

Branching Out

\$9 Million Gift Brings New Facility for Laboratory of Tree-Ring Research

SINCE 1937, The University of Arizona's Laboratory of Tree-Ring Research has helped scientists unlock mysteries in areas as diverse as archaeology, ecology, geology, and most recently, in climate change. Amazingly, all of this world-changing research has been conducted in the lab's "temporary" home under the west side of Arizona Stadium.

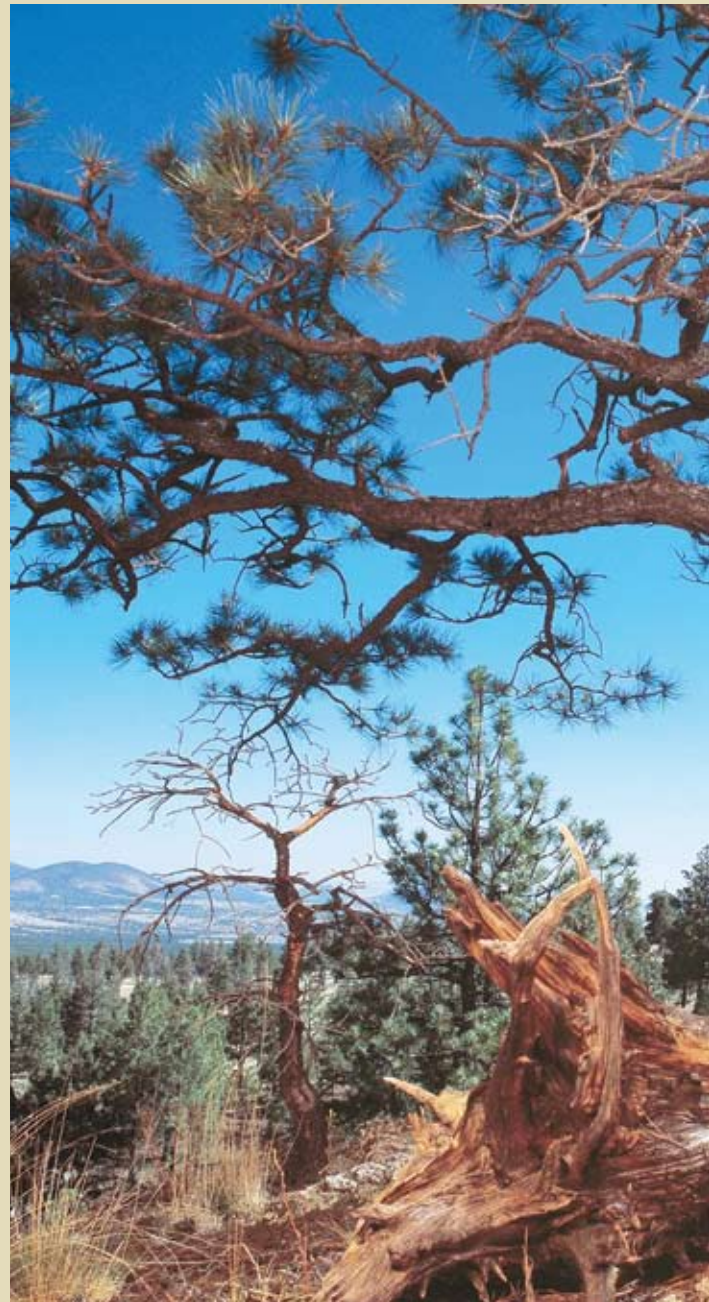
The lab's 70th anniversary celebration in November was highlighted by an historic gift from Agnese N. Haury, the widow of one of the lab's founders. She donated \$9 million to construct a new building to archive the lab's collection of more than two million samples, a centuries-old chronology of scientific information stored in wood.

The building will be named for Bryant Bannister, the lab's director emeritus. The about 15,000 square feet will store the world's largest collection of ancient timbers in climate-controlled rooms with compressible shelving on rails to maximize storage space.

Most of the samples are cores taken from the bases of trees and are about the thickness of a pencil. The largest specimens are cross sections of giant sequoias, like the 6-ton section on display at the Arizona State Museum.

The new archive will allow scientists from a range of disciplines access to materials that still offer answers to questions about ecology, water supplies, forest fires and other environmental issues.

"Each ring is like a time capsule, like a great library," Lab Director Thomas Swetnam said. "And only some of the volumes have been read, and only some of the pages in the volumes have been read. This gift has allowed us to organize the collection and make it accessible to the world to come and use this wood for future studies."



David Meko of LTRR removes a pencil-sized core sample from a ponderosa pine tree for a study funded by the Salt River Project on the flow history of the Colorado River. Photo courtesy of SRP.

Emil W. Haury

Emil W. Haury, then a graduate archaeology student, joined Douglass as an assistant in 1929 and spent a year cataloging Douglass' growing sample collection.

Haury went on to become one of the preeminent figures in Southwest archaeology, head of the UA anthropology department and director of the Arizona State Museum. He also mentored three of Douglass' successors, including Bannister.



After his first wife, Hulda, died in 1987, Haury married Agnese Nelms Lindley in 1990. The two had been friends since the mid-1960s, when she worked on Haury's excavations at Snaketown, an extensive Hohokam archaeological site near Casa Grande, Ariz. Emil Haury died in 1992 at age 88.

Agnese Haury's own remarkable career spans 60 years. She graduated with degrees from Bryn Mawr College and Wheaton College, and visited, worked and lived in more than 60 countries. She worked for, among others, the United Nations and the Woodrow Wilson Foundation.

During her five years with the Carnegie Endowment for International Peace, she traveled to Bolivia, Peru, Ecuador, Libya and Burma on special assignment to survey international assistance programs and wrote extensively about her work.

She established the Agnese N. Lindley Foundation in 1981 to benefit dozens of projects in education, science, arts, civil and human rights and the environment, and has been exceptionally generous to the UA.

Her gifts have supported the Agnese Haury Institute for Court Interpretation, the Agnese and Emil Haury Southwest Native Nations Pottery Vault, located in the Arizona State Museum, the Agnese and Emil W. Haury Endowed Chair in Archaeological Dendrochronology and the Agnese Nelms Haury Graduate Fellowship in Archaeological Dendrochronology, to name only a few.

Swetnam said he expects the UA's tree-ring lab to remain at the scientific forefront in a number of areas.

"I hope we keep our interdisciplinary mix," he said. "We're going to keep working in archaeology but expand to other parts of the world. Climate change is increasingly important, as are issues of water. So, we're going to keep on being involved in the big changes occurring on the planet and how those affect people.

"The great thing about tree rings is that we bring all of these interesting threads of science together." ■

Dendrochronology of the Labora



1906 – Andrew Ellicott Douglass is hired as assistant professor of physics and geography at The University of Arizona. Douglass is a UA faculty member for the next 57 years, including duties as a dean and a short stint as acting president. He is the founder of both Steward Observatory and the Laboratory of Tree-Ring Research.

1929 – A.E. Douglass “bridges the gap” between the ancient tree-rings in archaeological wood from Chaco Canyon and modern living trees, providing the first absolute calendrical dates to the construction and abandonment of the great Southwestern ruins. Douglass publishes the article “Secrets of the Southwest Solved by Talkative Tree Rings” in *National Geographic Magazine*, December 1929. This is one of the first world-significant discoveries made at The University of Arizona.

1937 – The Arizona Board of Regents formally establishes the Laboratory of Tree-Ring Research, December 4th, 1937, “. . . for the purpose of caring for the collections, equipment, properties and activities connected with tree-ring work. . . and for the further purpose of recognizing the priority of the University of Arizona in pioneering this most important field of study”.

1956 – Edmund Schulman, first full-time dendrochronologist employed at LTRR, discovers that the world’s oldest living trees are bristlecone pines growing in the White Mountains of California. His article announcing this discovery of 4,000 year-old trees is published in the March 1958 issue of *National Geographic Magazine*.

1964 – Bryant Bannister, who had worked for A.E. Douglass as a student assistant and was mentored by Emil Haury in his graduate studies in anthropology and archaeology at UA, is hired as the 4th director of LTRR. Under Bannister’s directorship (1964-1982) the LTRR grows to ten full-time professors.

1966 – C. Wesley Ferguson, professor at LTRR, working through the 1970s with Hans Suess, Paul Damon, Austin Long and others, provides the first multi-millennial calibration of the carbon-14 dating technique using exactly dated bristlecone pine tree rings as the standard. This work revolutionizes the use of carbon-14 dating and overturns some previous archaeological interpretations based on this dating technique.

1976 – Harold C. Fritts, professor at LTRR, publishes his classic book *Tree Rings and Climate*. This seminal work establishes the foundation of modern dendroclimatology, and to this day is the world’s most widely cited dendrochronology publication.

1976 – Charles Stockton, professor at LTRR, working with Gordon Jacoby, uses tree-rings to reconstruct the long-term flow levels of the Colorado River, demonstrating that the 1922 Colorado River Compact was based on the highest flow levels in several hundred years.

Bryant “Bear” Bannister



Self-effacing Bryant Bannister calls the naming of the new tree-ring lab archive building “inconsequential.” But many colleagues feel it aptly honors the man who brought world renown to the facility.

“He was really responsible for building the modern lab that it is today,” says Director Thomas W. Swetnam.

With “energy and vision,” Bannister, 81, quadrupled its faculty during his 1964-1982 directorship, says Swetnam, including hiring eminent climate scientist Harold Fritts.

Tree-ring research diversified to such disciplines as geology, ecology and climate.

Inspired by Professor Emil Haury, Bannister used dendrochronology to date the Southwest ruins he studied as a grad student. In 1949 the Phoenix native became an assistant to lab founder A.E. Douglass. “My first job was working in the tree-ring lab as a

grad student and I never left,” Bannister recalls.

“Bear,” as Bannister is known, landed at the UA after earning a bachelor’s degree in anthropology in 1948 at Yale University. His master’s came in 1953, his Ph.D. in 1960. He served as full-time faculty from 1953 to 1989.

Orphaned at a young age, Bannister lived with relatives around the country. He attended the University of Wisconsin for a year before serving in World War II with the American Field Service attached to the British army in Burma.

He continues teaching as professor emeritus of dendrochronology and the lab’s director emeritus. He lives minutes from the UA with his wife, Betty Stanaway Bannister, whom he married in 1951. His two children also live in Tucson.

Agnes Haury suggested naming the archive building after Bannister to honor his contributions and personal friendship, says Swetnam. He added, “It was warmly received by the faculty.”

- ELENA ACOBA

History of Tree-Ring Research



1984 – Valmore LaMarche, professor at LTRR, working with Katherine Hirschboeck (graduate student at the time, now Associate Professor at LTRR), publishes a paper in *Nature* reporting a history of volcanic eruptions recorded as “frost rings” in ancient tree rings. This work posited a date of 1626 BC for the eruption of Santorini (Thera) in the Aegean, stimulating more than two decades of ongoing research and debate among archaeologists and climate historians about this cataclysmic event.

1988 – Jeffrey Dean, professor at LTRR, working with Robert Euler, George Gumerman and others, publishes “*Human Behavior, Demography, and Paleoenvironment on the Colorado Plateaus*” in the journal *American Antiquity*. This landmark work summarizes a large body of tree-ring, geomorphic, hydrological, and archaeological data, epitomizing the power of dendrochronology in interdisciplinary studies.

1998 – Malcolm Hughes, professor and director at LTRR (1986-1999), working with Michael Mann and Raymond Bradley publish a Northern Hemisphere temperature reconstruction in the journal *Nature* using tree rings, ices cores and other “proxy” data. This temperature record shows a sharp warming trend in the late 20th century; it becomes known as the “Hockey Stick” record, and is included as Figure 1 in the Executive Summary of the United Nations 3rd Report of the Intergovernmental Panel on Climate Change, 2001.

2000-2007 – Today’s LTRR continues its long tradition of cutting-edge research with national and global significance, including: Steve Leavitt’s and Michael Evan’s work extracting climate history from isotopes in tree rings; Paul Sheppard’s work on volcanic eruptions and environmental pollution; Dave Meko’s and Katie Hirschboeck’s studies of river flow histories and extreme climate events; Ramzi Touchan’s dendroclimatology investigations in the Middle East and northern Africa; Don Falk’s and Tom Swetnam’s work on forest fires and forest ecology; and Ron Towner’s and Irina Panyushkina’s work on international archaeological applications in Mexico, Peru, and Kazakhstan.

2006 – The “Agnese & Emil Haury Endowed Chair in Archaeological Dendrochronology” is established, with joint appointments in LTRR and the Department of Anthropology, through a generous gift from Agnese Haury.

2007 – The LTRR’s 70th Anniversary, and announcement of plans to construct the Bryant Bannister Tree-Ring Archive Building, through the generosity and vision of Agnese Haury.

Branching Out

