

ARTICLE

WAS CHARLES H. STERNBERG THE PROFESSIONAL ANCESTOR OF THE
MODERN COMMERCIAL FOSSIL COLLECTOR?

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INTRODUCTION

Charles H. Sternberg (1850–1943) (Fig. 1) was the patriarch of a family which for two generations was involved in collecting and selling fossils to wholly or partially financially support themselves. Sternberg began his collecting career in the early years of the ‘dinosaur rush’ of the nineteenth century, at times collecting for both Edward D. Cope and O. C. Marsh, as well as for various institutions. His three sons continued with an interest in paleontology, and all his sons ended up being employed with government or academic institutions (Rogers, 1991). Sternberg-collected fossils, whether collected by the father or the second generation, can be seen in almost every major museum in North America and Europe.

Sternberg’s name and career are often invoked by modern-day commercial collectors to make the claim that they are simply carrying on in Sternberg’s legacy, that their collecting activities are little different in scope than his and that they similarly contribute to the science of paleontology. The November 19, 2013 public auction at Bonhams in New York is one example of recent commercial activity involving fossils. According to the auction catalogue of fossils specimens for sale, 35 lots had estimated values over \$10,000. Thirty-seven percent of those lots (13) had values over \$100,000; 9% (3) had values over \$500,000; and the two headlining specimens were valued at \$1.8 and \$7 million respectively (Anonymous, 2013). This summary does not include specimens that were pulled from the sale.

Those asking prices are considerable sums of money, and are not inconsistent with other recent fossil sales. Can modern commercial collectors claim that their activities are essentially no different than the work that Sternberg did? If Sternberg was the ancestral commercial dealer, what did his dealings look like compared with those of today? The goal of this paper is to explore the economics of commercial fossil collecting during Sternberg’s time and compare that with these high-dollar sales of dinosaurs and other fossils today. Are modern collectors following Sternberg’s lead, at least as far as how much he earned when fossil collecting compared to the market prices sought today?

CASE STUDY

The actions and events of Sternberg’s collecting activities in the San Juan Basin of New Mexico in 1921 have been well documented (Hunt et al., 1992), and will serve



FIGURE 1. Charles H. Sternberg. Photograph from the Forsyth Library, Fort Hays State University, Hays, Kansas.

as an historic case study. Whereas Sternberg did sell individual fossils, often fully prepared and mounted for display, he more often worked under contract for a benefactor for a collecting season. Under those arrangements he was paid a sum, out of which he covered his expenses and retained some amount of income for himself. All the material discovered during the contract period was shipped to the individual, or more often institution, paying the contract. In this regard his operation is in direct contrast to most of the modern commercial collectors who first find fossils, and then work to sell them piecemeal.

In 1921 Sternberg was under contract with the University of Uppsala, Sweden, and took his direction from

Dr. Carl Wiman. It was agreed that the university would pay \$2,500 for the season's work and get all fossils. Immediately, we can see that Sternberg's arrangement was comparable to a contract worker being employed for a period of time, and not comparable to a vendor selling a commodity. At the end of the season, Sternberg delivered to the university an itemized list of 113 specimens, some of them being individual fossils, but they also included specimens like dinosaur and crocodile skulls, about 60 turtle skeletons, and several partial dinosaur skeletons. So how does the amount of money he was paid in 1921 compare to modern monetary values?

As any economist would tell you, this is not as simple a question as it might seem on the surface. When comparing the value of monetary amounts in different time periods (1921 compared to 2014) there are many different ways to view those values, and depending upon the metric and assumptions used, the amounts can vary widely. Also, costs of different goods and services are not constant, so what might cost \$500 (in modern value) in 1921 may only cost \$10 due to improvements and efficiencies of advancing technologies. For these reasons a purely straight across-the-board comparison cannot be made. All of the figures given in the discussion come from the calculators at MeasuringWorth.com (Williamson, 2014), and I acknowledge Samuel Williamson for guidance; however, all mistakes in interpretation are mine. The last year that site has modern data is 2012, so all modern figures given in the discussion are in terms of 2012 dollars.

PAYMENT AS SALARY

If we examine Sternberg's 1921 contract as if it were a salary, we might compare it to current purchasing power based upon the Consumer Price Index, which is a measure of the cost of goods and services over time. In this view, \$2,500 in 1921 would purchase about \$32,100 worth of material (real cost) in 2012. Another value we could compare it to is a statement of value. This value is a measure of purchasing power. Over time we purchase more consumables due to a higher standard of living, and the prices of those consumables increase due to inflation. So, \$2,500 in 1921 could be valued today as being able to purchase \$79,700 (real value).

However, we must remember that the money paid to Sternberg was both salary and operational expenses, from which he had to buy supplies and hire wagons, horses, and laborers. Throughout the season, Sternberg wrote to Dr. Wiman about sending the money from the contract as apparently Sternberg fronted the money for the season in anticipation of Wiman paying. In letters dating at least from July, 1921 until he was finally paid sometime after November, 1921, Sternberg complained to his benefactor about lacking the funds.

On July 30, 1921 Sternberg wrote to Wiman and asked for the money in a post script:

"PS I am depending on the money being sent to Glendale National Bank Calif. The first of August, to meet my

expenses here they are heavy." (All quotes taken from Sternberg letters are printed in Hunt et al. [1992]).

By September 4, 1921 Sternberg's tone became more urgent:

"The thing that worries me is that I have received no notice from the Glendale National Bank that the \$2500 has been received. It is very serious as I depended on that money to continue my work until the end of my contract and I do not want to lose any time going to town as I will have to in order to cable you asking where the money is. It is a serious thing to be out of money here among strangers."

Despite these pleas, Sternberg continued work and reported his discoveries to Wiman. Late in the field season Sternberg discovered a nearly complete ceratopsian skeleton, articulated but lacking a head. Perhaps hoping to play upon any guilt Wiman might have about the delay in transferring the money, Sternberg suggested that this specimen was worth a bit of extra money to compensate for the extra time he took to collect it. He wrote on November 14, 1921:

"Taking up this specimen and travelling by my Fords [sic] truck will take me to the end of December. You will realize as I found it [the ceratopsian skeleton] during contract time I cannot keep it myself. Farther that when I started taking it up I had to finish. This of course greatly injured me financially. For that reason I cabled you and you freed [sic] yourself by saying 'no more money.' Unless I receive \$622 ½ in addition to the \$2500 I will have worked 5 months for the bare expenses of my expedition. But under the circumstances I am forced to send the skeleton to you. I have sold skeletons no better for \$2000."

This reply indicates that Sternberg had already asked for extra money and that Wiman had replied no. Hunt et al. (1992) speculated, and I also think it likely, that Wiman did not take Sternberg up on sending extra money, although he was apparently eventually paid the original contract price and the specimens shipped to Sweden.

There are several telling bits of information in this correspondence that provide evidence of Sternberg's sense of honor, and the commercial value that he placed upon his work and the fossils. If we are to fully believe Sternberg, the expedition cost him more than the \$2500 agreed upon, leaving no room for his profit, and he even suggested a rather specific price of \$622.50 to make him whole.

There is no way of knowing how much money over his overhead Sternberg made, or if he did lose money. For the sake of argument, if we assumed that Sternberg exaggerated his financial situation to Wiman, and in fact could pocket \$500 as profit (extremely unlikely), than that amount of money adjusted to today would be \$6,410 using the Consumer Price Index (historic standard of living), \$15,900 under the statement of value index (contemporary standard of living), or \$37,700 using an economic status index that measured the relative 'prestige value' using per-capita Gross Domestic Product (GDP).

PAYMENT AS COMMODITY

It is clear in the given case study that Sternberg was not selling the fossils he collected as a commodity, but that he collected under contract. However, we can gain some insight into the commercial value of fossils as commodities at that time from the correspondence. Sternberg noted that the ceratopsian skeleton that he collected was in itself worth \$2,000, although this is likely an exaggerated value. What is the modern monetary equivalent to that 1921 estimate of value?

To estimate the modern value of a commodity we can again turn to the Consumer Price Index, which gives an indication of how much an item would cost in today's dollars (real price). Another valuation indicates how 'affordable' that amount would be to an average person by taking into account wages over time (income labor value). Again using the calculators at measuringworth.com those numbers for a \$2,000 dinosaur skeleton in today's money are \$25,700 (real price) and \$112,000 respectively (labor value). We know that Sternberg was paid \$2,500 for all the fossils he collected; including the one he suggested was worth \$2,000. However, for the price of \$2,500 the total lot of specimens, all 113, shipped for the modern values of \$32,100 (real price) or \$141,000 (labor value).

PAYMENT AS A PROJECT

Another potential way to evaluate what Sternberg was paid in 1921 for the collection of the dinosaur material is to view it from the standpoint of the university that hired him to carry out the project, in this case the expedition and collection of fossils. In other words, the decision was made that this use of \$2,500 was an appropriate and affordable project as they could have chosen to spend that money another way. For example, labor costs in Sweden were generally lower than in the United States, so the \$2,500 could have purchased overall more labor at home (Bureau of Labor Statistics, 1927), and might have been used to cover a lecturer at the university, for example, rather than buying fossils. As with the other evaluation methodologies there are several different approaches to this.

Using a Historic Opportunity Cost index compares the cost relative to the GDP Deflator. The GDP Deflator is an index that represents the 'average price' of all goods and services produced in the economy, with changes in the Deflator being a broad measure of inflation. It is generally preferred to use Consumer Price Index for projects of a person, but is included here for discussion. The \$2,500 paid for this project in 1921 calculates to be a modern project value of \$25,600.

DISCUSSION

How profitable was the life of a fossil hunter in 1921? These data suggest that if we generously grant Sternberg a net profit for his time in the field after expenses, he may have made \$6,410 to \$15,900 (in 2012 dollars) for five months of work. Assuming he could do that all 12 months (which he could not due to weather) his annual modern

income at least for that year could be approximated as \$15,384 to \$38,160. In 1921, Sternberg was not a young man at 71 years of age, so he was not at his prime, however there is no reason to think that this range of income was not generally typical for him. At the highest estimate of \$38,160 annually Sternberg earned more than the modern poverty rate for a two-person household (him and his wife) of \$15,510 (Federal Register, 2014), but again it is very unlikely that he was able to net that much for the summer's work. The lower estimate of \$15,384 puts him just below the poverty line.

If he had been able to sell the fossils he collected individually, his 'prize' specimen of the season, with his likely inflated estimate of worth of \$2,000 in 1921, he might have been able to sell for somewhere between \$25,700 and \$112,000 in modern dollars.

Looking at the season from the point of view of the university that hired him it seems to have cost them about \$25,600 (in 2012 dollars) for a season's work to mount the expedition, pay their labor and expenses, and bring in a sizeable collection of fossils. This seems like a reasonable approximation of what many museums who conduct field collecting trips might anticipate their costs to be. At least it is not wildly out of line.

In the Bonhams sale of November 19, 2013, 35 lots had estimated values over \$10,000. Of those, more than a third had values over \$100,000, and 9% were valued over \$500,000. The two headlining specimens, a full *Tyrannosaurus rex* mount and the "Montana Dueling Dinosaurs", had asking prices of 3.6 to 14 times over \$500,000. (It should be noted that most of these high-dollar specimens did not sell that day). In his 'wildest' estimate, Sternberg's ceratopsian dinosaur had a modern value of \$112,000, but was really much closer in value to the real price of \$25,700.

It is understood that the exercise undertaken here involves a lot of room for interpretation. The specimens at auction could be argued to have been especially commercially valuable, whereas those collected in 1921 by Sternberg might not be directly comparable. This is not a large data set of historic sales. It may not be without merit that economics was once called "the dismal science" by historian Thomas Carlyle. It might be an impossible task to attempt an analysis like this, at least when done by a paleontologist. However, I think some conclusions can be drawn.

First, Sternberg did get paid to collect fossils, but that meant he was a commercial fossil collector, not a commercial fossil dealer. He was often paid for his labor and expenses on contract, and not for the specimens themselves. Even when he attempted to convince Wiman that he should get paid more because of the quality and expense involved in collecting the ceratopsian partial skeleton, he knew that the specimen already belonged to the university because that was his contract.

Why did Sternberg not push harder to make the case that he should get more money? Clearly if he really felt

that the single specimen could be sold for the price he gave he might have tried harder to work a different deal. Honor is certainly one reason—Sternberg knew the terms of the contract he entered. However, no doubt the market at the time also played a large role. Universities and museums were the only ones buying fossils, period. There was no larger market demand for fossils as decorative or novelty items such as there exist today.

To illustrate that point we turn to the unrelated case of Earl Douglass. In 1913, in a clever attempt to secure rights to the public lands that would one day become Dinosaur National Monument in Utah, Douglass filed a mining claim on the land to gain exclusive rights for the Carnegie Museum to collect there. The claim was denied by the Department of the Interior (DOI) and Douglass appealed that decision. The DOI has the authority to adjudicate appeals and grant a final decision in cases like this. The claim was ultimately denied on the grounds that fossil bones could not be classed as a “mineral product in trade or commerce, nor does it [dinosaur bones] possess economic value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts;...” (Department of the Interior, 1916:326). At least in 1915, the DOI could find no commercial value in dinosaur bones. That finding might surprise a modern reader who has seen dinosaurs sold for millions. Sternberg did not have a wide supply of eager buyers.

Lastly, Sternberg was very clear about his own motives. He was driven by the love of the fossils and the contribution that he felt he was making to science. In a December 6, 1919 letter to Dr. Wiman he wrote:

“Every dollar I receive goes back into the expenses of my field and laboratory work...So I feel with you I can look back upon my life with gratitude to God that He has chosen me, a small insignificant crippled man to add to His glory, by adding to human knowledge the wonderful story of his [sic] buried dead. With that sentiment I have been able to endure contempt, lack of support and a thousand other things that irritate a man, who works among a people so wrapped up in the pursuit of the Almighty Dollar, they can see nothing else. But enough of my self. Let my works stand as an enduring monument to my devotion to science.”

To compare most modern commercial fossil collectors and the modern market for fossils to the time and the man of Charles H. Sternberg is just plain wrong, and is a disservice to his memory. The professional phylogeny from Sternberg is more properly traced to museum and university employees who have, like Sternberg, found a way to make a modest living by doing what they love, collecting and preserving fossils for the good of us all. His actions and words show that Sternberg was far more similar to those academic collectors than to the modern version of

those selling fossils. While commercial fossil collectors of today may share some similarities, some plesiomorphic traits if you will, with Sternberg, theirs is a much different business in a very different world. In 1921 Sternberg sold 113 specimens, including a 7.5 foot ceratopsian skull; a partial ceratopsian skeleton; other dinosaur vertebrae, jaws, teeth, femora, and numerous sundry other parts; partial crocodile skull; and close to 60 turtle skeletons. If we assume their worth was equal to the highest modern value calculated in these exercises, the claim might be made they were all combined worth \$141,000 in modern terms. It looks like in 1921, \$100,000 bought a lot more than one can get today.

Critics might point out that today there is more of a market demand, and that it is demand that drives prices up to their current levels, and it is all just the action of the free market. The point is granted. But Sternberg collected before these present market conditions, worked on slim margins with limited market demand, and yet he toiled on, with a true deep passion for science. He was not inspired by potential astronomical financial gains seen in modern times. For these reasons modern commercial fossil collectors should relinquish any claim of professional phylogeny with Charles H. Sternberg, or any of his clan.

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