



ES LUTTRELL

# PIONEER LEADERS IN PLANT PATHOLOGY: ES Luttrell

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## ABSTRACT

ES Luttrell was a mycologist who spent 42 of his 44 professional years at the University of Georgia, first at the Georgia Experiment Station in Griffin and later at the main campus in Athens. He is best known for his innovative classification scheme for the perithecial ascomycetes, in which orders were based on patterns of ascomal ontogeny and mode of ascus dehiscence. This work established him as an authority on ascocarp development. His later studies on the classification of the *Helminthosporium* complex, in which he showed that small differences in conidium germination and structure could be correlated with distinct teleomorphs, brought him recognition from plant pathologists as well. These studies were notable for his attention to detail and the quality of his work. His contributions to mycology and plant pathology were numerous and varied and brought him various awards later in his career. To his colleagues he served as administrator, teacher, mentor and friend.

## ES LUTTRELL

When ES Luttrell joined the staff of the Georgia Experiment Station on October 1, 1942, as Associate Botanist in the Department of Plant Pathology, there was little in his record to suggest that when he retired 44 years later he would be widely recognized for his outstanding research both in mycology and in plant pathology. Before long, however, his scholarship and intellect became evident and set him apart from his colleagues. To those of us who worked with him, his publications represented only a portion of his contributions to mycology

and plant pathology. Anyone who had personal contact with him came away enhanced both personally and professionally.

Lutt was a man totally immersed in and dedicated to his research. His brilliant mind, insatiable intellectual curiosity, and professional dedication were the source of his outstanding achievements. Others may have had longer publication records, but none exceeded him in the quality and intellectual insight of his work. And although he published a number of coauthored papers, most of these came late in his career. Significantly, in all of his major contributions he was sole author. He published only three papers on ascomycete morphology jointly, and these were with postdoctoral fellows and students.

## EARLY YEARS

Everett Stanley Luttrell was born January 10, 1916, in Richmond, Virginia, the son of Ralph Edgar and Mae Flippen Luttrell. He contracted polio as an infant, which left him with difficulty in walking and with pain a common companion. As a child he frequented the rivers and bays of the Richmond area, and he developed an interest in the natural history of the region. He also became familiar with the local folklore and in later years he would often relate stories about his experiences there. Lutt attended the Richmond Public Schools and in due course graduated from high school, but then was faced with the problem of what to do. These were depression years and jobs of any kind were scarce. His mother wanted him to attend college, but as the time approached for classes to begin, he still had not enrolled.

Mae Luttrell was a strong-willed woman (a quality her son came to share), insistent that her close associates should not easily avoid following her wishes. When she discovered that her son had not registered for college, she went to the Registrar's Office at the University of Richmond and enrolled him herself. Lutt dutifully began to attend classes. This was certainly a pivotal time in Lutt's life. His hesitation in enrolling in college may well have reflected the fact that he found classes intellectually boring and unchallenging, or that he harbored a lifelong dislike for fetters of any kind. Yet he had a strong sense of duty and responsibility to fulfill obligations. His mother undoubtedly felt that academic life, such as a teaching position, was a career at which her son could succeed without undue physical hardship. Besides the value of the college education, however, Mae Luttrell pushed her son to be independent, and to view his physical shortcomings as inconveniences rather than as a handicap. By the time he had graduated, these qualities were ingrained in his behavior and they were a prominent feature of his character thereafter.

At the University of Richmond Lutt majored in biology, continuing his earlier interests in natural history. Although his undergraduate career was not outstanding, one of his professors, a Dr. Tucker, recognized his latent talent

and encouraged him to continue his studies at Duke University. Here he came under the tutelage of Dr. Frederick A Wolf, mycologist in the Botany Department, who was widely known for his studies on the biology of plant pathogenic ascomycetes. Under Dr. Wolf's direction Lutt began a study of foliar pathogens of trees in Duke Forest, adjacent to the university campus. In 1939 he presented his M.S. thesis entitled "A tar spot disease of American holly and the life history of the causal organism." One year later he completed his doctoral dissertation, "The morphology and development of some fungi parasitic on trees within Duke Forest." This included studies of two ascomycetes and a new genus of conidial fungi. All three studies were published in 1940. The clarity of his prose and high quality of his research are already evident in these papers, and they include the first of the detailed line drawings that would be a prominent feature of his publications.

Unable to find professional employment after graduation, Lutt took temporary work as a surveyor's assistant with the USDA Soil Conservation Service (SCS) in Virginia. During this time he took additional graduate courses at the University of North Carolina and the University of Virginia. Although he could not conduct morphological research, Lutt took advantage of his travels around the State of Virginia with the SCS to assemble a large (ca 5000 specimens) collection of lichens. These later formed the basis for his monograph of the Cladoniaceae of Virginia (4). Interestingly, this was the only paper he published on lichens, and the only organized herbarium collection that he made during his long career.

## PROFESSIONAL YEARS

### *Research*

Finally, in 1942, Lutt received his first professional (albeit temporary) appointment with the Department of Plant Pathology at Georgia Experiment Station, located at (Experiment) Griffin. When the faculty member he had replaced returned from military service in 1945, nothing was said about Lutt's position being temporary, so he stayed on.

Once in his new position, Lutt immediately resumed his morphological and taxonomic studies of ascomycetes. As he studied additional genera he broadened his review of the literature on developmental morphology, but he was handicapped by the limited resources of the Station library in that pre-computer era. Then, in 1947, Lutt accepted a position as Assistant Professor of Botany at the University of Missouri, where he had access to a much better library. With these resources available, he undertook a thorough review of the literature on ascomycete morphology. He perceived distinct patterns of development of the ascocarp that were characteristic of certain groups of ascomycetes. This

led to the 1951 publication, "Taxonomy of the Pyrenomycetes" (3), in which he revised the classification of the perithecial ascomycetes, basing the new scheme on the ontogenetic pattern of the ascocarp. He also separated those ascomycetes with bitunicate asci from the unitunicate forms, and noted the correlation of these modes of ascus dehiscence and the basic pattern of ascocarp development. Later he proposed that the bitunicate forms be segregated in a new subclass (6, 9). This book firmly established him as an authority on ascomycete morphology, both nationally and internationally. It is somewhat ironic that the work for which he is best known was published not in Georgia, but by the University of Missouri, although by the time he had completed the manuscript he had returned to his old position at Griffin. He was happy to exchange the rigorous teaching schedule of bacteriology, mycology, plant pathology and forest pathology for the slower-paced life in Georgia.

Throughout his career Lutt worked on a wide range of ascomycetes and conidial fungi, but the developmental morphology of the ascocarp remained his dominant interest. Regardless of what else he was studying, he was also working on the morphology of some ascomycete. The majority of his morphological studies were conducted on bitunicate species, but he studied unitunicate forms as well. All of these studies were characterized by detailed observations of the various stages of ascocarp development, and illustrated by photographs and line drawings. In studying the development of a fungus, he used a variety of techniques including whole mounts, squash mounts, slide culture, and microtome sections. Later, in his work on host-parasite relations, he included electron microscopy. As he observed the fungus under the microscope, he made notes and rough sketches. Once satisfied that he had worked out the details of the ontogeny, he made the illustrations for the manuscript. Although he used photographs, line drawings were his preferred method of illustrating his work, as he could emphasize features that were difficult to photograph. Many hours were spent in preparing these drawings. Pencil sketches were first made on standard sheets of paper with the aid of a camera lucida, and these were then arranged into plates. Each entire plate was then traced on a single sheet of drawing paper and inked. Because his plates were usually large (some nearly a meter high) and therefore had to be reduced for publication, the density of the stippling was a problem. To help with this he used a reducing glass to determine the optimal spacing, then he meticulously added each dot. Only rarely did he have to change a plate once it was finished. The illustrations were then merged with the text to produce the final manuscript. Besides his own contributions, his work stimulated many additional studies on ascomycete morphology. Despite the wealth of new data, he resisted suggestions that he revise his book. In addition to his morphological studies, Lutt produced three monographs, on *Stomiopeltis*, *Leptosphaerulina*, and the Cladoniaceae of Virginia.

Although not trained as a plant pathologist, Lutt was confronted by plant pathology problems soon after he arrived in Georgia. The day of the extension specialist had not yet arrived and farmers were accustomed to taking their problems directly to the Experiment Station, especially on rainy Saturday mornings. This led Lutt to initiate research on various local disease problems, especially those associated with beans and grapes, and he published a series of papers on diseases of these and other crop plants. He also conducted surveys of the diseases associated with several crops in Georgia. Because most of the plant diseases he studied were caused by conidial fungi, Lutt began to look at them in more detail. Shortly after his return to Georgia he began a series of studies that were mycological in nature, but which were of direct interest to plant pathologists; his studies on the taxonomy of *Helminthosporium* species continued for several years, during which he published a key to the gramini-colous species and a revision of the *Helminthosporium sativum* complex, and culminated in a pair of papers on the taxonomic criteria (7) and systematics (8) of the *Helminthosporium* complex. In this classic study he demonstrated that subtle differences in conidium morphology and pattern of germination were correlated with clearly distinct teleomorphs, and supported the segregation of *Helminthosporium* into four anamorphic genera. He also introduced new terms to describe modes of conidiogenesis and conidium germination. These papers underscored the importance and value of a detailed understanding of the biology of plant pathogenic fungi. He liked to cite these studies to emphasize what he referred to as the "predictive value" of taxonomic data (12, 13).

As he worked with these conidial fungi, he discovered the ascigerous states for several of them, and he described a number of new species of ascomycetes and conidial states, many of which were sent to him by other workers.

In 1979 Lutt published a new system of classification for the conidial fungi (Deuteromycetes) (14) that was a parallel of his earlier treatment of the ascomycetes: Orders were based on the fundamental mode of conidiogenesis, with families being based on such characters as conidium arrangement and type of fructification. While it is now generally recognized that conidium ontogeny can be too variable to serve as the basis for a taxonomic system, this paper points up again his innovative approach to solving practical problems.

In later years he became more interested in host-parasite interactions, and turned his attention to what he termed "replacement" diseases (16), in which host structures are replaced by fungal tissues. He published studies on the infection of *Sporobolus* ovaries by *Bipolaris* and of the development of the sclerotium in dallisgrass and in *Claviceps purpurea* (15). He was actively pursuing the study of the smut fungi and their effects on the morphology of their hosts (1, 18) at the time of his death.

Lutt felt strongly that mycologists and plant pathologists should study fungi

of economic importance, to justify their expenditure of public funds. In this sense, he felt that the efforts directed toward such genera as *Aspergillus*, *Blastocladiella*, and *Neurospora* in the development of model systems were misdirected, and that more would be gained by studying plant pathogens instead. He also lamented the separation between mycology and plant pathology, as interfering with their common goal of developing a better understanding of the fungi. As an active member of both the Mycological Society of America (MSA) and the American Phytopathological Society (APS), he strove to bring the two groups together. To MSA members he stressed the value of working on the biology of plant pathogenic fungi (11), whereas at APS meetings he emphasized the value of morphology and taxonomy to plant pathology (9). He also believed that one should work with living systems whenever possible. He regarded it as remarkable that with all of the research on the fungi, there still are very few species whose biology is well understood.

Although about one third of his papers were jointly authored, Lutt preferred to work alone, especially in the area of ascomycete morphology. Even though he worked only 145 km from Julian H Miller, himself a distinguished and recognized authority on pyrenomycete taxonomy, they never collaborated, and so far as I am aware, never discussed ascomycete taxonomy. Likewise, he never collaborated with BB Higgins, his department head, whose early work involved developmental studies of plant pathogenic ascomycetes, and though Lutt and I frequently discussed our research, we never published together.

### *Teaching*

Faculty positions at Griffin entailed full-time research, hence little or no formal teaching was involved. During his two years at Missouri (1947–49) Lutt labored under a heavy teaching load of 11 classes in 4 subjects (bacteriology, mycology, plant pathology, and forest pathology). He did not teach again until he moved to the main campus of the University of Georgia in Athens in 1966. Athens had been without a mycologist since the retirement of Julian Miller in 1958, so Lutt took over the introductory mycology class that had been taught by John Owen, the former department head. When I moved to Athens in January 1967, he turned both the introductory and advanced mycology courses over to me, and later he developed a new graduate course, “Phytopathology: Principles and Theory.” This great course was soon required of all students. Lutt prepared his own manual, drawing upon examples from all areas of plant pathology and many from medicine as well. The course, which included considerable epidemiology, proved challenging to most students, who were unaccustomed to thinking in such broad terms, and often lacked the requisite background to profit from it.

Although Lutt enjoyed teaching, he also found it frustrating. He tried to be innovative, but was often stymied by the students who tended to study only

for exams. In the second year he announced that everyone would receive an 'A', so they could forget exams and concentrate on learning the material. Much to his dismay, word spread of his grading policy, and many students with little interest in plant pathology came for an easy 'A'. Reluctantly, he returned to giving exams.

As a way of evaluating the variable background of his students, Lutt instituted an exam on the first day of class. This, of course, caused great consternation, even though he made it clear that the quiz was for his information only. Students seemed to be so indoctrinated with the importance of exams that they were unbelieving when told otherwise. Lutt finally abandoned this practice as well.

With his complete dedication to his profession, Lutt had difficulty accepting that others had lesser devotion. He often complained that students seemed uninterested in their studies and were distracted by too many other activities.

After moving to Athens, Lutt had only a few graduate students late in his career. He never recruited students; he preferred to assist whenever needed without being involved in the paperwork that was a part of their programs.

### *Administration*

In 1955 Lutt succeeded BB Higgins as Head of the Department of Plant Pathology at the Griffin Station. His attention to detail and sense of responsibility made him a good administrator. As the department was small and administration less complicated than now, he had ample time for research. He continued in this position until July 1966, when he became head of the department at Athens, replacing John Owen, who became Director of Experiment Stations. The position at Athens was actually a dual position: both Head of the Department of Plant Pathology and Plant Genetics, as well as Chairman of the statewide Division of Plant Pathology. The Division Chairman was responsible for overseeing the activities of all three departments at the Athens, Griffin, and Tifton stations, along with the extension personnel at Athens and Tifton. It thus required considerably more time than did the headship at Griffin. Lutt's move to Athens was a fortuitous and timely one. The State Legislature of Georgia had decided in the early 1960s to improve and expand the facilities in the sciences at the University, and allocated funds for new buildings and faculty positions. The size of the Athens department doubled; a new Plant Sciences Building was built; the plant pathology curriculum was expanded; and the graduate program was upgraded, as were the research programs. Lutt brought vision and foresight to the expansion process, and stimulated others to greater achievement. With his broad experience, he could discuss research with anyone and offer useful insights. He never hesitated to share his knowledge, especially with younger faculty. One of his greatest strengths as department head, however, came from the high degree of respect and confidence



shown him by his faculty. With his unquestioned integrity one could always be certain that he acted in the best interests of the department and of the individual. This lessened tensions among the faculty and made difficult decisions easier.

Lutt was left with little time for the research that he loved and he tired of the frustrations of dealing with the higher administration, so in 1970 he resigned his administrative duties to return to full-time research and teaching. He never considered himself an administrator, and he could be quite critical of administrative activities.

### *Scholarship*

Relatively few individuals can be regarded as truly brilliant, but Lutt was one of those. His intellectual curiosity was broad and he was a prodigious reader. More importantly, he understood, assimilated, and retained what he had read. This ability enabled him to look at things in a broad perspective and to discern patterns or correlations not evident to others. From this quality of his mind came the innovative ideas that he applied to the fungi he studied. His reading extended far beyond mycology and plant pathology. A predictable feature of our weekly departmental seminar was that, regardless of the topic, Lutt would ask pertinent and relevant questions. He could seek out the essential facts of a paper and relate these to other things he had read or observed. He enjoyed intellectual challenges. When he discovered a key to *Fusarium* species in Russian and was unable to obtain a translation, with the help of a Russian-speaking faculty member at the Griffin Station, he learned sufficient Russian to be able to translate the article. He also learned Latin so he could write his own descriptions, and he could read French, German, and Spanish. Learning was a continuous process for him. He constantly sought ways to improve his drawing techniques, by studying the works of earlier, skilled artists, and by experimenting with new pens and inks. When it became apparent that electron microscopy (EM) techniques could add valuable information to studies on host-parasite relations, he enrolled in the EM course at Georgia so he could incorporate this into his research program.

Lutt was a master of the English language, and he was frequently asked to review manuscripts from a broad range of disciplines. He would conscientiously critique the paper, writing his comments in longhand on canary-colored paper, then give the philosophical basis for his comments. These sometimes exceeded the manuscript in length; they were not always easy reading for the author, but they invariably improved the manuscript.

He was often distressed by what he regarded as improper or imprecise usage of technical terms in publications. This caused him to write two papers discussing terminology (5, 10). Perhaps the term that distressed him the most was the use of "incite" with reference to the initiation of plant disease infection.

Despite his lucid discussion of the reasons this term is inappropriate to plant pathology, it unfortunately continues to appear in the literature.

### *Rewards*

Lutt was a member of several professional societies including the American Phytopathological Society (APS), Botanical Society of America, British Mycological Society, and the Mycological Society of America (MSA). He served the MSA as counselor (1967–69), vice president (1969–70), president-elect (1971–72), and as president (1972–73). In 1981 he was honored by his selection as the MSA Annual Lecturer, and in 1983 he received the society's Distinguished Mycologist Award. In 1964 he served as president of the Southern Division of APS, and in 1972 was elected an APS Fellow. The genus *Luttrellia* was named in his honor (21), as were several species. Then, in 1978, the University of Georgia appointed him as DW Brooks Distinguished Professor of Plant Pathology, a position he held until his retirement in 1986. With donations from family and friends, the Department of Plant Pathology at the University of Georgia established the ES Luttrell Lecture Series. Each spring a noted mycologist or plant pathologist is invited to campus to present a lecture and meet with students and faculty.

## FAMILY

The one concession Lutt made to his research was to his family. He was a devoted husband and father, and later grandfather. In April 1944, Lutt married Margaret Muse, a public health nurse from Albany, Georgia, who often visited relatives who worked at the Griffin Station. It was there that she met Lutt. Margaret and the three children shared Lutt with his beloved fungi. In later years, when the children were grown, Margaret began to accompany Lutt to meetings, where they formed close friendships with other pathologists and mycologists whose wives also regularly attended the meetings. They continued this practice until Lutt retired.

Besides his family, Lutt relaxed by gardening. In this, as in other aspects of his life, he was competitive. A major challenge for a gardener in the South is to grow English peas. They will not mature in the heat of summer, and so must be planted in late winter, but not so early that a late freeze will catch them. Each spring, Lutt would proudly announce the date his peas emerged, certain that he had beat other gardening faculty members. Even in his garden, though, he was never far from his fungi, as it also contained numerous diseased plants on which he could observe the effects and progress of the pathogen. He grew these from transplants or seeds so they would be close at hand to study.

## RETIREMENT

Research had been too great a part of Lutt's life to think of abandoning it through mandatory retirement. So, with space available to him in the department, he decided to continue his studies. Unfortunately, the illness that was to claim him began soon after; he was able to complete only two more manuscripts (19, 20). Characteristically, one paper dealt with plant pathology, the other with ascomycete morphology.

## REMINISCENCES

I first met Lutt at the railroad station in Griffin, Georgia, in March, 1960. My presence resulted from a rather curious series of events. My doctoral dissertation involved studies on ascomycete morphology, so I had read Lutt's book and other morphology papers. In December, 1959, I wrote him to ask some questions about his studies, and closed the letter with the comment that I would complete my PhD the following summer. He promptly answered my questions, and said that he did not know of any jobs available. This was not a major concern because university and college positions in the early 1960s were not difficult to find. I was greatly surprised, therefore, to receive a second letter from him a few weeks later asking if I was interested in working with him. He explained that he had just received a National Science Foundation grant for research on ascomycete morphology and it contained funds for a technician. With the assistance of the Experiment Station Director, he had converted this into a temporary faculty position and he invited me to interview for it. So a few weeks later we met in the small textile mill town of Griffin, site of the Georgia Experiment Station, a branch of the University of Georgia College of Agriculture, located some 65 km south of Atlanta. Thus began my introduction to Lutt and to the South. Little did I dream that we would spend our professional careers together.

Lutt had an engaging personality, with a ready smile and friendly handshake. It was difficult not to like him. We collected my suitcase and he led me to an early 1950s vintage Ford sedan, which his colleagues had affectionately dubbed the "Blue Bullet," referring, of course, to his habit of driving slowly. After meeting the faculty I was shown around the large laboratory where he worked. It was not long before I encountered his subtle sense of humor. At one point he asked what equipment I would need, and I mentioned an incubator for growing cultures at room temperature. Lutt looked at me with a slight smile and said, "You might want to consider a refrigerator." After I spent my first summer there I learned the full impact of his comment. The laboratory was located on the top floor of a three-story building with no air conditioning. The temperature was such that paraffin blocks softened and sectioning was impos-

sible. We purchased a refrigerated microtome but it would not function in midsummer because of the heat. Finally, during my third year there, a central air conditioning unit was installed for the laboratory and our adjacent offices. But Lutt had worked like that for 20 years.

Lutt cared little for personal comfort. As long as he had what he needed to do research, he was satisfied. Early in his career funds for research had been inadequate and spending money for comfort or convenience could not be considered. Basically, however, his focus on his research was so intense that he did not want to deal with inessentials. He also disliked anything that kept him from his research. In Venezuela, for example, he became very frustrated with the traditional 2 hour lunch break. To be kept from his studies for so long was unacceptable to him, especially when working on something new and interesting.

Lutt was an avid collector. If left alone outdoors for more than a few minutes, he would invariably head for the nearest plants and begin examining them for fungi with his hand lens. However, accumulating things detracted from time better spent on research, so he kept only what he had immediate use for. He received numerous reprints from all over the world, which he stacked in small piles according to subject around his office. As the piles became larger, it was difficult to remember what was in them. When I moved to Griffin I was assigned the office formerly occupied by BB Higgins, and accepted his offer to take over his collection of reprints assembled during his nearly half-century long career. These I added to my small collection and arranged alphabetically in document boxes. Soon Lutt got into the habit of coming to my office to look for articles he could not locate, but often I lacked what he needed. Then one day he suggested, "Why don't I just give you all of my reprints. You can organize them and I'll know where to find them. And you can use them too." He kept in his office only what he was working on.

Lutt attended his first Mycological Society of America (MSA) meeting in 1962, held at the University of Massachusetts in Amherst. Shortly after we arrived, I introduced Lutt to the local representative, Margaret Barr Bigelow, a former classmate of mine at Michigan. During their conversation Lutt was explaining where he worked and Margaret said, "Oh, that's where Dick Hanlin works." Thereafter, when asked where he worked, Lutt responded, "I work where Hanlin works." It was some time before he let me forget that.

After that first meeting, Lutt regularly attended the MSA, and when possible, APS meetings. He also attended the First International Mycological Congress in England and the preconference foray in Switzerland, and later traveled to Mexico and Venezuela to collect fungi. Meetings were very tiring for him, but he enjoyed the interchange of ideas with professional colleagues, as well as the social contacts. The MSA/AIBS meetings were usually held on university campuses, and this frequently required walking long distances between resi-

dence halls and meeting sites. Although walking was difficult for Lutt, he steadfastly refused any assistance. Consequently, several of us who usually drove to the meetings devised a scheme whereby one of us would “happen” to drive close by the meeting room when Lutt was coming out; he would stop and offer a ride, which Lutt readily accepted. Had Lutt known that this had all been arranged, we could not have pushed him into the car.

Lutt’s presence at meetings was eagerly anticipated each year. He was always surrounded by colleagues engaged in a stimulating discussion of some technical topic, or enjoying the humor of his stories. Students found him easy to approach and talk to, as he always took an interest in their studies. He had a knack of making you feel at ease, regardless of your status in your profession.

One cannot think of Lutt without recalling his great sense of humor and his prowess as a storyteller. Although his research papers were written in a serious vein, he often injected humor into his talks. He once presented a paper entitled “Significant studies of insignificant diseases,” and when invited to give a talk on single spore isolations he began with “The first principle to remember in making single ascospore isolations is that it is usually unnecessary” (2). His history of the Georgia Experiment Station (17) is filled with his subtle humor. Because of it he was often the target of jokes by other faculty members, who could be certain that he would retaliate when an appropriate moment arose. For some reason he had a knack of having humorous things not of his own doing happen to him, and these became the source of numerous anecdotes among his friends. He took all of this in good spirits.

## EPILOGUE

Working with Lutt was a rare privilege. Professionally he is remembered for the quality and innovativeness of his research, but those associated closely with him will recall his personal qualities. He was a man of integrity and sincerity, caring and sensitive, with a deep sense of fairness and responsibility. His convictions were strongly held, but he was willing to listen to opposing views. Despite his recognition, he remained modest and dedicated to his fungi, never deviating from his chosen path. Perhaps the best indication of how much he meant to his former colleagues is the frequency with which they still mention him.

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