In 1962, astronomers discovered a shining dot in the sky that appeared to be moving at an astonishing 47,000 kilometers per second, or one-sixth the speed of light. The velocity indicated that the object—named 3C 273—was a few billion light-years away, yet it was so bright it could have been a nearby star.

To study the object further, researchers delved into a trove of the astronomical past: a collection of photographic plates at Harvard University dating as far back as the 1860s. They spotted 3C 273 on some 600 photographs taken with a variety of telescopes over 70 years, some of them days apart. The images showed fluctuations in the object's brightness on time scales as short as a week. Because the object could not be dimming or brightening faster than light could traverse it, the researchers inferred that in spite of being more luminous than a billion suns, the object had to be less than a light-week across—the size of the solar system. The finding helped characterize 3C 273 as a new type of object known as a quasar, one of the most powerful energy sources in the universe.

The discovery shows the value of historical sky observations, says Harvard astronomer Jonathan Grindlay, who is leading an initiative to scan the 500,000 plates in the university's collection and put them online. The project—called Digital Access to a Sky Century at Harvard (DASCH)—is part of a movement by a small but persistent group of astronomers to preserve, digitize, and study old astronomical photographs in hope of doing new science.

Proponents argue that old plates provide the only way modern astronomers can study astrophysical phenomena on time scales longer than a few decades. "Why would you want to wait another 100 years to learn how certain stars might be varying in brightness and position over long time periods when we have this resource right here in front of us?" asks Grindlay, referring to the Harvard collection.

Preserving and scanning old plates, however, has been slow to win support from the broader astronomy community and funding agencies. Universities and observatories often discard plate collections when astronomers retire. Digitization projects in the United States and Europe—including DASCH—have proceeded in fits and starts on shoestring budgets.

"We live in a world where money is fixed—so the question is, what is the relative merit of the old data compared to new data?" says David Monet, an astronomer with the U.S. Naval Observatory's (USNO's) station in Flagstaff, Arizona, who until 2000 led the scanning of some 20,000 old plates for a searchable online sky catalog. Although he spent nearly 15 years on that project, Monet now thinks historical observations are of little value because of limitations on how accurately the brightness and position of objects can be determined on the images. "The thrill of going back 50 years" is one thing, he says, but "is the science case for doing so strong enough?"

Absolutely, say proponents, citing hundreds of newly identified variable stars in the tiny fraction of Harvard plates digitized to date. Meanwhile, the movement to digitize archives is getting a push from the Pisgah Astronomical Research Institute (PARI), a nonprofit in Rosman, North Carolina, which has started acquiring plate collections from institutions that no longer have room to house them. "Each of these collections is

stations such as Arequipa Observatory on Monte Blanco, Peru. Around 1881, as more and more plates started coming in, the then-director of the observatory, Edward Pickering, realized that the work of documenting the positions and magnitudes of imaged objects had to be sped up. He put his Scottish maid, Williamina Fleming, on the job. She showed such talent that the observatory soon hired a legion of women, later known as the Harvard Computers, to catalog the observations.

Grindlay and his colleagues began digitizing the plates in 2008, using a souped-up