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Meet Our Museum Podcast: Henry Fitz’s Telescope Shop

Date: 8/2010

Audio-only Podcast online at: <http://americanhistory.si.edu/thinkfinity/podcast/HenryFitz.mp3>

Codes:

MR = Matt Ringelstetter

ST = Steven Turner

“ “ = interrupting, pause

[] = not speaker’s words

MR = Look, up in the sky. Wait, are you using a telescope? If so, did you ever think how a tube and lens could help you look at things so far away? Telescopes today can look deep into the far reaches of the universe giving scientists and amateur, backyard astronomers a glimpse into fascinating places and objects in the sky. One hundred and fifty years ago telescopes were much simpler but relied on similar principles. Today we’re going to learn about America’s first successful telescope maker; a man by the name of Henry Fitz. Fitz lived from 1808 to 1863 and during a 15-year stretch, he produced about 80% of the telescopes made here in the United States. After his death, his shop in New York City was basically forgotten about until the 1950s. That’s when curators from the Smithsonian walked through its door taking a step back in time as the

shop had been left almost completely undisturbed from when Fitz last left it. Let's listen to curator Steven Turner discuss the work of Henry Fitz and his telescope shop.

ST = My name is Steven Turner. I'm a curator in the physical sciences collection of the National Museum of American History; in the Smithsonian Institution. Today I'll be talking about Henry Fitz, America's first successful commercial telescope maker, and an important figure in early American science. Henry Fitz was born in 1808 and died in 1863. He was a man of many interests. He was a cabinet maker, he was active in early photography and he was also a very dedicated telescope maker and amateur astronomer. Fitz made some of the earliest American daguerreotype photographs and claimed to have made one of the first portraits ever made in 1839 and in 1841 he opened a successful photography studio in Baltimore, one of the first in America. Although his photography studio was extremely successful, he kept experimenting with lens making. He was deeply interested in astronomy and by 1845 he had begun making telescopes full time. Fitz won many awards for his telescopes and was really the first commercial American telescope maker. As I said, he was very successful and it has been calculated that between 1840 and 1855, in that fifteen year period, he made 80% of the telescopes made in America. He made hundreds of them. Unfortunately, he died suddenly in 1863 just as his business was at its highest success. His 16 year old son Harry took over the business temporarily but he struggled to keep it going and by 1884, the company was out of business and the telescope making shop had been closed. The shop remained closed until the 1950s when Mrs. Willard Howell, one of Fitz's descendents, donated it to the Smithsonian.

When the Smithsonian staff arrived, they found the shop in basically the same condition as it had been when Fitz was in business. It was a time capsule; the nameplate was still on the door and Fitz's hat was still hanging on a peg inside. There were even still pots on the stove and all of Fitz's tools were just where he had left them. Fitz made all the parts for his telescopes including the lenses, prisms, eye pieces, filters, lamps, mounts and at least in some cases the wooden telescope tubes themselves. He got his glass mostly from France but almost all of his glass came from Europe. One of the problems with his business was always to find high-quality optical glass for his telescopes. Fitz's

shop contained a number of specially made tools including special hand tools for working brass but also special tools for cutting and grinding the glass lenses. This is the 12 inch lens from the telescope that Fitz made for Vassar College. This telescope is now on display in the National Museum of American History. At the time it was made, this was one of the largest telescopes in the United States.

Henry Fitz was America's first successful, commercial telescope maker and the large number of telescopes that came out of his shop were important in increasing American interest and knowledge of astronomy. Although Fitz's telescopes were later surpassed in quality and size, he was an important pioneer in American science and scientific instrument making and he served as a model for those who came after him.

MR = Can you talk a little bit about his lab was donated or his work place was donated, his shop, was donated to the Smithsonian. In what year was that?

ST = In the 1950s the shop was donated, yes.

MR = The 1950s. What was it like when it was basically discovered?

ST = Unfortunately, I wasn't there. But this is such an unusual thing for museum people to be able to find these shops are valuable and important places and they don't get abandoned very often and they rarely are saved if they are. So this was a real time capsule; a view into the past and really the beginning of American interest in science and activity in science and to have such a central figure have all his work preserved is really a special case and something that we're putting considerable study into now to really understand what Fitz was doing and what it meant to American scientists.

MR = So, when a telescope is made, everybody knows about the tube part and there's a lens, obviously, what else is going on when someone creates a telescope like this?

ST = Well you have... telescopes are heavy so you have to have a mount to hold them and there's a big lens on one end which collects a lot of light and focuses it but then you have

to enlarge that so that's what an eye piece essentially does. It's a magnifier to make the image larger; both larger and brighter since you're bringing in more light. And then you have to have a mechanism in the telescope to focus these lenses depending on if you're looking at a moon or a star or something on the earth the focus points will be a little bit different.

MR = So that's the pitch that they found on the stove.

ST = Yeah.

MR = And, what is the pitch used for?

ST = It was used to attach the lenses to the machines that were used to grind them. Basically so you could attach the lens to a holder that was then used to manipulate the glass against the grinding material. You used special tools with specially cast templates for his lenses so that they sort of automatically made the proper curves. And then all the final polishing he did himself for all the lenses that came out.

MR = What was it about Fitz's telescopes or his methods that was different from the time period that would make him such a successful telescope maker?

ST = Fitz was able to, well Americans were anxious to buy their scientific instruments from American manufacturers. They were tired of looking to Europe for leadership in scientific matters and anxious to develop American expertise. So, Fitz fit right in with that. The fact that his telescopes were made in the United States meant that they were considerably cheaper than European scopes so that was encouraging for people who wanted to pursue astronomy as either as a hobby or as a study.

MR = Right place, right time?

ST = Exactly so. Exactly so.

MR = I'm assuming that scientists were purchasing the telescopes but were they the only ones that were using telescopes at the time?

ST = There weren't many professional astronomers at this time. Most of... the larger telescopes that Fitz made went into colleges and universities and his medium and smaller instruments went to private observatories or amateur astronomers. They were used to typically at the time to find comets which was a big object of study, to separate double stars, to basically do the hard legwork of mapping the sky.

MR = Were amateur astronomers purchasing telescopes at the time or was that further down the road?

ST = No, no. There was a huge popular interest in astronomy. In the 1840s a number of important comets were seen by all Americans. There were some large comets and that really peaked interest in astronomy and there were also a lot of traveling lecturers talking about astronomy and the solar system and the sky. It was just a popular area of interest for people and there was always the promise that someone looking up at the sky could make a big, important discovery and make a reputation. Maria Mitchell who used the Vassar telescope that Fitz made that's on exhibit at American History. She became famous by discovering a comet and that really launched her career as America's first important woman astronomer.

MR = Take Maria Mitchell and that Fitz telescope as an example. What could someone potentially see with that as opposed to what scientists can see today?

ST = Oh, oh. I mean. One of the big hurdles was to see things outside of the solar system and then outside of our galaxy and Maria Mitchell could see things outside our solar system. She could see nebulae but she couldn't really resolve them into individual stars so what she could learn about the universe was sort of limited. She could only see a certain envelope but then the big 200 inch telescope out of polymer came in and they

can resolve individual stars and galaxies hundreds and hundreds of light years away. It's really order of magnitude. It's phenomenal what we can see now and what they couldn't see then. Yeah, yeah. It's really... One of the things that history of science folks are always interested in is the relationship between instruments and what we can know. It's complicated and kind of convoluted but in this case it's really clear with astronomy. Every little fraction that you make your telescope bigger, you expand further into space and further back into time.

MR = So really, discovery is only limited by advancements in technology.

ST = That's really one of the key things; is the instrumentation. A lot of times if your instrumentation isn't good, you'll get bad results and that sort of thing.

MR = Well, thanks Steve for taking the time to speak with us today.

ST = My pleasure.

MR = I'd like to thank Steven Turner for taking the time to discuss Henry Fitz with us. Be sure to tune in again next month as we get another behind the scenes look at the interesting work that goes on here at the National Museum of American History. This podcast has been made possible by a generous grant from the Verizon Foundation. Creative Commons Music provided by To Pull. To hear more go to freemusicarchive.org.