Lindsay S. Olive

1917–1988

BIOGRAPHICAL *Memoirs*

A Biographical Memoir by
Maarten Chrispeels

NATIONAL ACADEMY OF SCIENCES

LINDSAY SHEPHERD **OLIVE**

April 30, 1917–October 19, 1988

Elected to the NAS, 1983

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By Maarten Chrispeels

Lindsay Shepherd Olive, a mycologist who was a long-time professor of botany, first at Columbia University in New York and later at the University of North Carolina in Chapel Hill, died on October 19, 1988, at the age of seventy-one, in Highlands, North Carolina. He was widely known during his life as the discoverer of many new fungal species, as well as for his work on the systematics of fungi. The best succinct description of Olive's contributions was given to me by John Tyler Bonner (elected to the National Academy of Sciences in 1973). Bonner wrote:

Lindsay Olive was a naturalist of the old school. His great success was in finding new species of primitive organisms (e.g., stalked amoebae), some of them particularly interesting ones. His accomplishments are in the tradition of the great Roland Thaxter (also a member of the Academy): both discovered and described so many new organisms. They both found new species, and even new kinds of organisms, of great interest. Lindsay reveled in his role as the discoverer of previously unknown organisms. He knew he was a pioneer and we owe him a great debt. And he did this with grace and Southern charm.

Two articles about Olive's work and life, both written by Ronald H. Peterson, have been published (Peterson 1981, Peterson 1989) and are a rich source of information about what kind of person Lindsay Olive really was.

Becoming a mycologist

Lindsay Olive, born April 30, 1917, in Florence, South Carolina, was the oldest of three children. His mother, Sarah Williamson, was from a Southern plantation family in Florence, South Carolina. At some point his father, Lindsay S. Olive, Sr., moved the family to Apex, North Carolina—just outside Raleigh, North Carolina—and that is where the children grew up.

Olive went to high school and must have done well, because he earned a scholarship to the University of North Carolina, Chapel Hill. Unfortunately, his father died and his mother sold her share of the plantation to help pay expenses, including those incurred by her children to attend university. She wanted Olive to be a chemist, but after a few years he changed his major to botany.

As an undergraduate he enrolled in the graduate mycology course given by Professor John Couch. Olive was so intrigued by Couch's classroom manner and love for his subject that he decided to devote his life to the study of fungi. He received his bachelor of arts in 1938, his master of arts in 1940, and his PhD in 1942, all from the University of North Carolina.

For his doctoral work, Olive had two mentors: Couch, who was interested in *Septobasidium* species; and William Chambers Coker, an expert on fleshy fungi. As he entered graduate school in 1938, Olive accompanied Coker to Highlands, North Carolina, a village at the southern end of the Blue Ridge Mountains where the university had established the Highlands Biological Station. Not only is the area beautiful, but also its warm humid climate is ideal for the study of fungi. Olive fell in love with Highlands, returned to it many times, and eventually built a house there, where he retired after completing his career. While a student, he met fellow student Anna Jean Grant, who grew up not far from the area. They were married in Highlands in August 1942, immediately after Olive was awarded his PhD.

In 1944, Olive was appointed as a mycologist/plant pathologist at the US Department of Agriculture laboratories in Beltsville, Maryland. Although the war was nearly over, the country mobilized its scientific talent to defend the nation in case of an attack.

Several short-term appointments and a move to Columbia University

The United States entered World War II after the attack on Pearl Harbor and conditions in the country changed rapidly. Olive was selected as instructor in the Botany Department at Chapel Hill. (In those days mycology was part of botany because fungi were thought to be somehow closely related to plants.) He remained in the department for two years and broadened his interest to include the study of the fungi order *tremellales*, a subject of great interest to his mentor Coker. Olive continued to study *tremellales* for more than a decade.

In 1944, Olive was appointed as a mycologist/plant pathologist at the US Department of Agriculture laboratories in Beltsville, Maryland. Although the war was nearly over, the country mobilized its scientific talent to defend the nation in case of an attack. In this case it was feared that the enemy would target US crops with infectious diseases. Olive published several papers on plant disease agents affecting soybeans, cowpeas, and sorghum, but his heart was not in it.

After a year in Beltsville, Olive moved to the University of Georgia in Athens. However, the teaching load at the university was so onerous that he had no time for research. So in 1946, after one year in Athens, he moved to Louisiana State University in Baton Rouge, where he remained for three years. Here, too, he studied the local fungi and published two articles on them in *Mycologia*.

Bigger things were in store for Olive. In 1949, he was offered a position as associate professor of botany at Columbia University in New York. He continued his characterization of fungal life cycles, writing about heterothallism and homothallism, the behavior of nuclei, karyogamy, and meiosis. He also authored a major review in 1953 for *Botanical Reviews* titled "The Behavior of Fungus Nuclei."

In 1955 he wanted to go on his first sabbatical leave to French Polynesia, so he wrote a proposal for the Guggenheim Foundation titled "The Jelly Fungi of the Society Islands." It apparently caught the eye of Senator William Proxmire, who delighted in ridiculing research that he thought was a waste of money. Nevertheless, the sabbatical leave in Tahiti was a success; it focused Olive's research on the lower basidiomycetes and resulted in a number of publications. During his travels around the world later on, Olive often returned to Tahiti, which he had come to love.

While at Columbia University, Olive participated in meetings of the New York Academy of Sciences and the Torrey Botanical Club. The scholarly meetings of the latter organization were often held at Columbia, and Olive encouraged his students and postdocs to attend. He was also active within the university, serving as secretary of the Faculty of Pure Science for several years at a time when availability of federal funds was expanding and the number of students was increasing.

At the New York Botanical Garden he found other scientists with whom he could have scholarly conversations. One of his friends there was Donald P. Rogers, the curator of fungi at the New York Botanical Garden. He found inspiration from talking with Bernard Ogilvie Dodge, who had years of experience working with the genus *Neurospora*.

This led Olive to develop a research program with the related genus *Sordaria*. It is easy to identify micromorphological mutants in Sordaria, which is more amenable to genetic analysis than *Neurospora*. Olive and several of his postdocs developed *Sordaria* into a genetic system that was widely used in botany, mycology, and genetics laboratory courses to illustrate inheritance of characteristics using ascospore color and shape as markers.

New York could be exciting, of course, but this country boy missed the Appalachian Mountains. At the end of the spring term, Olive and his family packed their bags and left for the southern mountains. They had built a cabin in Highlands and also bought a substantial tract of land there, planning to eventually build a home for their retirement. However, the piece of land was so spectacular that he ended up donating it to the Nature Conservancy and building his retirement home in another location.

Change is coming, and a move back home

Olive's research direction changed from studying the genetics of ascomycetes to the biology and taxonomy of cellular slime molds. Columbia University changed, as well. The head of the Botany Department, Ed Matzke, died, and several faculty members left Columbia. The discipline of biology was in transition, and the new faculty members who were being hired at Columbia University represented a new field known as molecular biology. The New York Botanical Garden began a reassessment of its association with Columbia University.

Olive, and especially his wife Jeannie, missed the southern mountains, so Olive expressed an interest in the job of Kenan Professor of Botany at the University of North Carolina, Chapel Hill. His two PhD mentors, Couch and Coker, had held this position. Could the university ignore this distinguished native son? If appointed, Olive would bring a new dimension to mycology at Chapel Hill because he had become an expert in the biology of the *mycetozoa* (slime molds).

The family moved "back home" in 1968 and Olive was named a University Distinguished Professor. Importantly, they were now close to their beloved Highlands retreat, and Olive became involved in maintaining and expanding the botanical garden of the Highlands Biological Station.

During these first years in his new position, Olive was involved in assembling the material for a major monograph titled "The Mycetozoans" which was published by Academic Press in 1975. His graduate student F. W. Spiegel collaborated with R. Malcolm Brown in his department to study the role of actin during fruiting body

(sporocarp) culmination in the slime mold *Planoprotostelium*. With M. C. Dasey, Olive identified the role of the Golgi apparatus during sporogenesis in a cellular slime old. Clearly, new tools to study biological processes at the cellular and subcellular level were having an impact on his interests. Nevertheless he kept finding new species of fungi. Among his last ten papers, seven describe new species of fungi (Petersen 1989).

Honors and retirement

In 1981, to celebrate its fiftieth anniversary, the Mycological Society of America decided to start giving an annual Distinguished Mycologist award. That year, four scientists were so honored, including Olive and his mentor Couch.

Olive formally retired from the university in 1982 with a symposium attended by former graduate students and postdocs and a special issue of the *Journal of the Elisha Mitchell Science Society*, which includes a biographical sketch by Ronald Petersen (1981). In 1983, a year after he retired, he was elected to membership in the National Academy of Sciences, having been proposed by the Botany Section.

Over the thirty-year span of his career, Olive and his wife Jeannie traveled extensively visiting Europe, Africa, New Zealand, Australia, a number of countries in south east Asia, and many islands in the Pacific Ocean. He was always on the lookout for new species and he found many!

After he retired from the University of North Carolina, Olive worked another year pro bono to finish his responsibilities, allowing his students to graduate. He continued his research alternating summers at Highlands and winters at the University of Hawaii. Earlier in his career, in 1963, he had spent a semester there as a visiting professor during a sabbatical leave from Columbia University.

As his health began to fail in the mid-1980s, because of Alzheimer's disease, Olive gave up foreign travel and closed his laboratory in Highlands. A complete set of his publications is housed in the Biology Library of the University of North Carolina.

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