

Malunt plurimi nova docere,  
quam prisca dicere" (E. Fries)

In memoriam M. Moser (1924-2002)

Meinhard M. Moser was born on 13 March 1924 in Innsbruck (Tyrol, Austria) where he also attended elementary school and grammar school (1930 to 1942). Already as a youngster, he developed a keen and broad interest in natural sciences, further spurred and supported by his maternal grandfather E. Heinricher, Professor of Botany at the University of Innsbruck. His fascination for fungi is proven by his first paintings of mushrooms, which actually date back to 1935 when he was still an eleven-year old boy. Based upon a solid humanistic education, he also soon discovered his linguistic talents and in subsequent years he became fluent in several major languages (including Swedish and Russian), which in later years helped him to correspond and interact with colleagues from all over the world.

In 1942, M. Moser enrolled at the University of Innsbruck and attended classes in botany, zoology, geology, physics and chemistry. At this period during World War II, his particular interest and knowledge in botany and mycology gave him the opportunity to become an authorized mushroom controller and instructor. In connection with this public function and to widen his experience, he was also officially requested to attend seminars in mushroom identification both in Germany and Austria. At these occasions, M. Moser met many of the leading German mycologists, who subsequently became his mentors during his scientific mycological career. He developed and kept close relationships with J. Schäffer, W. Neuhoff, G. Kallenbach, S. Killermann, H. Haas, B. Henning and numerous other contemporary mycological celebrities. At one of these meetings, E. Thirring directed M. Moser's attention to the difficult and large genus *Cortinarius* s.l. with which he remained engaged ever since.

After completing three terms at University, M. Moser then 19 years of age was forced to interrupt his studies (1943) and was called up for military service (civil defence). Because of his linguistic skills, he was trained as an interpreter (for slavonic languages) before being sent to the front lines in the Balkan Peninsula. Despite such a direct confrontation with war, M. Moser continued with his interest in mycology. Whenever time permitted, he collected and identified mushrooms wherever he was garrisoned and he memorized "Das System der Agaricales" published by R. Singer (1936, 1942, 1943). It is a fact that he carried these three volumes in his military pack for many years, keeping his interest in the taxonomy of macromycetes alive.

In early 1945, M. Moser was taken prisoner of war in Czechoslovakia and was imprisoned in a labour camp in Crimea, Ukraine. As a member of a construction work gang, he was often pushed to the brink of his physical capacity. One day he escaped unscathed in an accident when a truck densely packed with prisoners turned over, killing several of his comrades.

M. Moser was released from captivity in 1948 and returned home. Despite poor health and the severe moral setbacks caused by the war, he decided to return to his studies at the University of Innsbruck. Two years later, he presented his Ph.D. thesis "Zur Wasserökologie der höheren Pilze, mit besonderer Berücksichtigung von Waldbrandflächen" (1950). Whilst still a student, he also published his first

mycological papers, which finally amounted to almost 200 valuable and genuine contributions to various aspects of mycology.

During this hectic time in his life, M. Moser became a member of several mycological societies, in particular the Société Mycologique de la France (1948) and the British Mycological Society (1949), and consequently he made efforts to re-establish broken relationships with colleagues in Austria, England, France, Germany, Switzerland, and in many other European countries. In order to widen his knowledge concerning the systematics and diversity of agarics, M. Moser began to attend scientific meetings, conferences, field forays and actively collected macromycetes in all kinds of habitats in Central Europe.

In 1951, M. Moser obtained a grant from the British Council, which gave him the opportunity to work under Prof. J.L. Harley in Oxford. The half-year long stay in Britain was focussed on ectomycorrhizal research and taxonomic revisions of *Agaricales* kept in the Kew Herbarium. In addition, A.A. Pearson introduced M. Moser to numerous contemporary British mycologists and researchers on ectomycorrhiza. On returning to Austria, M. Moser was offered a research position in 1952 with the Federal Forestry Research Institute in Imst (Tyrol) where he was fully occupied with theoretical and applied aspects of ectomycorrhiza research and mycoecology. For many years, M. Moser and his collaborators developed inoculation techniques with the goal to establish (in nurseries) a symbiotic fungus-tree relationship for seedlings subsequently used in reforestation projects at and above the timberline in the Alps. The proposed methods were later successfully adopted worldwide in reforestation programs. After leaving the research institute (1968), ectomycorrhiza research never ceased to attract his attention and subsequently many students worked in Moser's lab at the University on ectomycorrhiza-related problems.

In the early fifties, R. Singer's taxonomic concepts on agarics and boletes were still revolving in the back of M. Moser's mind. In addition, he realized that identification of the *Agaricales* was seriously hampered due to the lack of adequate and updated literature. Consequently, he decided to write a pocket-size mycota based on Ricken's "Vademecum für Pilzfreunde" (1920) reflecting his own and Singer's taxonomic views. The handsome "Kleine Kryptogamenflora von Mitteleuropa" was published in 1953, and its subsequent new editions (1955, 1967, 1978, 1983, now out of print) have been at the top of the bestseller list of mycological books ever since. In the following years, this book (treating some 3150 taxa) was also published in English (1983) and Italian (1986) translations. The French version remains unfinished. The resulting "Moser" volume undoubtedly became not only the most popular standard book for the identification of European macromycetes, but also successfully helped to draw attention to the "modern" taxonomy of *Agaricales* as proposed by R. Singer. It is worth mentioning, however, that Singer and Moser did not actually meet until much later, in 1960 (M. Singer 1984).

In the series "Kleine Kryptogamenflora von Mitteleuropa", M. Moser also published "Ascomycetes" (1963) which provided dichotomous keys for the identification of the more common European species of cup fungi. Lack of time and expertise in ascomycete taxonomy, however, stopped him from preparing a second edition of this less well-known book.

Despite heavy duties and scientific challenges both in the lab and in fieldwork, M. Moser became "Privatdozent" at the University of Innsbruck (1956) and taught Microbiology. Eight years later, he was promoted associate professor and finally became a full professor in 1968. The newly created Microbiological Institute was officially opened in 1972 and M. Moser was in charge of this gradually increasing research and teaching institution until his retirement in 1991. For many years, M.

Moser instructed hundreds of students in classes and lab work on diverse fields of microbiology ranging from the taxonomy, ecology and mycogeography of fungi, to bacteria and viruses, chemotaxonomy, molecular genetics, microbial toxicology, immunology and symbiosis. During his scientific career at the University of Innsbruck, M. Moser supervised and directed more than 60 doctoral theses and numerous diploma theses dealing with topics related to the above-mentioned fields of research. In addition, he was closely engaged in administration and worked in several committees at the faculty of Natural Sciences.

Going through the long list of M. Moser's publications (cf. *Sydowia* 54, 2003), the following four major topics of his research activity and interests in *Agaricales* s.l. are apparent: (a) classical morphotaxonomy, (b) ectomycorrhiza research, (c) chemotaxonomy, and (d) toxic constituents in *Agaricales*.

**Classical morphotaxonomy of *Agaricales*:** in connection with the "Kleine Kryptogamenflora", M. Moser was forced to clarify the taxonomic identity of the taxa recorded from Europe. In his concept, the only possible and feasible way to obtain reliable results was to go back to the localities in Sweden where E. Fries gathered the specimens described in "Systema mycologicum" (1821) and subsequent publications. Accordingly, M. Moser not only learned Swedish but gathered topotypical material of *Agaricales* at localities visited by E. Fries with the intention of creating an international herbarium of "neotypes" available to all mycotaxonomists world-wide. His disappointment was obvious when the rules of nomenclature for fungi were changed (1981) and the taxa mentioned in Fries' books became "sanctioned only".

As mentioned above, M. Moser concentrated his attention on the taxonomy of the genus *Cortinarius*, the most difficult and most diverse genus in the *Agaricales*. In the course of his studies, he monographed the European representatives of *Phlegmacium* (1960) and wrote many critical and supplementary contributions on related taxa. Invited by R. Singer to Argentina and Chile, M. Moser (together with E. Horak) published a comprehensive monograph on *Nothofagus*-associated *Cortinarius* species occurring in the Patagonian Andes. In numerous trips to the United States, M. Moser continued with taxonomic research on *Cortinarius* material lodged in the A.H. Smith Herbarium (MICH) and he added, in cooperation with J. Ammirati (Seattle), valuable data towards the knowledge of these taxonomically difficult species of agarics in North America. Simultaneously, M. Moser documented (often including paintings) and published on personal collections gathered in a wide range of habitats (with special interest in arctic-alpine sites) from all over Europe, Greenland and the former Soviet Union (Crimea, Altai Mts.) as well as examining material of SE-Asian and Australasian *Cortinarius* species sent to him by E.J.H. Corner (Cambridge) and E. Horak (Zurich).

Though initially expressing scepticism, M. Moser soon realized the taxonomic potential of molecular techniques in disentangling the complex systematics of the *Agaricales*, *Cortinarius* in particular. Accordingly, he did not hesitate to cooperate with colleagues in several leading molecular labs and passed on his ample expertise in order to encompass all aspects in modern taxonomy.

During his long mycological career, M. Moser gathered and documented more than 25,000 collections, which are curated in the Herbarium IB at the University of Innsbruck. Voucher specimens photographed and presented in "Farbatlas der Basidiomyzeten" (Moser & Jülich 1985-2002) are also kept in this herbarium. In addition, he published around 420 new species of *Cortinarius* and about 80 new taxa belonging to other genera of agarics and boletes. Finally, he proposed *Singeromyces*

(1966), *Stephanopus* (1975) and *Anamika* (2002) as new genera, the first two exclusively occurring in temperate South America.

Meinhard Moser's high esteem in the professional mycological community is also expressed by the name of the new genera *Moserella* Pöder & Scheuer (1994) and *Chromosera* Redhead, Ammirati & Norvell (1995) and the epithets of the new species enumerated below in alphabetical order: *Acariniola moseri* T. Majewski & J. Wisn., *Collybia moseri* (Antonín & Noordel.) Bon, *Conocybe moseri* Watling, *Cortinarius moseri* (E. Horak) E. Horak, *Cortinarius moserianus* Bohus, *Cortinarius meinhardii* Bon, *Entoloma moserianum* Noordel., *Gerronema moseri* Singer, *Gymnopus moseri* Antonín & Noordel., *Hebeloma moseri* Singer, *Hydropus moserianus* Bas, *Hygrocybe moseri* Bon, *Lactarius moseri* Harmaja, *Sericeomyces moseri* (Wasser) Heinem., *Leucoagaricus moseri* Wasser, *Lasiosphaeria moseri* O. Hilber, *Peziza moseri* Aviz.-Hersh. & Nemlich, *Phaeocollybia moseri* Band.-Muñoz & Guzmán, *Psathyrella moseri* Singer, *Psilocybe moseri* Guzmán, *Thaxteriola moseri* T. Majewski & J. Wisn., *Tricholoma moserianum* Bon, *Tricholoma moseri* Singer, *Tubaria moseri*, and *Wardomyces moseri* W. Gams.

**Ectomycorrhiza research:** many users of M. Moser's "Kleine Kryptogamenflora" are probably unaware that he was an internationally recognized expert on ectomycorrhiza. After having been introduced to this topic by J.L. Harley, and in close contact with the Swedish researchers belonging to the Melin-Björkman school, M. Moser's contributions in this field of research have been notable due to fact that (based on his taxonomic background) he put the fungal partners in the centre of his ecologically oriented concept of ectomycorrhizal relationships. In connection with extensive fieldwork carried out in the transitional zone between the upper subalpine and alpine belt both in Europe and the USA, he contributed many interesting records and described new taxa from these unique habitats. Under his guidance, several of his students have been engaged in studying ectomycorrhizal relationships in alpine habitats. With regard to this alpine mycota, it was an open secret that M. Moser had a high opinion of the contributions published by J. & J. Favre, R. Kühner and D. Lamoure from the Swiss and French Alps. For many years, he was in close scientific contact and exchanged research data and expertise with these two French colleagues.

Apart from the afore mentioned ecological contributions, M. Moser was also one of the first to realize the physiological importance of IES-auxins synthesized by the mycelia of ectomycorrhizal fungi in the rhizosphere.

**Chemotaxonomy of Agaricales:** basidiomes belonging to many taxa of M. Moser's pet genus *Cortinarius* s.l. are particularly characterized by conspicuous colours. On the lookout for additional criteria to separate taxa at species level, he made the first successful steps to study these pigments, which predominantly belong to anthrachinonic compounds. Based upon his selected material, Ph.D. students worked hard on chemotaxonomic aspects believed to be reliable tools in practical taxonomy. In addition, M. Moser sought support and cooperation with biochemists actively involved in pigment biosynthesis and analysis, and as a result several important pieces of research data have been published in the pertinent literature.

**Toxic constituents in Agaricales:** insiders are well aware that M. Moser was an excellent amateur cook, renowned for creating delicious menus containing agarics and boletes. After having been intoxicated in the course of gastronomic experiments (with *Phaeolepiota* and *Agaricus*), however, he also developed interest in the field of toxicology. M. Moser and his students became particularly involved in the chemical and pathological properties of the potent toxin orellanine, isolated from basidiomes of species belonging to the *Cortinarius*

*orellanus-speciosissimus* complex. In his long scientific career, M. Moser was actively engaged in enhancing, progressing and promoting mycology at many different levels and functions. Hence he kept mutual contacts not only with leading professional mycologists but also with amateur mycologists thoroughly familiar with their local mycota. He organised numerous workshops and meetings, acted as chairman or president in several national and international congresses, was a member and referee on the editorial committees of several mycological journals, and belonged to the committees of various mycological societies. M. Moser always emphasized and valued his very close relationships with the mycological societies in Austria, Switzerland and Italy, which invited him routinely for forays which offered ample opportunities to enhance his knowledge of macromycetes.

Due to his broad expertise in mycology and related sciences, M. Moser evaluated countless research proposals on behalf of national and international associations and academies, and accordingly directed the thrust of mycological research in many institutions.

In recognition of his outstanding contributions towards various aspects of mycological research, M. Moser received many prestigious awards and was elected an Honorary or Corresponding Member of many distinguished societies, as listed below in chronological order: Schweizerische Mykologische Gesellschaft (1957), Bayerische Botanische Gesellschaft (1962), Clusius Medal, Budapest, Hungary (1978), Deutsche Gesellschaft für Mykologie (1981), Société Mycologique de la France (1981), Dr. h.c., Université de Lyon, France (1984), Kardinal Innitzer Preis, Wien, Austria (1985), Österreichische Akademie der Wissenschaften, Vienna (1986), E. v. Tschermak-Seisenegg Preis, Österreichische Akademie der Wissenschaften, Wien (1989), Ehrenbürger der Stadt Borgotaro, Italien (1990), Mycological Society of America (1992), Ukrainian Academy of Sciences (1992), Gesellschaft für Mykologie und Lichenologie, Germany (1992), Ukrainian Botanical Society (1993), Centenary Fellow of the British Mycological Society (1996).

This summary of Meinhard Moser's long career could lead to the false conclusion that he centered his interests exclusively on mycology and worked like a robot for years on end. Yet it is a fact that he was gifted by an uncompromising capability for concentration. His memory for relevant literature sources was near-perfect. Over the years, his PC became his close companion in order to manage and control the immense pool of his descriptive data.

Meinhard Moser was rather shy, taciturn, formal and constrained in public or in official functions. However in a relaxed atmosphere among students, collaborators or friends, he became extrovert and surprised many by his sense of humour and ready wit. Relaxing from his heavy load of duties in his comfortable home in Vill near Innsbruck, M. Moser easily became absorbed in several of his treasured hobbies. In particular, he liked to spend time on his stamp collection and enjoyed reading both belletristic literature and books on the history of early exploration (he owned a complete set of Sven Hedin's works), geography, botany and mycology, or he tried to raise plants from seeds brought back from his numerous collecting trips in Europe, North and South America. Even after he finally retired in 1991, he still kept up an intensive pace of work, which he usually began at 5 a.m., only occasionally interrupted by a short stroll through the forests in his neighbourhood.

A short while after returning from the 7th International Congress in Oslo (Norway), M. Moser suffered from a series of heart attacks, and was admitted to hospital. His condition worsened rapidly and he passed away on 30 September 2002. With the untimely death of Meinhard Moser, the mycological world lost one of its pillars of taxonomy for agarics and boletes. His former students, assistants and

collaborators at the Microbiological Institute at the University of Innsbruck, his professional colleagues in the mycological community worldwide, and his many friends will deeply regret the loss of a distinguished researcher and teacher, leader and mentor.

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