

Obituary

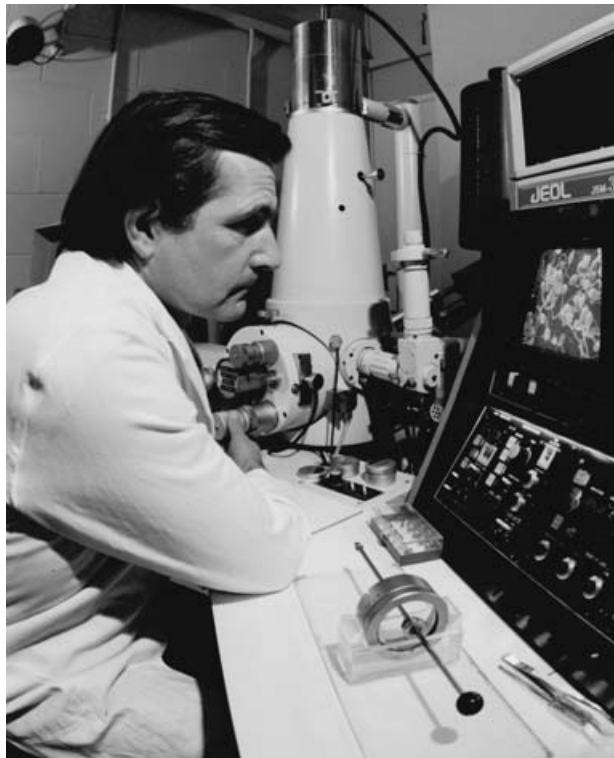
Stephen Thomas Moss (1943–2001): leading fungal ultrastructuralist and promoter of mycology

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Steve Moss, General Secretary of the British Mycological Society 1992–2000, and its President in 2001, died in 2001 aged 58 years.



Steve

Fig. 1. Stephen T. Moss (1943–2001).

There have been several immediate and sincere appreciations of Stephen Moss following his untimely death from a heart attack. Steve will be remembered both as a truly outstanding General Secretary of the British

Mycological Society and for his mycological researches on trichomycetes and ascomycetes. His research was focused on electron microscopy and was characterized by a meticulous attention to detail which enabled him to make significant contributions to our understanding of the morphology and morphogenesis of fungal spores. Steve was principally a ‘team man’ contributing to and enhancing the worth of research and ensuing publications with his particular skills: many of his primary publications (from over 100) were written jointly with others. A chronological list of publications follows this obituary.

Steve’s wife, Jan, was a constant tower of strength, encouraging him in his research and supporting his BMS activities. Steve and Jan lived at Gosport, a ferry boat ride away from his Portsmouth office, and at home they were generous in entertaining mycologists visiting Portsmouth. Steve always tried to reserve his weekends for family and home, but this ‘ring fence’ was all too often breached by late evening work on BMS affairs and by BMS functions.

As a clear and enthusiastic lecturer, his enthusiasm could not but ‘fire’ undergraduates and numerous research students. Many of these students came from the Far East and he often made return supervisory visits to them in their home countries thus becoming at least as well-known and appreciated abroad as at home. Steve will be remembered for his friendly interest, encouragement and inspiration to young workers. It was this great gift of quiet but effective support to those from developing countries that has resulted in colleagues and friends establishing the Stephen Moss Memorial Fund for travel support to younger mycologists. Peter Molitoris has stressed that his patient listening to others, whatever their status, remained a strong characteristic which, without doubt,

contributed greatly to his attractive personality. Council members have echoed this sentiment as Steve could always be called upon for help and advice: advice which was so readily given. With his qualities as a communicator and efficient administrator, it was inevitable that he was often asked to plan scientific meetings and act as the local organizer.

Stephen Thomas Moss was born in Buxton, Derbyshire, on 22 October 1943 but the family soon moved to Norwich, East Anglia. He was the middle child and only son. He married Jan on 26 July 1969, and there were two children, Rebecca (Becky) and Timothy (Tim). Latterly, Becky became an invaluable assistant to Steve in maintaining computerized BMS membership files.

He was educated at the City of Norwich Grammar School (1955–1963) but then moved to London where he attended Walthamstow Technical College (1963–1966), from whence he gained a BSc (Pass) degree as an External Student of the University of London. From 1966–1968 he studied part-time (mostly in evening classes) for an MSc at Birkbeck College, University of London. During this time he was a part-time lecturer or demonstrator, from foundation to degree standard, at a number of technical colleges in south and east London: Norwood Technical College, South London; Walthamstow Technical College, East London; West Ham Technical College, East London; Goldsmith's Teachers Training College, South East London. It was this experience of class contact with students of varied backgrounds and ambitions which contributed to his development as a gentle, skillful and perceptive teacher and lecturer.

Steve's interest in mycology started from a chance introduction to particular fungi from a great teacher: Terence Ingold suggested that for his MSc project he should seek and study the *Trichomyces*. These fungi, placed in the *Zygomycota*, are specialist niche players in the biodiversity of the aquatic ecosystem; they are fungi commensal in the guts of aquatic insect larvae. Steve was able to specialize as a field mycologist with organisms that had captured his imagination. He decided that he wanted to continue in full-time higher education and came to the Department of Botany, University of Reading to work under my supervision for a PhD (1969–1972). At that time the University of Reading had only one electron microscope, housed in the Zoology Department, and it was there that he obtained his basic technical electron microscope training from Elaine Robson. He quickly became a proficient electron microscopist both in the quality of the images produced and in their interpretation. His thesis was entitled 'Occurrence, Cell Structure and Taxonomy of the Trichomyces, with Special Reference to Electron Microscope Studies of *Stachylina*'. In this thesis he used TEM to unravel the morphogenesis of the appendage and collar of the trichospore of *Stachylina* and to link the morphology of this organelle with its probable biological significance. The thesis was

submitted within the three-year norm; and, exceptionally in those years, an External Examiner from outside the UK was appointed to conduct his viva, Jehanne-Françoise Manier of Montpellier University (France), then the foremost world authority on the Trichomyces.

After graduating, Steve and Jan took the opportunity of moving to Lawrence, Kansas, USA, where Steve was to hold an NSF-funded Research Associateship from September 1972 to December 1973. At the University of Kansas he established a happy, productive and long-lasting collaboration with Robert W. Lichtwardt. Their joint work on the morphology and biology of the Trichomyces over subsequent years led to Steve being recognized as a world authority on these fungi. Later, as a result of their collaboration, he was appointed to the honorary position of Adjunct Professor of the University of Kansas (1977). He became a member of the Mycological Society of America in 1972 and remained so thereafter.

Steve returned to the UK to take up a post with E. B. Gareth Jones at Portsmouth Polytechnic, this institute later becoming the University of Portsmouth. He remained at Portsmouth for the rest of his life, progressing from Research Fellow (1974–1978); Lecture (1978–1981) to Senior Lecturer (1981–1988) and Reader (1988–2001). As an electron microscopist, he soon became heavily involved in internal committee work to rationalize the use of electron microscopes in various departments at Portsmouth, eventually becoming manager of this facility. Under the influence of Gareth Jones, he turned his attention to the electron microscopy (both TEM and SEM) of marine ascomycete spores, elucidating their diverse mechanisms for attachments to substrata. This work involved SEM examination of the biodeterioration of submerged woods. Concurrently with the marine biodeterioration studies, he also became involved with another group of heterotrophs, the thraustochytrids. Few mycologists can claim to have excelled in three such widely disparate fungal groups. Spore attachment studies in relation to fungal biodeterioration in aquatic environments led to participation in marine archaeology – particularly the fungal aspects of decay and preservation studies on the Tudor battleship 'Mary Rose' which is now a prime tourist attraction in Portsmouth.

Steve had a hand in training 28 research students in topics as diverse as ascospore ontogeny (7); spore attachment (4); biochemical biodegradation and nutritional studies (7); microbial communities and associated ultrastructural interactions (7). Only two of his students specialized in the *Trichomyces*. His organizational abilities and research achievements were only grudgingly recognized and he was unsuccessful, in the difficult academic climate of the 1990s, in obtaining a professorial position.

A quarter of his papers were on his first love, the *Trichomyces*, and almost a third of these were co-authored with Bob Lichtwardt. Ultrastructural

studies of spore appendages constituted a continuing strand in these studies. Inevitably, field work revealed new taxa, but his particular achievement was to demonstrate how the different spore-forms fitted the life-histories of the fungi. The life-history studies were remarkable in demonstrating how these fungi maintained their populations in fast-flowing lotic environments. Other significant work was on the morphogenesis and function of the trichomycete zygospore and the consequent phylogenetic implications of these findings. It was an inevitable disappointment that lack of UK funding for taxonomic and ecological biodiversity meant that this promising research could not be followed further.

With its maritime connections, it was not surprising that an early 'Portsmouth' interest was with the marine *Labyrinthista*, particularly the *Thraustochytriaceae* (five papers) supported by a major research grant (NERC, 1981–1984). His work on the ultrastructure (TEM) of the ectoplasmic net has been a major contribution to our knowledge of these protocists. The unique nutritional role of the ectoplasmic net and its relationship to thallus cleavage were obvious developments from his electron microscopy.

Over 50 publications, most co-authored with Gareth Jones and students, were concerned with the taxonomy of ascomycetes and the ultrastructure (TEM and SEM) of the ascomycete spores, particularly those from aquatic environments. Steve was responsible for all the electron microscopy. These papers explored the inter-relationships between morphogenesis, morphology and function. A smaller number of papers were more specifically concerned with the mechanisms (appendages and secretions) for ascomycete spore attachment to substrata prior to germination and colonization. The work on ascomycete spore appendages and secretions constitutes a major tranche of the published work in this field. With this expertise in the biology of aquatic fungi it was natural that he became one of the experts on the biodegradation of wood in freshwater and marine environments.

In 1985 Steve was elected to the Council of the BMS: his progress within subsequent Councils was steady, becoming General Secretary in 1988 with unanimous re-election for the next 12 years. He also served on Special Interests Committees: Structure and Systematics, 1990–1995 and as an Associate Editor, 1975–2001. He was unremitting in his energies for the promotion of the Society. His election as President in 2001 was greatly acclaimed. Outwardly, he always had a smile and encouraging word, which made it easy for others to work with him. However, he had difficulty in delegation (because others were not so selfless); if a task was necessary he tended to 'do it himself' and all who served on Council or Committees were aware of the midnight oil he burnt in the furtherance of the Society: no surprise that in unguarded moments he sometimes looked strained. As Stefan Buczacki has written, '... no President ... had come to the task so well versed in the

workings and goals of the Society', but one must now wonder at what cost. Without his unremitting commitment for 16 years, the British Mycological Society would not be as it is today: one of the foremost biological societies in the world.

Having assiduously followed the directives of previous Presidents and listened to the views of so many Council members, Steve as President wanted to exert his influence on the management and direction of the activities of the Society. His legacy was to 'hit the ground running' on many of the fronts he had identified as requiring action. It is to his credit that he initiated so much in his short tenure. Although Steve was aware of problems in the effectiveness of previous Councils, this changed immediately Steve took the Chair, so that Council woke up to the fact that each member had a role to play and be seen to be active in their allocated tasks.

Organismal mycology, particularly systematics and environmental biology has been no exception in being neglected by grant-awarding bodies in the UK; biodiversity studies becoming 'endangered species'. Steve was in a position (thanks to yet another of his other activities, as Secretary of the UK National Committee for Microbiology) to play an active role in discussions leading to the formation of a proactive, authoritative UK Life-Sciences Federation, a Federation in which the BMS became included as one of the sixteen foundation societies. As President of the BMS, and in common with other specialist organismal groups, he supported the role that the Linnean Society is playing in acting as an 'umbrella Society' for these interests. Steve was also active for the National Biodiversity Network Trust. Acutely conscious that introspective policies were not options for any specialist society, he initiated the input into our Council from spokespersons from other groups with cognate interests with the aim of developing more outward-looking mycologists.

Again, the urgent need for the promotion of mycology by publicity and teaching was recognized and acted upon. Under Steve's direction a compelling start to improve the professionalism of publicity for mycology has been made, with appropriate funding from within the BMS. The need to be seen to support mycological education in general at all levels should by now be obvious to BMS members, other biologists, school teachers and the general public.

Publications and meetings are the mainstay of the BMS. Steve was concerned that academically imaginative but poorly attended scientific meetings have, in the past, contrasted with enthusiastic support for foray and conservation activities. He worked very hard to bridge any differences of approach between the amateur and professional mycologists. The high quality of the presentations by younger mycologists for the Howard Eggs lecture award was a particular pleasure. Steve steered the successful launch of *Field Mycology*; the *Mycologist* has a new direction and approach following his input, and *Mycological Research* maintains its

high international reputation as shown by its increasing citation index values.

Steve was gregarious, enjoying the company of other mycologists and he was particularly happy when talking and teaching in the Far East where all his energies could be put into mycology. Latterly, when Jan was able to accompany him, they both relaxed in the informal camaraderie. Steve lived for mycology and rarely had time for hobbies. When younger, from Norfolk days, he was a keen dinghy sailor but although he kept his boat, rarely sailed thereafter, even when living by the coast at Gosport. Stephen Moss's contribution to the advancement of mycological knowledge was as significant as it was wide-ranging – we can only guess where it may have led given the fullness of time.

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BIOGRAPHICAL NOTICE

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