

Intro VO:

Once upon a time, the cosmic stage was smaller. The sun, the planets—the entire universe—all orbited our unmoving Earth.

At least, that's what our best astronomers and theologians believed, until brighter minds like Copernicus and Galileo proved otherwise.

With their heretical shove, they knocked humanity off its pedestal by proving that the Earth was not at the center of the cosmos.

And yet, their revised cosmology continued to place us *close* to the center.

As recently as a century ago, scientists doubted whether the universe extended beyond our own Milky Way.

Until an astronomer named Edwin Hubble, working with the world's most powerful telescope in the mountains high above Los Angeles, discovered just how vast our universe truly is.

And the proof of this historic discovery is securely locked away—right here in Southern California—in a vault in Pasadena.

I had to see it for myself.

Intro to walking into the Hale Library:

The Carnegie's plate vault is unlike any other archive I've seen.

Instead of paper and ink, the documents here are made of glass and emulsion. Photographic images of the heavens...the raw data of astronomy.

Close to a quarter-million of these glass plates are preserved in the basement vault.

But none changed the way we saw the universe more than the one John just showed me.

It was created by Edwin Hubble, the pipe-smoking father of modern cosmology.

Hubble is one of several legendary scientists who worked and lectured here. And he's a big reason why, today, astronomers regard this Pasadena library as hallowed ground.

ALT: And he's a big reason why, today, astronomers regard the Pasadena headquarters of the Carnegie Observatories as hallowed ground.

Carnegie to Mount Wilson VO:

Even with his exclamation point, Edwin Hubble couldn't overstate the importance of his observation.

Like Copernicus and Galileo before him, Hubble recentered the cosmos away from humanity.

He didn't just prove that Andromeda was its own galaxy. He discovered an entire universe of galaxies beyond our own—as many as 2 trillion, scientists now believe.

But Hubble couldn't have done it without one incredible machine.

Completed in 1917 with billionaire Andrew Carnegie's money, the 100-inch Hooker Telescope peered further into the universe than any other astronomical device.

It was a remarkable feat of engineering. Piece by piece, the telescope was brought up a winding dirt road to the top of the San Gabriel Mountains.

And for decades...before light pollution compromised its powers...the telescope made Mount Wilson the most important place in astronomy.

Mount Wilson Institute chief Tom Meneghini and Carnegie Observatories astronomer Johanna Teske offered to show me around.

Entering the 100-inch VO:

If there's anything like hallowed ground in the world of astronomy, the 100-inch telescope is it. Walking up its steps is a little like entering a secular temple.

Closing VO:

Mount Wilson's 100-inch retired from active research in the 1980s.

But, orbiting high above us, another device with an appropriate name—the *Hubble* Space Telescope—continues to peer into the strange and surprising depths of our cosmos.

One of its most famous photos is a little like the exclamation point on *Edwin* Hubble's discovery.

Zooming in on a seemingly dark and empty patch of the night sky, the telescope found not a void, but *ten thousand* galaxies, each burning with the brightness of billions of suns.

Finally we're starting to know our place in the universe.