

## Elmar E. Leppik and Estonian mycology

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**Abstract:** Elmar Emil Leppik (1898-1978) was the most prominent Estonian mycologist and plant pathologist. His influence on mycological studies was established beginning in 1923 when he worked in Estonia, and continued long after he had to leave Estonia as a refugee in 1944. The mycological herbarium and library established by him at Tartu University has served as a firm foundation upon which to base studies that are going on today. Continuity of mycological research in a small country like Estonia is passed on not only from teacher to student, but more often it is a written continuity of ideas and aims.

### INTRODUCTION

In a small country like Estonia (about 45,000 sq km; 1.5 mln inhabitants in 1997) mycological studies usually are sporadic and discontinuous. The first scanty data on Estonian fungi were published in 1777 (Parmasto, 1989). Although Johannes Anton Weinmann, the author of the first survey of Russian fungal biota (1836), was actually the Learned Gardener of the Botanical Garden of Tartu University (1805-1813), his interests had not turned to fungi at that time. Thus, it was not until the middle of the Nineteenth Century, that the first specialized studies on the fungal biodiversity of the country were carried out.

From 1850-1859 Heinrich August Dietrich studied fungi while he was employed as Chief Gardener at the Haimre Manor in northern Estonia. As a result of his extensive studies, two research papers (1856, 1859) and nine fascicles of exsiccata (*Plantarum florae Balticae cryptogamarum*, Cent. I-IX, 1852-1857) were issued. These activities mark the beginning of scientific mycology in Estonia.

After moving to Tallinn, Dietrich lost his interest in, or time to devote to mycology. For the next sixty years Estonian fungi were studied only by botanists or mycologists working outside of Estonia. These include C. Gobi, V. Tranzschel, T. Westergren, and F. Bucholtz, who individually published several valuable papers. Although Fedor Bucholtz went to Estonia at the end of his life, he had no time for fungi, because he devoted himself (1919-1923) to the reorganization of the newly reopened Institute of Botany, Tartu University, after the War of Independence. Bucholtz published only four short papers while he was in Tartu, all in 1922;

these were one 2-page paper with mycological notes, and three in Estonian that were two popular articles on plant protection and one on sexuality in fungi.

### ELMAR LEPIK, THE FIRST ESTONIAN MYCOLOGIST

Elmar Lepik was born in the Jõgeva Commune north of Tartu; he was the son of a farmer. His birth date has been given in the Estonian Encyclopedia (1972, 2nd ed. 1990) as 4 October 1898; however, according to the Census Book of the Laiuse Parish for 1898, the date was 3



Elmar E. Leppik (1950)

December 1898 (Anrik, 1998). It seems that not even the year of his birth was recorded correctly, because in a personal letter to me, dated 11 November 1967 he wrote to me (in Estonian): "My true jubilee is not next year, but some years later. This is a mistake difficult to correct now. I shall send you more exact data later". He never did.

As a student, although Lepik was interested in mycology, he was even more interested in algology, and his first (unpublished) paper was entitled "Estonian algae" (Tartu, 1922. 76 pp., in Estonian). After graduating he was told: if you want to get a stipend from the Rockefeller Foundation and be employed at Tartu University, you must take phytopathology and mycology (S. Talts, pers. comm.).

Lepik followed this advice because from 1926 to 1929 he was a fellow of the Rockefeller Foundation and (later) Tartu University in Bern, Genf and Zürich. Among his tutors were the well known mycologists E. Fischer and E. Gäumann. He received his Dr. Sc. Nat. degree 1928 in Zürich; the dissertation was entitled "Untersuchungen über den Biochemismus der Kartoffelfäulen. Der Einfluss der Phytophthora-Fäule auf die chemische Zusammensetzung der Kartoffelknolle."

After returning to Estonia, Elmar Lepik worked at Tartu University beginning as Acting Assistant Professor (1929-1931), and progressing to Assistant Professor (1931-1938), Professor Extraordinary (1938-1942), and Professor (1942-1944). From 1929 on he was also the Head of the Phytopathological Station of Tartu University (Annuk, 1998). Through his efforts, the station became the center of phytopathological and mycological studies in Estonia. He acquired monographs and key books and all the important mycological journals of the day for the library: including almost complete sets of *Annales Mycologici*, *Bulletin de la Société Mycologique de France*, *Mycologia*, *Mycology*, Rabenhorst's "Flora", volumes of Saccardo's *Sylloge fungorum*. In addition several series of fungal exsiccata were obtained comprising altogether more than 10,000 specimens. Lepik compiled and issued six fascicles of the "Fungi Estonici exsiccati"; this was the basis for exchange of fungal specimens. He and his co-workers collected fungi extensively; there are about 10,000 Estonian specimens of this time included in the

herbarium. Another important contribution was the addition of a biochemical laboratory to the Phytopathological Station in 1931.

During his activities in Estonia (1923-1944), Lepik published more than 150 papers, including studies on distribution of microfungi in Estonia, revisions of Dietrich's exsiccata, checklists of fungi found in some interesting regions of Estonia, and on edible and poisonous fungi as well as on wood rotting fungi of Estonia. There were also many popular phytopathological articles published for farmers in Estonian. One of Lepik's most interesting theoretical papers dealt with the historical development of the fungal biota of Estonia (1941). He published a full bibliography of his papers (1976), and his papers on Estonian fungi also are available in the List of Estonian Fungi (L. Järva & E. Parmasto, 1980). Besides his scientific research, Lepik organized a wide network of farmer-correspondents who reported on the occurrence and damage caused by phytopathogenic fungi. He helped farmers in other ways, because at the Phytopathological Station, new fungicides were manufactured; the Station was also the official plant quarantine center in Estonia.

Lepik was helpful in facilitating the research of others. He served as editor of the transactions (*Annales*) (1937-1943) of the Estonian Naturalists' Society. He also participated in the compilation and editing of handbooks on gardening, and the agricultural encyclopedia. Of his students and colleagues, several phytopathologists were interested in mycology and published articles on Estonian phytopathogenic fungi (E. Kaarep, A. Kivilaan, A. Kustasson, A. Käspre, A. Luhakooder, R. Toomre, and others). Because of his support, even an amateur mycologist, N. Witkowski, was allowed the opportunity to study mushrooms, and this work resulted in several valuable papers.

#### **ELMAR LEPIK, AN AMERICAN MYCOLOGIST AND EVOLUTIONIST**

As a refugee, Elmar Lepik (since 1947 spelled Leppik) worked as a lecturer and professor in botany and plant pathology in German universities. Later he served as an instructor at the US Army Agriculture and Technical School. In 1950 he moved to the United States; for the

first seven years he taught at Augustana College in South Dakota and worked as a research scientist at the Hormel Institute of the University of Minnesota and as a guest investigator at the University of El Salvador. In 1957 he was employed at the research institutes of the US Department of Agriculture at Iowa State University and until 1964 when he moved to Beltsville, Maryland, a centre for agricultural studies (Cook, 1967).

Leppik's interests changed during this period toward the problems of the origin and phylogeny of flowering plants and fungi, evolutionary classification of flower types, co-evolution of plants, insect-pollination, and biology of bees. Six papers on the phylogeny of rust fungi were published in "Mycologia" (1953-1962). He became more and more interested in theoretical biology and general questions of evolution, and he published several important papers on this subject in the "Acta Biotheoretica", "Evolution" and "Evolutionary Biology." A series of papers was devoted to the problems of evolution of homologous and analogous characters; he was really the first biologist to acquaint American biologists with the theories of N. I. Vavilov's.

Elmar Emil Leppik died 4 November 1978 in Maryland, only 20 years ago.

### CONTINUITY OF MYCOLOGICAL STUDIES IN ESTONIA

When some young students of Tartu University became interested in mycology in 1950, there were no longer any mycologists in USSR-occupied Estonia. The Phytopathological Station had been destroyed in battles at Tartu in 1944, but the excellent mycological library and a good fungal herbarium fortunately survived. The head of the Institute, Prof. A. Marland was a Lyssenkist; but, nevertheless, he dared to permit some students to use the library in years (about 1946-1954) when the use of any foreign literature was rigorously forbidden by the Soviet authorities. The head of the Botanical Institute, Prof. August Vaga gave moral support to the mycological studies. As a botanist interested in theoretical problems, he was one of the first biologists in world who recognized Fungi as independent kingdom of living organisms (Vaga, 1952). In 1952 contacts with the mycologists of the Botanical Institute of the

Academy of Sciences of the USSR in Leningrad were established.

The aims and research projects of this generation of young mycologists were predetermined by Leppik's actions; he was a paragon for them. Short papers on occurrence of fungal species, surveys of fungal biota of some of the regions of Estonia similar to those studied by Leppik were published. Leppik had been interested in wood-rotting polypores; a survey of these fungi in Estonia was the first theme of studies of young E. Parmasto.

Leppik had been able to develop mycological and phytopathological studies equally in Estonia, not subordinating one to the other. The new mycologists managed to follow his example despite external pressure. His exsiccata "Fungi Estonici exsiccati" were followed by the exsiccata "Mycotheca Estonica" (3 fascicles, 1957-1961). Leppik was a master at compiling popular books, articles, and short notes in journals and newspapers, and the same trend was shown in the work of the young mycologists in Estonia.

In 1963, correspondence between E. Leppik and me began. In reply to a New Year greetings, on 11 April 1964 he sent me a message in English headed "Official letter," but with a line with thanks handwritten in Estonian. In the following correspondence (1964-1975) he wrote in Estonian, but we both used a half-official style: we both knew well that all correspondence with foreigners was monitored by KGB officers; letters were sometimes detained for checks for up to two months. In preparation for a scientific publication by Estonian mycologists to mark his jubilee, Leppik was notified of the intention; however, on 11 November 1967 he wrote, "As a precaution, I ask you and others not to do this. Refugees are on a black list [in Estonia] as before, and it may cause unforeseen political trouble to the authors of such publications. I do not like to think that somebody may suffer on my account." (Translated by E. P.)

Leppik sent us his reprints (including a full collection of his papers bound into four volumes produced by him in six copies) and several mycological books printed in the USA, otherwise unavailable then in Soviet Estonia. Through our letters we told each other of the news of mycological life in both countries. We



sent Estonian biological publications which he later passed on to the library of the National Fungus Collections in Beltsville. In 1971 and several times later he asked me to send him Vol. 47 of the "Annales" of the Estonian Naturalists' Society published in 1943 for the US Library of Congress. Although it was a crime in the Soviet Union to send something published in that year abroad, it was impossible to tell Leppik of the law. We managed to send the publication to him, but it did take two years to find the way.

Leppik's papers published in the USA on the phylogeny of fungi inspired us in Estonia to pay more attention to evolutionary studies. Phylogenetic taxonomy of fungi based on world data became one of the main trends in Estonian mycology.

#### MYCOLOGICAL RESEARCH: CONTINUITY OF AIMS AND IDEAS

Except for the last few decades, the continuity of mycological studies in Estonia has not been based on teacher-student relationships. Much more important has been the influence of ideas from writings and the wish to continue these studies originated by predecessors, on a new, contemporary level. Possibly, the same is true in other small countries, too. In the light of this approach, Elmar Emil Leppik's influence on the present day mycological studies is very significant in Estonia, as it has been during the last seventy years.

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