

First Installment

Chris Anderson is one of ten local interns chosen for Pinhead Institute's 2006 Internship Program, which sends high school juniors and seniors to work with mentors in science institutions throughout the world. Chris spent two-months this summer working with Dr. Conrad Labandeira, a paleontologist at the Smithsonian National Museum of Natural History in Washington DC. Chris is currently a senior at Norwood High School, and hopes to continue his work in paleontology in college and graduate school. Dr. Labandeira enthusiastically invited Chris back to his lab next summer.

Week One

Wow, where to start? A lot has happened in the week since I have arrived in Washington, DC. I arrived last week amidst a flooded DC; luckily, though, the day my plane left was the day that it stopped the record breaking downpour. Soon after arriving I met my host for the next two months, Mr. Ned Slagle. Ned is an old friend of my grandfather's who was gracious enough to allow me to stay with him for the duration of my internship.

On Friday I met my mentor, Dr. Conrad Labandeira, a paleontologist who specializes in the evolution of plant and insect interactions. After meeting Dr. Labandeira I was given a desk and told about the first project that I'm going to be working on: researching Paleozoic plant-insect relations from the Carboniferous Period. This means that I get to spend the next couple of weeks sifting through various plant fossils from the Carboniferous age under a microscope and try to identify signs of insect herbivory. It's not the most glorious work, but I'm still enjoying it quite a bit because of the fact that I'm handling these fossils in the Smithsonian, of all places. It still boggles my mind to think that I'm actually interning at the Smithsonian.

My grandfather, who drove me out East, and I spent the rest of the weekend visiting some of the various Civil War battlefields around Washington DC. The first stop was Antietam, the site of one of the bloodiest battles in the Civil War. The battlefield was pretty interesting, although I could have done without viewing the multitude of fat tourists milling about. Next we went to Harper's Ferry. Harper's Ferry was the site of US national arsenal from the Revolutionary War right up until it was destroyed in the Civil War. Harper's Ferry sits at the confluence of the Potomac and the Shenandoah rivers and the scenery was quite breathtaking. It reminded me a little bit of home, even though the "mountains" around there were only a fraction of the size that I'm used to.

Week Two

My second week at the Smithsonian has been great. I managed to finish the early Carboniferous (Mississippian) project last week and I did actually manage to find some very suspicious looking damage to a few fern pinnules. Dr. Labandeira wants to photograph the specimens sometime in the near future so that he can say for sure whether or not the damage on these pinnules was caused by insects or not. The reason this is

somewhat exciting though is because if a couple of these actually turn out to be damage caused by insects it would be some of the first known insect herbivory, ever.

After finishing that project, however, Dr. Labandeira got me started right on another one. This time I get to look through Mazon Creek, IL material from the Middle Pennsylvanian and try to find insect damage on one particular seed fern, the *Macroneuropteris Scheurchzeri*. I'm actually really excited about this project too because the level of preservation on this Mazon Creek material is just amazing. It's as if the leaves fell of the plant yesterday and were somehow...encased...in..rock.

The hardest thing for me to adjust to so far has been grasping the concept that I'm getting up every day to go to "work". I'm enjoying what I'm doing so much that there doesn't seem to be any of that "workish" stuff involved. It's an absolutely amazing chance to be immersed in something that I may want to do for the rest of my life and I would really like to thank the Pinhead Institute for everything it did to help get me here. I would especially like to thank Nana Naisbitt and Kari Koch for guiding me through the whole process. Without either of them none of this would have been possible.

On Saturday I decided to go check out the Air and Space museum since I hadn't been there yet. I succeeded, somewhat, in what I set out to do. I was hopelessly sidetracked from the second I stepped off the metro. I had to pass no less than three art museums on my way to the Smithsonian Air and Space Museum, and I just couldn't help myself. The Freer Gallery features Oriental and East Indian art and artifacts. Some of the stuff they had in there dated back thousands of years. I also had to pass by the Smithsonian's Hirshhorn Museum and Sculpture Garden. The Hirshhorn featured more "modern" art and I still enjoyed it quite a bit. The building itself was pretty interesting as it is a large circular building with a giant, geyser like fountain in the middle. Eventually I found the exit to the Hirshhorn and I started my trek back to the Air and Space museum. It was already late in the day and I was sick of fighting with the crowds of tourists, so I only ended up staying a fraction of the amount of time that I should have. Oh well, I'll try again next week, should the allure of space prove more than African art and Native Americans.

Second Installment

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Week Three

My third week at the Smithsonian has been largely uneventful. I'm still working on the Mazon Creek material as Dr. Labandeira has shown me a new type of damage to look for and I now have to go back through most of it. The "field", as they call it, in the

paleobiology department, is just amazing. There are literally dozens of rows of giant cabinets that are just full of drawer after drawer of fossils. The sheer number of fossils, even just in the area I'm working, is mind-boggling.

My host Ned took me out on a little sight seeing tour on Saturday, which I enjoyed quite a bit. First we went to the National Cathedral. I'm not particularly religious, by any means, but I'm still always awed by the architecture and craftsmanship that goes into cathedrals of this stature. Some of the stained glass and reliefs were just breathtaking in both scope and intricacy. The National Cathedral is also home to President Woodrow Wilson's sarcophagus (the only president to be buried in DC proper) and the resting place of Hellen Keller's ashes, so it was interesting to see that too.

After the National Cathedral we went to Meridian Hill Park. Meridian Hill Park is a park in the vein of the Renaissance and Italian gardens found in most large European cities and the architecture there really shows it. The most striking feature, to me, was a large waterfall stairway in the middle of the park that emptied into a small pond. Some of the features and reliefs around this waterfall really added to the feeling you were in a very old park somewhere in Europe.

Week Four

Shale, shale, and more shale. My fourth week at the Smithsonian has been full of shale, almost nothing but shale. I have extended my search for the elusive *Macroneuropteris Scheuchzeri* into a new collection this week. The preservation is nowhere near as good as the Mazon Creek material and I'm forced to use a microscope because of it. Dr. Labandeira should be returning sometime next week and I'll be able to show him all of the new specimens that I have flagged and hopefully they'll be of some use to him.

Outside of work I had a great time this weekend pursuing the Library of Congress, Folger's Shakespeare Library, and the National Museum of the American Indian. The Library of Congress was by far the most impressive of the three. The entire building is saturated with hidden symbolism and references to famous writers, poets, philosophers, scientists, and mathematicians throughout history. One could spend weeks examining just the decor of the Library and learn much about the history of human thought.

I managed to make it to the National Museum of the American Indian and I must say that I wasn't disappointed. They had an absolutely wonderful exhibit on the Indian tribes of the Pacific Northwest that held my attention for almost the whole time that I was there. Another part of the museum that I liked was the cafe that featured traditional food for several different Indian tribes from across the nation.

Third Installment

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Week Five

Dr. Labandeira returned from his fossil collecting trip and I showed him some of the specimens that showed gall like structures that I had found while he was gone. He seemed to be pretty excited about that because apparently specimens with galls on them are very rare for this time period. It always makes me feel good when I find something like that because it makes me feel like I'm actually accomplishing something here instead of just being the "poor intern" they sent to be buried in shale.

On Saturday I went to Shenandoah National Park just west of DC and had a great time hiking around for a few hours in the "mountains". I hiked a really great trail down to a 70-foot waterfall called Dark Hollow Falls. On the way back from the park I stopped by the Lurray Caverns. The caverns were very beautiful. The tour guides, however, tell you in the beginning not to touch anything but they fail to tell you *why* you shouldn't touch them. The creative force behind cavern formations of all kinds is water and humans have all sorts of oils on their skin. When you touch these cave formations some of that oil is left on the rock. Since oil and water don't go together, water will now run around where you touched, essentially "killing" that part of the formation. I don't think many people realize what kind of damage simply touching the formations causes, and subsequently I saw several people touch some of the more spectacular formations.

Week Six

Largely uneventful. Those two words pretty much sum up my sixth week at the Smithsonian. I'm still slowly but steadily marching through drawer after drawer of shale, always shale. On the bright side though I've managed to find a rather large collection of *Macroneuropteris scheuchzeri* that seems to have the same types of damage that was found on the Mazon Creek material. It's nice to see consistency like that, and hopefully because of that Dr. Labandeira will be able to write a couple papers on these specimens.

I'm just now starting to realize how incredibly large the building is for The National Museum of Natural History. The building is just absolutely colossal, with the exhibits actually taking up a very small portion of the building. Just the other week the person that I share the lab with, Laura, and I got hopelessly lost on the way to the RTP Intern Research presentation in some ungodly part of the museum. A couple of the intern presentations were mind numbingly boring but a few were genuinely well presented and interested me quite a bit. Most specifically there was a presentation on the computer-based reconstruction of a Permian forest based on flora records that I enjoyed quite a bit.

My weekend, thankfully, was far more interesting than the rest of the week. As a belated birthday present Ned took me on a Segway tour of the city. The tour started at a piece of history, the Willard Hotel. The tour guide had a rather funny anecdote about the Willard and life in DC in general. Apparently, in a previous tour that he gave, his tour group got to see Laura Bush enter the Willard and then not 5 minutes after they saw Laura Bush a crazy homeless man came from around the corner and started ranting and

raving at the top of his lungs about whatever crazed homeless people rave about. You become very cognizant of being in the nation's capital with experiences like this. One second you'll see an extremely high profile politician and then the next minute you'll see someone completely out of their mind. Now that I think about it, actually, I suppose those two types of people aren't too inherently different. It seems that you have to completely out of your mind to be elected to any sort of public office nowadays.

Forth Installment

Chris Anderson is one of ten local interns chosen for Pinhead Institute's 2006 Internship Program, which sends high school juniors and seniors to work with mentors in science institutions throughout the world. Chris spent two-months this summer working with Dr. Conrad Labandeira, a paleoentomologist at the Smithsonian National Museum of Natural History in Washington DC. Chris is currently a senior at Norwood High School, and hopes to continue his work in paleontology in college and graduate school. Dr. Labandeira enthusiastically invited Chris back to his lab next summer.

Week Seven

It's amazing to me that I've already been interning for seven weeks. The time seems to have just flown by in a blur of museum dust and shale. In two short weeks I will return to Norwood and the drudgery that is school. Despite being less than enthusiastic about returning to school, I'll be very glad indeed to finally get out of the city and back into the mountains. I've slowly been losing my sanity being unable to mountain bike, or even just hike in real mountains. So in that regard, it will be wonderful to return.

My search continues, and it's becoming increasingly more difficult to even find any *Macroneuropteris Scheuchzeri*, much less *M. Scheuchzeri* exhibiting insect herbivory. My exploration of Carboniferous flora shall continue though, and I'll be sure to report any discoveries. And if not, you'll be sure to hear about my lack thereof.

Week Eight

I'll make my update short and sweet this week, but I do have good news. I finally found something worth mentioning in this Godforsaken shale: a specimen that is just rife with signs of insect herbivory. This particular specimen of *M. Scheuchzeri* shows no less than three different types of feeding: a gall, a hole, and a funny little U shaped area on the margin that could be type of surface feeding or even perhaps some type of fungal infection. The gall and the hole are exciting finds all on their own, but the "U" shaped area on the margin are the jewel on this specimen because it shows a very clear continuity from the Mazon Creek material. I found several Mazon Creek specimens that showed this odd type of damage and the fact that this specimen has it is very exciting. This new specimen is from a different locality, Mazon Creek was believed to have been a river delta with a lot of sediment, hence why there is such good preservation. The new specimen was preserved in a completely different environment, from somewhere in Pennsylvania, quite possibly several million years later, and it's this kind of continuity that we are really looking for in studying the evolution of plant-insect relations.

I'll use this space to thank my gracious hosts Ned and Peggy. Both of them have been absolutely wonderful. Not only have they let me live with them for these last couple months, but they've gone beyond what normal hosts would have done in making me feel at home. My stay has been made immeasurably better by both of them. So again, thank you, both of you.

I would also really like to thank Pinhead Institute again, especially Nana Naisibtt and Kari Koch for everything that they've done. My mentor, Dr. Lanbandeira was very supportive and I want to thank him also. He would always answer any question I may have had and he gave me more than enough background information to complete my work in the best way possible. He was always very friendly and easy to get along with as well. This was an absolutely great experience that has really done much to prepare me for a career in the sciences, and besides, it was just a really fun experience.