Elias Melin

WITH THE death of Elias Melin on 22 March 1979, at the age of 89, experimental botany and, more especially, mycorrhizal research has lost a pioneer who held a leading position within his field. His experimental life spanned a period of over 60 years, during which he kept abreast of new developments in his area. Indeed, up to a year before his death, he was still working slowly but productively in his laboratory. His interests were wide and covered aspects of ecology and physiology of higher plants and of fungi.

Melin started his scientific career as a student of the well known plant ecologist Rutger Sernander who in the early decades of this century attracted a great number of gifted students, creating a school of plant sociology which played an important role in the development of Scandinavian botany. At first Melin became interested in the taxonomy and biology of the genus *Sphagnum*, and his doctoral thesis (1917) comprised a study on the plant sociology of North Scandinavian peat bogs. During these studies he observed that young seedlings of pine and spruce grew well on drained peat bogs only if they became infected by mycorrhizal fungi. After this discovery, Melin devoted his life to studies on the mycorrhiza (the symbiotic association between tree roots and fungi)of forest trees.

As a university lecturer at the Royal College of Forestry in Stockholm, he described the structure and the fungal components of the mycorrhizas of pine, spruce, larch, birch, and aspen. He worked out methods for the isolation in pure culture of the fungal symbionts and for the synthesis of mycorrhiza of forest tree seedlings under controlled laboratory conditions. He proved that various species of *Boletus, Amanita, Cortinarius, Lactarius, Russula*, and *Tricholoma* are symbionts of the forest trees.

He also turned his interest to the physiological interactions between the trees and their fungal partners. In pure culture experiments with mycorrhizal fungi, performed in liquid media after the addition of minute amounts of exudates from germinating seeds of pine and spruce, he found that these fungi required simple sugars for growth but were unable to decompose cellulose. He concluded that the mycorrhizal fungi obtain sugars from the tree roots,and that on the other hand, the fungi are especially important to the trees in transferring nitrogen from the soil to the roots. These earlier works and results were summarized by Melin in his monograph *Untersuchungen über die Bedeutung der Baummykorrhiza* (Jena 1925) which is a classic of mycological literature.

In 1930 Melin became professor of botany at the university of Uppsala, where he introduced the study of modern plant physiology. A large number of students, not only from Sweden but also from abroad, were attracted by Melin and his ideas, and under his leadership an intense activity developed in the field of mycorrhiza and physiology of fungi. The laboratory facilities necessary for this development were created under his leadership in the modern institute for plant physiology at the university of Uppsala.

Melin quickly appreciated the possibilities of isotope tracer techniques in mycorrhizal research. In co-operation with H. Nilsson he used this method to prove the transfer of products of photosynthesis from pine seedlings to the fungal symbiont, as well as the transfer of nitrogen, phosphorus, and calcium from the fungus to the plant.

In his later years, Melin still retained his keen interest in the problems of the mycorrhiza, especially the stimulating effect of the plant roots on the growth and spore germination of mycorrhizal fungi. He concluded that this effect was due to exudates from the roots and made considerable efforts to elucidate the chemical nature of this so called 'M-factor'.

Besides his scientific activity, Melin was deeply interested and involved in the social life of the students both at his department and at his student union.His election in 1946 as inspector (master) of this union gave him the greatest pleasure and emphasises the affectionate esteem in which he was held by the students. Colleagues and pupils in several countries are deeply indebted to him for his outstanding leadership and his never-failing friendship and support.

G. Lindeberg

Scott R. Mazzur

SCOTT RUIGH MAZZUR, well-known for her work on social and cultural factors affecting the transmission of hepatitis, died in Washington, DC on 2 March 1979.

Scott Mazzur was born on 30 September 1932 in Princeton, New Jersey and obtained her PhD in 1966 at the University of Pennsylvania working with Dr Werner Henle. Following this, she directed a viral diagnostic laboratory for the New Jersey State Department of Health until 1969 when she joined the laboratory of Dr Barry Blumberg at the Institute for Cancer Research in Philadelphia. In 1973, she was appointed Head of the Viral Epidemiology Section of American Red Cross Blood Services.

Scott Mazzur was fascinated by the interaction and mutual pressure exerted by evolution on human society and human disease. She recognized that a virus like rubella, which has no dormant state, must pass from person to person to maintain itself and that this would be possible only in stable, larger communities which would be able to provide a sufficient number of new contacts. This means that many of the diseases that we know today have probably existed only for the last five or six thousand years when urban communities began to develop in Mesopotamia.

Much of her work was carried out in a series of field trips to a remote area of the Solomon Islands in the South Pacific where the incidence of hepatitis carriers is about five hundred times greater than in the United States. The unique feature of her approach was the prospective study of the total human population of the island, thereby eliminating the elements of chance and selection that have biased the statistical analysis of many studies. The simplicity of her approach was remarkable: she was entirely self-sufficient and did not take any assistants with her on her four field trips to the South Pacific between 1972 and 1977. She took a full census of the residents, drew blood samples and tested them in her field laboratory. She learned to speak Pidgin English and was perfectly at ease in communicating with 'my people' as she like to call them, even though head-hunting and cannibalism was practiced in these islands as recently as the second world war. She loved the islanders and her love was reciprocated by them, as shown by the fact that she was able to collect blood samples even from infants in the various communities.

Scott Mazzur used subtypes of hepatitis B surface antigen extensively as an epidemiological tool and had recently described a new antigenic marker 'e' and used it to subdivide other specificities. Her studies in the South Pacific provided new insights into hepatitis B virus epidemiology. The practice of separating male and female children in the Solomon Islands' culture enabled her to reject the hypothesis that there is a genetic basis for the HBsAg carrier state and to show that high frequency of carriers in males was due to a higher rate of infection, chiefly due to cultural practices. She confirmed earlier suggestions that children under six years have a tendency to become asymptomatic chronic carriers if infected with HBV, while older children and adults often react with an immune response.

Scott Mazzur saw her studies of hepatitis as being a model for other infections of similar epidemiology which might also mimic genetic patterns, for example, in the so-called polyclonal birth defects. This kind of distribution could result from the prolonged presence of infectious carriers combined with the limited dissemination of the infectious agent. Her work bridged anthropology and epidemiology and to each of these she brought new insights. She was a warm and generous friend who met with courage the adversities of her husband's death and her own illness.

G.A. Jamieson