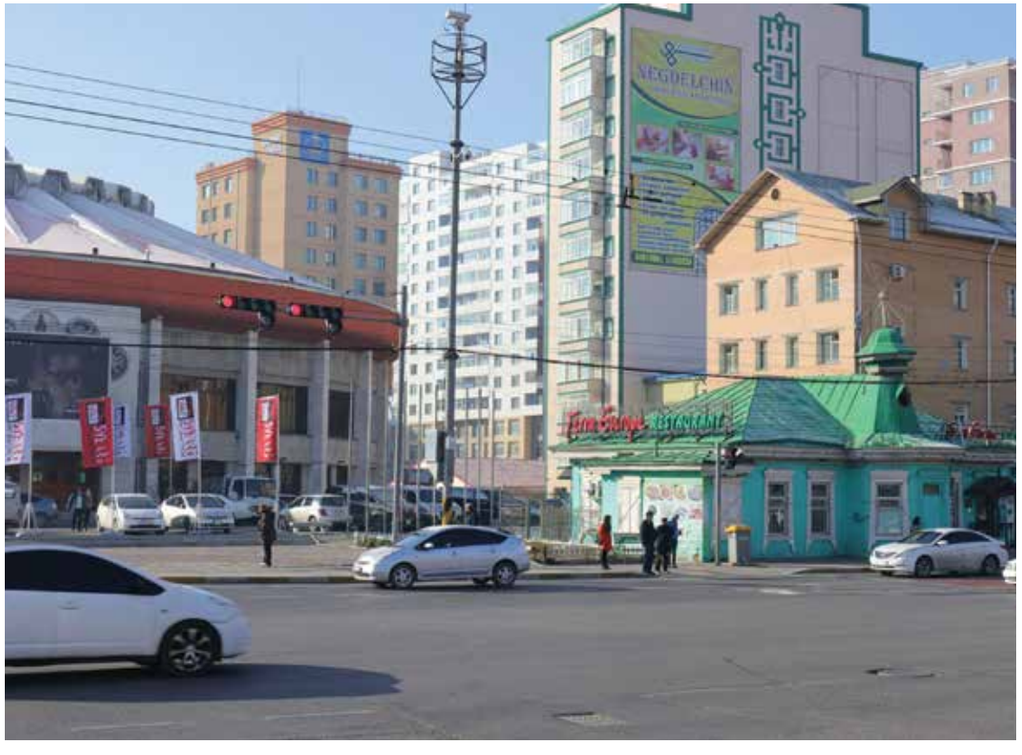


A FELLOW OF THE EXPLORERS CLUB SINCE 2017, J. KELLY CLUER IS AN EXPLORATION GEOLOGIST BASED IN MAGADAN, IN THE RUSSIAN FAR EAST. PREVIOUSLY, HE WAS BASED IN ULAANBAATAR FOR 15 YEARS, WHERE HE AND HIS TEAM MEMBERS WERE AWARDED THE HONORED GEOLOGIST OF MONGOLIA MEDAL FOR PUTTING THE BOROO GOLD MINE INTO COMMERCIAL PRODUCTION, LAYING THE GROUNDWORK FOR TRANSFORMING THE COUNTRY'S ECONOMY. FOR CLUER, REPHOTOGRAPHY PLAYS TO A PHILOSOPHY THAT HARD DATA AND DIRECT OBSERVATIONS ARE CRITICAL TO UNDERSTANDING PAST AND PRESENT EARTH PROCESSES AND CONDITIONS, ENABLING US TO RATIONALLY EMBRACE THE FUTURE.

Like most good ideas in Mongolia, our decision to follow in the footsteps of legendary paleontologist (and former Explorers Club president) Roy Chapman Andrews and his Central Asiatic Expeditions (CAE), the largest land-based scientific expedition ever launched, came to life over beers in an Irish pub in Ulaanbaatar in 2012. Aware of the vast collection of images documenting his exploits in the Gobi Desert, we wondered just how much that rugged landscape had changed in the century since his expeditions on behalf of the American Museum of Natural History (AMNH) in the early 1920s. Thus, the idea of retracing his journey and rephotographing the places he visited seemed like a wonderful way to mark the centennial of his expeditions, which revealed for the first time undisputable nests of dinosaur eggs, hinting at the avian origins of the creatures. It would also combine our love of history, exploration, photography, and Mongolia.

For the project to succeed, support of the AMNH would prove critical. Fellow Explorers Club members and museum curators Michael Novacek and Mark Norell, the original chasers of Andrews across the Gobi, were enthusiastic about the idea and enlisted their exceptional staff at the museum's research library. Several days in the library in New York produced a lot of high-quality material to work with, and we

OPENING SPREAD: THE TWIN TOWERS AT THE FLAMING CLIFFS (BAYANZAG), IN AN IMAGE TAKEN ON AUGUST 1, 2018. FACING PAGE: TOP, AN AMNH IMAGE OF GANDAN MONASTERY TAKEN BY YVETTE BORUP ANDREWS IN 1918 AND, BELOW, THE TEMPLE BUILDINGS TODAY, THE MOST NOTABLE CHANGE BEING THE PRESENCE OF CARS AND BICYCLES.



began to realize that if the rephotography was successful, it would illustrate dramatic changes in Mongolia over the past century. Mai Reitmeyer took the lead in locating the images and creating high-resolution scans, capturing amazing detail that has allowed critical comparison at a granular scale.

Each field season has yielded more compelling visual evidence of change, often at a surprising tempo. In addition to the stunning landscapes we have been fortunate to revisit and the dramatic urban change we have documented in Ulaanbaatar, an unexpected gift has been the valuable insight we have gained into the formidable work of the three principal photographers who worked with Andrews: James B. Shackelford, a Hollywood cinematographer and AMNH director who made some of the first motion pictures of Mongolia; Yvette Borup Andrews, Roy's first wife, who produced a superb collection of scenes of Ulaanbaatar; and Walter Granger, the chief paleontologist of the CAE.

INTO THE FIELD

After four years of planning, we finally headed into the field in early September 2016, beginning our mission at Gandan Monastery, an important Mongolian-Tibetan sanctuary in Ulaanbaatar, its name meaning "Great Place of Complete Joy." During that initial trip we had little to show for our efforts beyond a single rephotograph. However, we were able to lay substantial logistical groundwork that would enable us to gather far more photographs on subsequent expeditions. These have been carried out in partnership with Mijidorj Saandar, a GIS and digital mapping specialist who has served as an advisor for Mongolia's Administration of Land Affairs, Geodesy, and Cartography, as well as its Ministry of Construction and Urban Development. Saandar and I have been collaborating on projects since 1997, when I arranged tours of Nevada gold mines when his delegation was visiting the United States and helped him network within the international mining and mapping community.

In October 2017, a preliminary mission took our five-man team 480 kilometers west-southwest from Ulaanbaatar to the Flaming Cliffs in the Gobi Desert, where we camped for several nights under cold and windy skies, the desert's warning of the first winter blizzards. The weather allowed for two good days to identify subjects, approximate views, and obtain high-resolution images. In a few places we even found ourselves standing in exactly the same places the CAE photographers did, hallowed ground in terms of early twentieth-century exploration.

However, the high winds hampered our work. One blustery morning a grain of sand lodged in my left eye. A flush with water did not remove it. Sand in the eye is not a good thing for a photographer. Always ready to help, Saandar even administered the traditional Mongolian tongue swabbing (that moment when you find out who your true friends are), but to no avail. A trip to the nearest hospital was required. A long trip with eyes closed. All I could think about was the wind direction. The big storms always blow from the west, pushing billowing dust clouds toward China, exactly the opposite wind direction recorded in the Cretaceous sand dunes underlying the Flaming Cliffs. How many back-and-forth trips has this recycled sand grain made, now on its latest bumpy ride back to Dalanzadgad in a human ocular cavity? All ended well but it did result in our season being cut short.

A similar opportunity to occupy those century-old CAE camera positions

THE RUSSIAN HOUSES, CAPTURED BY YVETTE BORUP ANDREWS IN A JUNE 1919 PHOTOGRAPH (TOP), ARE SURROUNDED TODAY BY NEW DEVELOPMENT IN ULAANBAATAR.

occurred in 2018. We mounted a longer field expedition that included the Flaming Cliffs as a base of operations, and Red Mesa, a beautiful location 110 kilometers to the northwest. We also explored segments of the Tuul River near Ulaanbaatar and several views in the city.

After making camp at Red Mesa and scouting the possible CAE camera locations, I was studying one of Granger's old AMNH photos, in which a person is seen walking toward the photographer's position, when suddenly I looked up and saw our driver and chief mechanic heading my way as he surveyed the ground for artifacts from the CAE. I felt teleported in time, knowing that Walter or Roy may have once stood where I was standing.

During our survey of the Red Mesa site, we had hoped to find an artifact—a totem of sorts—that would physically tie the CAE to this location, perhaps an old Dodge car part, something stamped "Made in America." This was not to be. We did, however, find an unusual geologic curiosity: a perfectly formed "cannonball" that must have originated in the nearby "Cannonball Cliffs" formation. It is easy to imagine that during the 1923 campaign, a CAE geologist may have brought this beautiful specimen back to camp only to leave it behind once they packed up for the season.

Preliminary results from the Gobi locations show dramatic landscape changes, including spectacular cliff retreat in the Flaming Cliffs. We suspect that intense winds, along with seasonal freeze/thaw action, and possibly even seismic tremors, have conspired to destabilize the cliffs and eventually topple them over.

In the capital city Ulaanbaatar, of course, change has been so dramatic in the intervening century that capturing the same views Yvette Borup Andrews snapped is virtually impossible. A gleaming glass tower is invariably in the way. Yet in spite of these modern obstacles, some of her views have still been possible to recreate, for many of those buildings still stand, tucked into Ulaanbaatar's urban fabric.

A case in point is the so-called "Russian House" on the southwest corner of Tokyo Street and Peace Avenue, which can be seen in her archival images. From the northeast corner of the intersection we made a "nearly perfect" repeat photo. A "perfect" photo would have required our setting up cameras in heavy traffic.

We were also able to capture views of Gandan Monastery, a busy and beautiful place, and the spiritual heart of the nation. We were delighted to observe the presence of birds circling about the monastery, just as they had in Andrews' time, while people milled about the temple grounds as they have since its construction in 1809. The most dramatic change is the presence of bicycles and cars.

One of the striking Gobi Desert camel caravan views that Shackelford staged at the Flaming Cliffs shows little change in the intervening century. Even some of the rocks in the foreground are still present and more or less where they were 92 years ago. Yet erosion of the outcrops in the far distance is evident, noticeable in the widening of a small notch near the far center of the archival image, probably due to wind scour. Such geomorphic features make great alignment guides for our shots, allowing us to relocate views with confidence.

Pinpointing other views proved more challenging, such as the "Twin Towers," a pair of features in the Flaming Cliffs. Even though we knew we were in about the right place, the view was all wrong. Your eyes dart from the earlier photo you have carried

A VIEW LOOKING DOWN FROM ATOP THE FLAMING CLIFFS CAPTURED BY JAMES B. SHACKELFORD IN 1925 (TOP) AND THE SAME LOCALE AS IT APPEARED IN OCTOBER 2017.

halfway around the world to the landscape in front of you, and it does not compute. After several minutes of walking around trying different angles, the confusion dissolves when we suddenly realize that a large piece of the cliff is missing. Measurements revealed that five meters of the cliff had disappeared. Five meters per century, five centimeters per year. That qualifies as rapid change, but the change is punctual, as sudden whole-column collapse, not grain-by-grain disintegration.

Ultimately, we were able to identify the elusive place from which Shackelford made one of his most famous images. The "East Tower," one of the two towering Flaming Cliffs features that appear in several CAE publications. The East Tower has a crevice that Mongolia's much-prized golden eagles continue to use as a nesting location. For centuries, if not millennia, Mongolians have trained the birds to hunt with them seasonally before releasing them back into the wild, a tradition they still maintain as a competitive national sport.

Immediately north of the East Tower, Shackelford occupied another small alcove, sheltered from the wind, from which he shot southward to capture his famed view. Erosion of cliff features is evident, and close inspection shows that the blocks lying near the cliff base are also smaller and have moved down the slope in the intervening 92 years, virtually melting into the landscape.

Over time we have learned that Shackelford typically set up his cameras at a fine view position, often occupying the high ground, a knife-edge ridge spur, the very edge of a cliff, or even just a small rise out on the plain. From one of these set-ups he would make a number of shots toward different directions. His method is not particularly obvious, looking at the individual photos. One could easily imagine they were shot from completely different locations, a testament to his genius for composition.

Elsewhere on our journey, we found examples of cliff retreat, evident in Andrews' interesting compositions showing the unstable cliff. The large sandstone blocks that were just detached from the cliff face in 1923 are now slumped downward and further reduced by wind and water abrasion. This was one of the most difficult locations to find and occupy, since large blocks from recent cliff face movements clutter the slope at Andrews' original position.

The "Ruins," as they are called, were named by the 1963–1971 Polish-Mongolian Paleontological Expedition. These starkly beautiful erosional landforms are remnants of dinosaur-bearing sandstone formations. Visitor names and amorous figures are often carved into these soft monuments, no doubt hastening their disintegration. For instance, there are several photos of very narrow and fragile-looking spires in the CAE Flaming Cliffs collection. We surmise that they have simply disappeared, lost to erosion in this rapidly evolving landscape.

The positive aspect of rapid erosion is that new fossils are continually exposed. The flat-topped feature is a dark brown clay layer, an ancient soil horizon representing a land surface from Mesozoic time. When you walk on this surface today, you are occupying the same ground trod by Mesozoic fauna, the extinct dinosaurs and mammals sought here by a century of paleontologists. This is about as close to a time machine as one can get. Every rephotograph has been a journey of discovery. By finding the old positions and collecting precise GPS coordinates and view data, future generations can more easily document change in the century to come, advancing the time machine forward.

JAMES B. SHACKELFORD'S 1925 IMAGE OF THE SO-CALLED EAST TOWER IN WHICH AMNH EXPEDITION MEMBERS ARE SEEN TRYING TO REACH THE NEST OF A GOLDEN EAGLE IN A CREVICE (TOP). THAT SAME LOCALE IN OCTOBER 2017.