DEEP TIME AND SPACE OUT WEST: THE FOSSIL TRILOGY BY KATHRYN LASKY AND THE STERNBERG MUSEUM OF NATURAL HISTORY

by Nancy Vogel

Teaching My Antonia makes me recall the days I visited my paternal grandparents in Stuttgart, a little village in Phillips County, Kansas. Like the Shimerdas in Willa Cather's novel, my grandparents had ties to the "old country," but in our case to Germany rather than Bohemia. Instead of kolaches I remember summers of apricots and chokeeherries. Today mule deer run on the hills around the little settlement 70 miles from Red Cloud, Nebraska, and as I hear the wind blow across the cemetery, I am reminded of this passage from Cather's book:

As I looked about me I felt that the grass was the country, as the water is the sea. The red of the grass made all the great prairie the colour of wine-stains, or of certain seaweeds when they are first washed up. And there was so much motion in it; the whole country seemed, somehow, to be running.¹

The one book that some say Cather was born to write preserves the entrance of the Europeans onto the High Plains. One of those early settlers was Margaret Veeh, my great-grandmother, who owned a quarter section in Gove County, Kansas, known to the family as the "rock farm."

Ironically, 65 to 120 million years ago or so, western Kansas was covered by a shallow sea. In his deep map of Chase County, Kansas, William Least Heat-Moon notes the importance of a sense of deep place:

...the three most noted buildings—the courthouse, the Z Bar Ranch home, and the Fox Creek School—made as they are from that primeval,

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thickened Kansas sea cut and laid up into walls, even these buildings do not carry the people's connections beyond the nineteenth century.²

Sawed into building blocks, that "thickened Kansas sea" speaks about the buildings where I teach and the post rock where I garden. In his *PrairyErth* Commonplace Book, Heat-Moon quotes Carlos Fuentes as follows: "Without a living past, we have only an inert present and a dead future." The past beckons young and old alike.

William Least Heat-Moon, who has spoken about "his concept of a deep map as 'an organized piece of wonder about how we belong to the land'", makes the majesty of the past live in the present:

When the Rockies were still prostrate, one theory holds, the Nemahas rose and then eroded as the Appalachians reared up to relieve the crustal pressure, the birth of one being the death of the other....The Nemahas disappeared from view four hundred million years ago when the continents lay as one, and animate life had gone only so far as to cover itself with scales and free itself from the necessity of returning to the ocean to remake its generations; these mountains were already old when life began going from a legless world to a footed one, when lungs were something new.⁵

In some Kansas rocks are fossils, often exposed by wind and water erosion. During the Cretaceous period dinosaurs walked about Colorado, and mosasaurs swam in the shallow sea water over Kansas. As animals died and were buried, some were fossilized during the course of time, deep time. Eventually the waters receded.

About 300 miles west of Kansas City and 300 miles east of Denver is Fort Hays State University; fossils are our heritage. The campus buildings are block upon block of limestone, the tawny gold color of a lion's mane; posts of limestone mark campus boundaries. The land of the post rock, "a region where a single bed of rock has been used so extensively for fence posts that the posts have become an identifying feature of the landscape," is shaped like a barb on a wire. Hays is on the western edge of the barb which tilts northeast to southwest, covering "more than three million acres." Thus Fort Hays State University is a unique place within the larger space called the West. When the new Sternberg Museum of Natural History opens in 1997 or thereabouts, it will house a famous museum named for a dynasty of fossil collectors, the Sternbergs.

Patriarch of the family, Levi Stemberg, a Lutheran pastor, was administrator of the Hartwick Seminary in Oneonta, New York, in the late 1850s and 1860s. However, when he admitted women students and even appointed a woman to the faculty, the trustees no longer had confidence in his leadership. Thus, he resigned. Soon he moved west to Iowa with his wife and ten children, but his son George Miller Sternberg, by then an army physician stationed at Fort Harker, encouraged the family to come on to Kansas. In 1867 they did. Heartened by the support of his brother George, who eventually became Surgeon General of the United States, Charles H. Sternberg, found the passion of his life-fossil collecting. According to Katherine Rogers, "Charles reverently referred to the rocks of western Kansas as God's great cemetery." In fact, "He loved to refer to earth-especially the rocky formations—as cemeteries of God's dead, with the rich mantle of soil of the shortgrass country resting like a blanket over the extinct animals."9 During the late 1800s, fossil collectors adhered to a code of secrecy because wealth came in the form of recognition for finding a fossil first. According to Kathryn Lasky's novel. The Bone Wars, competition became bloody. Having practiced in the chalk beds of western Kansas and having been disciplined by a strict religious father, Charles was equal to the strenuous, exhilarating task.

In The Bone Wars, one of three books by Kathryn Lasky dealing with the world of fossil antiquity, rival fossil-hunting groups led by British and American scientists compete for glory in the 1870s. In this novel, the son of the major British scientist, a youth named Julian DeMott, finding himself at odds with his father's scientific philosophy and practice, forms another team with Thaddeus Longsworth, the orphaned guide for Professor Babcock's Harvard expedition. These two teenagers discover and recover the skull of Triceratops grandis montaniensis. Calling Thaddeus Longsworth "...a composite of several wonderful characters I have encountered in western history," Lasky writes, "For the most part, he is based on the cowboy J.H. Cook, who served as guide for [Othniel] Marsh, and Charles Sternberg, the most famous of the free-lance fossil collectors who worked with [Edward Drinker] Cope extensively in the Judith River Badlands." Marsh and Cope, rival fossil hunters, had a longstanding feud which Rogers describes as culminating in 1890. Although Charles worked for both professors, he favored Cope. Ultimately, he branched off on his own.

Charles H. Sternberg had principles, and so does Thad. A strong characteristic the fossil hunter and the fictional character share is the desire to give fossils to the people, not just to specialists. As much as a priest, Sternberg had a mission. According to Rogers' account, Sternberg believed, "My own body will crumble in dust, my soul return to the God who gave it, but the works of His hands, those animals of other days, will give joy and pleasure to generations yet unborn." Like

Thaddeus, he was working for people he would never see. He was a fossil hunter, not a professor. He was a discoverer, not a scientist. He was a man for his time, and his fossils are for all time.

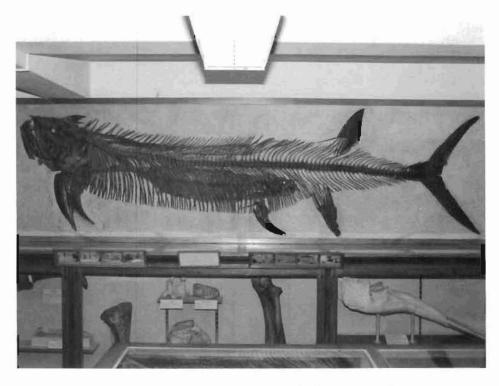
Did Charles, like Thaddeus, ever discover a *Triceratops*? Yes. The bookjacket on Laskey's hardcover edition shows a mountain out of which a *Triceratops* has been chiseled; two horns above the eyes protrude to the edge of the frill, and a shorter horn protrudes above the nose. A risk-taker, Charles had earned a contract based on his prediction that he could find a *Triceratops* in Wyoming; in 1908 he did and the British Museum acquired it. George Fryer Sternberg, the son of Charles, found another one in 1909, and this one went to the American Museum of Natural History in New York. Then in 1910 the Sternbergs discovered several more *Triceratops* fossils, with one going to Germany and one to France. In sum, the father and son unearthed six. Thus Lasky's fictional story has a parallel in the Sternberg family adventure to Wyoming for the purpose of finding one *Triceratops* for the British Museum.

At the end of *The Bone Wars*, Julian, Thad's young friend from England, describes the goal of his life—to bring the general public and museums together: "I'm interested in how museums can bring this knowledge to people, all people... And we[Julian and Thad] propose to make *dinosaur* a household word!" The Museum named for the Sternbergs will do the very thing that Julian forecasts. The public and fossils will come together under the dome of a defunct sports complex donated to Ellis County by the Chrysler Corporation for back taxes; subsequently the University, through the Endowment Association, bought it for one dollar at a tax sale.

Dubbed the "Dino Dome," the museum will display Fort Hays' most famous fossil—the fish within a fish, the *Gillicus arcuatus*, about six feet long, inside the *Xiphactinus audax*, about 14 feet long. One museum official speculates that the smaller fish punctured the stomach of the larger one, and both sank to the bottom of the sea which covered Kansas some 65 to 130 million years ago. Another official doubts that explanation. In any case, in 1952, in his late 60s, George F. Sternberg made the biggest catch of his life.

How did a Sternberg fossil hunter find this treasure, "The Impossible Fossil"?²⁰ In the summer of 1951, rains swelled the rivers of Kansas, spilling water over banks and levees, causing death and destruction. The next year, George F. Sternberg, hosting two American Museum officials in Hays, escorted them to the chalkbeds of Gove County. Fortuitously, erosion had revealed something that made the senior official stop and question George about a curiosity barely visible in the terrain; immediately George identified the exposed feature as part of a Xiphactinus. Adhering to the code among hunters, George offered the specimen

to the American Museum, which turned down his offers. At first, the find seemed rather ordinary, but as George's excavation revealed more and more of the giant fish, the smaller *Gillicus* appeared. George's work continued, and the long weekend of July 4, 1952, saw a faculty crew help remove the fish (resting in hardened plaster framed by wood) from terra firma. Rogers records the story of this significant find, adding that "...Sternberg lined the truck bed with old automobile tires to cushion the slabs and prevent jarring and possible fracture." Thus the fish left Gove County (home of the Monument Rocks and Castle Rock) to travel across Trego County to Ellis County, site of the museum on the campus of the then Fort Hays Kansas State College.



The Gillicus arcuatus Within the Xiphactinus audax Fort Hays State University

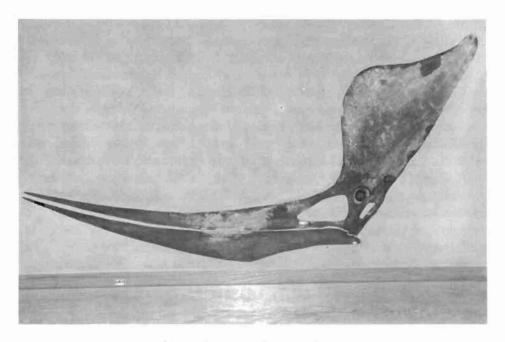
As Rogers writes, George F. Sternberg

...had found other examples of a fish within a fish, with both carcasses recognizable, but this was his crowning achievement and one which was heralded around the world as unique. It has been claimed by paleontologists and textbook publishers that this fossil is the most widely photographed fossil in the world, appearing in countless school texts as well as in other books on paleontology and natural history.²²

The image of the American West continues to be modified. Recent finds at the Minium Quarry reveal that bamboo grew in western Kansas seven million years ago, and camel bones have also been found there, according to Jay Burns, Sternberg Museum Educator. In Hays, a town with a fort that housed the Seventh Cavalry in the 1800s, the image of the gunslinging west will be changing even more as time in the "Dino Dome" will fast-backward to centuries and eons ago, to a time when not immigrants, not Native Americans, not even Cather's grassland held sway—but rather creatures whose only remains can be seen in fossils.

What is a fossil? The word fossil means "dug up" or "dug out." According to Roger Williams, "Fossils may be preserved shells or bone or wood, or they may consist of material that has replaced the original organic substance, while preserving its original form."23 The Sternbergs could "sniff dirt," to use Lasky's term, and at the age of nine, George Fryer Stemberg discovered his first significant fossil, a plesiosaur, and his finding pleased his father, Charles H. Sternberg. To mark this important event, young George chiseled his initials and age into a rock, a massive rock that can now be seen at the Sternberg Museum. Then some 60 years after finding the plesiosaur, George made his biggest discovery,24 but the American Museum of Natural History refused the right to the fossil for various reasons including the expense of the removal. As George unearthed the astonishing fish, he repeatedly offered the museum the fossil, for he followed the code among fossil hunters, namely that the discoverer has the right to the specimen. Just as often, the museum insisted that the specimen was Sternberg's. Delighted, he worked alone and secreted his work until he had exposed the entire fossil. Then he had to act fast, before vandals or nature could destroy the Gillicus and the Xiphactinus. Although George Sternberg could have sought buyers elsewhere, he offered his find to Fort Hays Kansas State College, where President M.C. Cunningham secured the acquisition for the museum that now bears the Sternberg name. Although the Sternberg name appears in the scientific name of many creatures, science has recognized George F. Sternberg directly by naming a flying reptile the Pteranodon sternbergi. With a wing-span of almost 30 feet, its

identifying features include a crested head and no tail. Flying above the Kansas sea in the new Sternberg Museum of Natural History will be several of these reptiles named in honor of George F. Sternberg.



Skull of Pteranodon sternbergi Flying Reptile Named for George F. Stemberg

Although dinosaur has already become a household word, the plains of western Kansas and books by Kathryn Lasky will contribute to the changing image of the West, a west of great antiquity. Sternberg Museum is designed to house a discovery room which will fulfill the dream articulated by Julian DeMott for himself and his young colleague, Thaddeus Longsworth, the American youth in The Bone Wars:

The goal of this project is to meet the science-based educational needs of children within a rural area of Mid-America....There are many children in our rural service area who lack the educational opportunities that exist in metropolitan areas. To reach attractions such as the one we propose, school groups often drive several hours. In this regard, the Sternberg Discovery Room will be the only natural history discovery room within a

day's drive in any direction. Along Interstate Highway 70, for example, it will be the only natural history discovery room between Denver and St. Louis.²⁵

What will the room provide? Again, a grant proposal by Jerry Choate, currently the Director of the Stemberg Museum of Natural History, specifies the outcomes:

The specific purpose of the Discovery Room is to provide hands-on opportunities for learning through the use of natural history specimens (both real and replicas), appropriate literature, media of various kinds, computers, microscopes, and other scientific instruments and tools. Examples of proposed learning modules are a fossil "pit" in which the children can find fossils, identification booths where children handle and compare specimens with pictures in books in an attempt to identify them, and computer stations with interactive software to facilitate learning about various animals, plants, and geological materials.²⁶

The image of the West—is it changing? Yes. During the summer of 1992 a team from the Sternberg Museum headed by Professor Joseph Thomasson found a fan palm. How old is the palm? "Based on current evidence, Thomasson thinks the sediments and leaves date back to about the time dinosaurs became extinct. Geologists refer to that time as the Late Cretaceous or Early Paleocene."²⁷ Bamboo, camels, palm trees? Awesome. The West—its time and space—invites us mortals to consider the immensity of the universe. Writer Kathryn Lasky holds a similar view.

I seem to seek a nonfactual kind of truth that focuses on certain aesthetic and psychological realities....The world is a very complicated place. I choose to present this complexity but not to analyze it. There are not always absolute answers, but there is a continual search for aspects of the truth.²⁸

In Lasky's trilogy, Dinosaur Dig is the book for the youngest readers: approximately 60 pages long, the thin volume has spectacular color pictures on three pages out of four, with about 15 pages of pure text. The story begins with a photograph of the author and her two children, Max and Meribah, reading a story about where dinosaurs walked. The next picture shows their luggage, at the bottom of the staircase by the front door at the Knights' house in Cambridge, Massachusetts (Lasky is married to Christopher G. Knight, the book's

photographer). Then the action moves to a two-lane asphalt highway across the Montana prairie, a scene that looks like many scenes of the west from Texas into Canada, but "the buttes of Montana—graveyard of the dinosaurs" serve as the campsite home for six families.²⁹ The emptiness and the wind mark the Montana land; in fact the leader of the expedition calls the wind "the best excavator." There in the Bug Creek Anthills, Dr. Keith Rigby, an academic paleontologist, instructs the children to get their noses close to the ground and "sniff dirt." Next, they graduate to shovels, using the tools to fill bags of cloth half full. In temperatures over 100 degrees, the expedition transports the bags to Fort Peck Reservoir where the bags are emptied into wooden boxes with a screen bottom; as the fossil hunters slosh the boxes in the water, the dirt vanishes out the bottom and light debris floats away on top. The dinosaur teeth and other finds that remain will be studied at a university because finders are not keepers here: government permits are needed for collecting.

Today antelope roam and rattlesnakes hide in the land where the wind scours the vast terrain, a territory where Kathryn and Meribah Lasky trip over a part of a *Triceratops*. In the Hell Creek area, Doctor Rigby's team uncovers dinosaur ribs, causing Lasky to be "...stunned by the realization that this is the first sunlight that has touched these bones, buried for 67 million years, and that the small group of people standing on this saddleback are the first humans ever to see these bones." With awls and trowels, amateur and professional fossil hunters painstakingly uncover the bones which are then hardened with a solution. In the book, pictures show children assisting in making plaster and burlap casts for the bones, a process reminiscent of making mud pies. The professor from Notre Dame tentatively identifies the ribs as bones of a *Triceratops*; and as the expedition in the Badlands revels over the thrill of gaining a trophy for science, readers can almost sniff the dirt.

The second volume of the trilogy, *The Bone Wars*, is a fictional account, unillustrated, for older youth. (*Dinosaur Dig* is nonfiction. *Traces of Life*, the third volume, is both nonfiction and fiction.) The only novel in the trilogy, *The Bone Wars* opens in Texas, and the inscription is from Black Elk: Know the Power of Peace." In the tradition of the nonfiction novel, Lasky succeeds with a gripping account of life in the graveyard of the dinosaurs where the motives of men of science cannot be kept separate from the human tendencies toward greed and glory.

In a telephone conversation with Lasky, I probed the connection between Thaddeus Longsworth and Charles H. Sternberg. Lasky believes the parallels are "deeply ironic." On the personal level, Thad is an orphan with no siblings. In actuality, Charles had ten siblings, even a twin named Edward. On the professional level, however, Lasky gives them striking similarities. The common

ground that Thad and Charles share is the insistence that fossils belong to everyone: "It was this notion of ownership of the past that Thad found so incomprehensible. He knew that Indians did not believe that land could be owned....He had never thought of himself as owning the fossils he had taken out of the earth." Charles Sternberg did not own the land on which he worked. He sold fossils that he found: that was his livelihood. In his own eyes, Charles worked for science and humankind. Vertebrate paleontologist Greg Liggett thinks that Sternberg felt that fossils belonged to everyone and this is why he felt justified in collecting on some private property—he was collecting public fossils to be sold to public museums and scientists. To clinch his point, Liggett draws a distinction between selling a product and selling time and expertise. He thinks that Charles was selling his time and energy more than the fossil itself. Today, the conflict between commercial and scientific interests over the ownership of fossils has reached the United States Congress.

Another striking similarity between Charles, the fossil hunter, and Thad, the fictional character, is their radar for fossils: Charles had a sixth sense for discovering them, and Thad is called "the master excavator." Lasky writes, "Thad worked with care and patience and seemed to know just where to begin a cut that would be least risky to the fossil. Babcock praised him for having a good eye for the tiniest hairline cracks in the rock surface that could either help or threaten the delicate excavation work." What Lasky said of Thad could easily be said of the young Charles: "...members of the team would say that the boy was uncanny. He could barely read, yet he saw through stone. And not just saw through it but seemed to have an intuition for each pressure point, fault, and cleavage line." Growing up, Charles saw westerners such as "Wild Bill' Hickok, 'Calamity

Growing up, Charles saw westerners such as "Wild Bill' Hickok, 'Calamity Jane,' and 'Buffalo Bill' Cody." In the novel, Buffalo Bill writes a letter of recommendation for Thad; Cody's letter guarantees Thad the position of scout for the Harvard fossil expedition. As the novel moves toward its conclusion, skulduggery and avarice mar the recovery of the Triceratops. For example, Professor Babcock rushes a scientific account into publication only to be embarrassed when he learns that a rival team headed by Nathaniel Cunningham had planted a ruse. In his haste, Babcock had thus identified a nonexistent creature. This feud between the Harvard and Yale teams reminds a reader of the feud between Othniel Marsh and Edward Drinker Cope, the scientific legends of the late 1800s. According to Rogers, "...Cope erred in the reconstruction of an Elasmosaurus, a giant plesiosaur. He actually placed the head on the tail of his restoration, a blunder that Marsh took advantage of and forever humiliated Cope." Although Sternberg worked for both Marsh and Cope, he loved Cope, his mentor, the man who had given him the chance to become a fossil hunter.

In a note at the end of the novel, Lasky confirms that Cope is the model for Professor Babcock. In actuality, Cope bankrolled Charles H. Sternberg \$300 for his first expedition, money he spent for equipment, ponies, and a driver on his trek to Gove County. In the novel, Babcock entrusts his young scout with \$300 to buy ponies and hire a driver, however, the law views Thad with suspicion, so much suspicion that he spends a little time in jail. Jail aside, these experiences of Charles and Thad resemble each other closely.

Another significant parallel between book and reality comes with Thad's independent discovery of a duckbilled dinosaur. The beauty of this beast lives in Lasky's description: "...lying on its back with its forelimbs outstretched as if futilely trying to claw its way out of eternity's sarcophagus, was a duckbilled dinosaur." According to Rogers' chronicle, George F. Sternberg, this oldest son of Charles H. Sternberg, actually discovered a duckbilled dinosaur in 1908 while working with his father; Charles is credited for the *Edmontosaurus* now in the American Museum of Natural History. Greg Liggett says, "This fossil is called the dinosaur mummy because skin, muscles, and tendons are preserved. The animal died in an arid environment; the body died, mummified, and was then covered." With that discovery, the torch passed to a new Sternberg generation. Eventually, George F. Sternberg became curator of the geology and paleontology museum on the Fort Hays campus.



George F. Sternberg, son of Charles H. Sternberg

The third and final volume in Lasky's trilogy, Traces of Life: The Origins of Humankind, is the most ambitious in scope. In this book illustrated with drawings by Whitney Powell, Lasky compares the idea of the Great Chain of Being with the newer idea of the Tree of Life, stating that "...Darwin did not think that his theories were at odds with a belief in God." One chapter is devoted to "The Remarkable Leakeys," and this book clearly ranges worldwide, presenting the study of the human species from a paleoanthropological point of view. Hence this capstone of Lasky's trilogy has the least to do with the image of the American West. Nonetheless, it deserves mention inasmuch as it reinforces Lasky's reputation as a premier writer for children and young people. It also reinforces the sense of human time on earth; maps in the opening chapter reveal the shape of the continents over the last 200 million years. Pouring the billions of years of the history of Planet Earth into a 24-hour time period, Lasky asserts that dinosaurs appeared an hour before midnight and mankind just a minute before midnight.

Traces of Life has a text woven of three strands: first, scientific controversies; second, illustrations; and third, fiction. Two examples of fiction come to mind. In the chapter on the australopithecines, Lasky inserts a story about a young girl at home both in the trees and on the ground. At eleven, this girl does not know why she feels movement abdominally, but "...she, the mother who will never be called mother, will know how to nurse the baby and care for it and love it wordlessly in a world that existed over three and a half million years ago."44

Another poetic story can be found in the section on the Neanderthals: Lasky places a pre-teen girl in a cave where her people live out a ritual which centers on the bones of a bear. As the frightened girl takes comfort in the presence of her fellow beings, her nightmare turns into a self-fulfilling prophecy: "Now she is the one erouching, ready to spring into her own new life." Thus a religious ritual turns into an initiation rite as the girl undergoes a powerful transformation. The forte of *Traces of Life* is bringing young characters of both genders into the central action of the story, namely "the origins of humankind."

In the thirteenth and closing chapter, dated the year 2,001,988, Lasky invents a tale of a professor "...in the Pacific Rift University on the island of California...Broderick Olcott, director of SPCRA—the Search for Pre-Continental Rift Ancestors." In his lecture, he offers his students theories for the missing link between Homo sapiens sapiens and Homo sapiens sapiens (Homo telepathicus). Could Peggy Sue be the missing link between the descendants of the human beings of the late twentieth century and the Homo telepathicus of the distant future? As Lasky closes her book, she has the professor instruct his class in this manner:

"She [Peggy Sue] was special. Her time was special. It was a time when meaning was sometimes hidden and pictures were incomplete. It was a time of books—" Professor Olcott's voice is choked with emotion as he gazes back two million years—"and a time for slow wonder and imagination."⁴⁷

To be sure, Lasky's trilogy offers "...time for slow wonder and imagination."

The new Sternberg Museum is designed to stimulate the scientific curiosity of rural children. The fossil pit, identification booths, computer software are a means of capturing the essence of the fossil seekers, as expressed by writer Kathryn Lasky:

I am an idolator of insensible gods, for they are indeed the most sacred. In my books I am not concerned with messages, and I really do not care if readers remember a single fact. What I do hope is that they come away with a sense of joy-indeed celebration—about something they have sensed of the world in which they live. 48

NOTES

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- 15. Ibid., 119.
- 16. Ibid., 120.
- 17, Lasky, 362-363.
- Jay Burns. Museum Educator, Stemberg Museum of Natural History, Twilight Tour, 11 June 1993.

- 19. Greg Liggett. Vertebrate Paleontologist, Stemberg Museum of Natural History, Spring 1995.
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- 32. Ibid., 43.
- 33. Telephone conversation with Kathryn Lasky, 15 June 1993.
- 34. Lasky, The Bone Wars, 213.
- 35. Ibid., 330.
- 36. Ibid., 103.
- 37. Ibid., 122-123.
- 38. Rogers, 17.
- 39. Ibid, 31.
- 40. Ibid. 34.
- 41. Lasky, The Bone Wars, 211.
- 42. Rogers, 115.
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- 44. Ibid., 62.
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- 48. Lasky, The Horn Book, 532.