

## AWARDS

### IMA De Bary and Ainsworth Medals

These Medals represent the highest honours bestowed by the IMA, and presentation of the awards is normally at International Mycological Congresses (IMC). The Committee may, however, choose not to award either Medal at a particular IMC.

*General Requirements:* (1) An individual may receive the same IMA Medal only once; (2) Self-nomination is not allowed; (3) Nominators must be members of the IMA; and (4) Nominees who are not chosen for the prize, may be re-nominated for up to two additional terms (within the year limit

linked to the specific award).

*Documents required:* The folder should contain: (1) A nominating letter, including a detailed evaluation of the nominee's contributions to mycology; and (2) A current *curriculum vitae*.

*Application process:* The next application deadline is **15 February 2018**. Nominations should be sent to the IMA Vice-President (Awards), who will forward them to the De Bary and GC Ainsworth Medals Committee. The Committee determines the winners, and will forward to the

IMA Vice-President and President by **15 February 2018**. Winners will be notified by the President of the IMA and encouraged to attend IMC11.

*The De Bary and GC Ainsworth Medals Committee:* The Committee is formed by the IMA Vice-President (Awards) from members of the IMA Executive Committee.

*Notes:* Awards consist of a certificate.

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### Johanna Westerdijk Award – Josepa Gené [Fina]

*Awarded on special occasions to an individual who has made an outstanding contribution to the culture collection of the Westerdijk Fungal Biodiversity Institute, marking a distinguished career in mycology. Nominees for the award will be evaluated on the basis of quality, originality, and quantity of their contributions to the collection, and on the basis of associated mycological research in general.*



On the second day of the “Leading Women in Fungal Biology” symposium in Utrecht on Thursday 31 August 2017 (see pp. (48)–(49) in this issue), the Westerdijk Fungal Biodiversity Institute presented this prestigious award. The award is made at irregular intervals by the institute following discussions by its senior staff. This is the eighth time this award has been made, and the citation was read, and the presentation of the certificate made, by the Institute's Director, Pedro W. Crous.

Professor Josepa Gené has a very impressive research profile. She has published around 180 papers on the taxonomy and epidemiology of many fungal taxa (*h*-index= 31), and is co-author of all the editions of the *Atlas of Clinical Fungi* (1995-2011), that according to Google Scholar has been

cited 2540 times, and also of the *Atlas of Soil Ascomycetes* (2012). She has supervised 10 PhD theses on mycology, and participated in more than 25 funded research projects. Since 1990 she has been a teacher in the course “Taxonomic identification of opportunistic fungi” taught in Spain and in many South American countries. She is recognized as a special recipient of the Westerdijk Award, however, as she has deposited a huge collection of clinical and environmental isolates of fungi in the Institute's collection, thereby ensuring that these remain available for research by future generations. Those of us who still collect and culture fungi, know that this represents a major investment of time and resources. As a mycological community, we thus thank her for this incredible contribution to global mycology.

### Australasian Plant Pathology Society Fellows

Several mycologists were made Fellows of the Australasian Plant Pathology Society at the meeting of the Society in Brisbane, Australia. The announcement was made at the dinner on 27 September 2017. All have made substantial contributions to the taxonomy and systematics of Australian fungi.

John Alcorn's career and contribution to plant pathology and taxonomic mycology

spanned nearly four decades. He has described over 150 fungal species, and is best known as an international authority on the helminthosporioid fungi, particularly those species that cause plant diseases. For further information see p. (54) in this issue.

Treana Burgess has explored cryptic speciation, pathogen movement, survival and establishment under the overarching topic of forest biosecurity. She has

contributed significantly to the molecular systematics and evolutionary biology of *Phytophthora* species and to a range of fungal species that adversely impact trees in planted and natural ecosystems.

Roger Shivas has described or classified over 400 species of fungi including a comprehensive study of the rust and smut fungi of Australia. His passion is the discovery and classification of new

taxa in the underexplored biodiversity of Australian microfungi, reflected by more than 4500 collections and approximately 5400 identifications of fungi in national herbaria.

Brett Summerell has focussed on the taxonomy and identification of *Fusarium* species, on techniques for plant disease diagnosis, and on fungal diseases of the Australian flora. He is a leading contributor to on-going global collaborations that have yielded major advances in our understanding

of *Fusarium* taxonomy and the role of these fungi in the diseases of many plant taxa.

Three of the four mycologists made APPS Fellows (left to right), Roger Shivas, Treena Burgess, and Brett Summerell.



## BIRTHDAY GREETINGS

### John L. Alcorn – Australian taxonomic mycologist and plant pathologist turns 80



We wish John all the best for his 80<sup>th</sup> birthday on 4 October 2017. John is an internationally accomplished Australian mycologist and plant pathologist whose contributions span almost 40 years (from 1967–2003). He joined the Queensland Department of Agriculture and Stock in 1956 as an 18 year old cadet before becoming the curator of the Queensland Plant Pathology Herbarium (BRIP) until his official retirement in 1998. John's publication record is extensive, with more than 60 papers in peer-reviewed journals that reflect his international standing and broad expertise and support for many of Queensland's agricultural industries.

John's contribution to taxonomic mycology is shown by his discovery and description of many new species and genera of mostly plant pathogenic microfungi. His most important taxonomic contributions are on helminthosporioid fungi, and his review on this topic (Alcorn 1988) has been cited over 100 times. John's skill as a mycologist was shown in his resolution of the taxonomic differences between the genera of helminthosporioid fungi based

largely on morphology, an achievement of considerable importance in the pre-molecular era in which he worked. John further demonstrated (in the laboratory) associations between the asexual and sexual morphs of these fungi in mating experiments. His work has been recognized in the generic name *Johnalcornia*, as well as in *Avetiaea alcornii*, *Colletotrichum alcornii*, *Curvularia alcornii*, *Teratosphaeria alcornii*, and *Ustilago alcornii*. He was a foundation member of the Australasian Plant Pathology Society (APPS), served as Treasurer (1973–74) and Vice-President (1992–93), and was made a Fellow of the Society this year (see p. (53) above).

John made significant contributions to plant pathology within Australia and internationally. As curator of the Queensland Plant Pathology fungarium and culture collection, John maintained a collection of specimens meticulously, recognising the importance of this resource for Australia's agricultural and horticultural industries. A computerized database for disease records was prepared by cataloguing the collection which had reached about 50 000 specimens by his retirement. He assisted with disease and pathogen identifications and descriptions in crops including mango, pawpaw, cucurbits, green beans, sorghum, sunflower, peanut, maize, pasture legumes, and grasses. Of particular note was his pivotal role in the identification and eradication of black sigatoka and leaf freckle in banana in north Queensland (Jones & Alcorn 1982), and the identification of

sorghum ergot in Australia (Ryley *et al.* 1996). He was also engaged with surveys and descriptions of diseases and their causal fungal agents of native vegetation, including mangroves, *Acacia*, *Eucalyptus*, and *Proteaceae*.

A humble and quiet achiever, who loves the natural world, John enjoyed visiting the field, and was a mentor to many plant pathologists who are deeply indebted to his time and willingness to discuss all aspects of plant pathology, and not just mycology. In the early 1990s a pagoda area was built outside the Plant Pathology Building at the Indooroopilly Research Centre, for the staff to enjoy meal breaks outside the laboratory; John won a competition to give this area a name, and chose "The Field", so that if anybody phoned while he was on a break he could say he was "in the field".

Alcorn JL (1988) The taxonomy of

*Helminthosporium* species. *Annual Review of Phytopathology* 26: 37–56.

Jones DR, Alcorn JL (1982) Freckle and black Sigatoka diseases of banana in far north Queensland. *Australasian Plant Pathology* 11: 7–9.

Ryley MJ, Alcorn JL, Kochman JK, Kong GA, Thompson SM (1996) Ergot on *Sorghum* spp. in Australia. *Australasian Plant Pathology* 25: 214.

Liz K. Dann, Roger G. Shivas,  
and Ken G. Pegg  
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## Donald J. S. Barr – Doyen of the zoosporic fungi

Donald reached a milestone, turning 80 on 18 September 2017. Born in England, Donald moved to Canada aged 17, and completed BSc and MSc degrees at Macdonald College of McGill University in 1960 and 1962, respectively, where he studied plant pathology. He went on to complete a PhD on chytrids on algae in 1965 at the University of Western Ontario under the supervision of C.J. Hickman, shortly before joining the mycology group at the Canada Department of Agriculture (now Agriculture and Agri-Food Canada), Ottawa. He was hired to cover zoosporic fungi and made outstanding contributions to mycology in this area by publishing close to 150 scientific papers, with about two thirds of them as senior author. He identified fundamental variations and conserved regions in the flagellar apparatus of zoosporic fungi and made several phylogenetic and taxonomy inferences, particularly in chytrids, that were supported later by molecular phylogenetics. Very few mycology laboratories in the world managed to master the transmission electron microscopy technology to perform such meticulous studies, and Donald Barr

always recognized or acknowledged the very important contributions made by Paula Allan and Nicole Désaulniers, the two main microscopy technicians who supported him in his work. Later in his career, Donald applied isozyme technology to biosystematics and his work on two *Pythium* species complexes remain among the most comprehensive population studies ever done in zoosporic fungi.

Donald also made several very important contributions to the mycology community. He initiated the Canadian Collection of Fungal Cultures and was its first curator from 1973–75, a role that he fulfilled again in 1982–84. He performed identifications of zoosporic fungi for other researchers as part of his duties, always providing insightful information and comments that often led to important collaborations in areas such as plant viruses vectored by zoospores, etiology of plant diseases caused by oomycetes, and ecology of rumen fungi. He was also involved in molecular phylogenetic studies of chytrids as a collaborator.

He was particularly generous with his time and in providing cultures and advice



to graduate students or young scientists, and had a positive impact on the career of several mycologists. Donald was President of two scientific societies at the same time, the Mycological Society of America (1990–91) and the International Society for Evolutionary Protistologists (1989–91), covering the two groups of zoosporic fungi.

Since retirement, Donald has returned to England and has been actively travelling and walking around remote areas of the world. The IMA wishes him a Happy Birthday year and the best for the years to come.

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## E.B. Gareth Jones – Champion of aquatic and tropical fungi



Gareth with colleagues from BIOTEC Thailand at his 80th Birthday celebration in Chiang Rai, many his past students.

Gareth celebrated his 80<sup>th</sup> birthday in Thailand on 27 January 2017. He was drawn to tropical mycology after visiting Singapore and Malaysia on his return from the International Mycological Congress

(IMC3) in Japan in 1983. After retirement from the University of Portsmouth in 1996, he headed for Asia holding research positions at: City University of Hong Kong (Royal Society Kan Tong Po Visiting Professorship

1997–99); Specialist Researcher, BIOTEC, Thailand (2000–10); Icon Professor, Institute of Ocean and Earth Sciences, University of Malaya (2011–13); Distinguished Scientist Fellowship Program (DSFP), King Saud University, Saudi Arabia (2013 on); Visiting Professor Chiang Mai University, Thailand (2016 on); and with the National Taiwan Ocean University, Taiwan. His primary interests have been in the training of research students, and he has supervised/co-supervised over 100 MSc and 81 PhD students, respectively, many from outside the UK. He considers his years in Asia the most productive and rewarding of his career. These studies not only included marine fungi, but a wide range of other tropical/subtropical fungi and in recent years especially molecular investigations of these fungi. His studies of Asian mycology resulted in a special award for his contribution to Asian Mycology at the Asian Mycological Association Congress of 2013, and an Honorary Fellowship of the

Japanese Mycological Society in 2006.

Gareth received his PhD from Leeds University in 1963, and a DSc from the University of Wales in 1973. His main interests have included: phylogenetic taxonomy of marine and freshwater fungi and their ecology, tropical mycology, biodeterioration of materials, marine archaeology, and marine micro-biofouling. He is especially known for his pioneering work on marine ascomycetes and their appendages, which he carefully documented and illustrated through collaboration with his colleague and electron-microscopist at Portsmouth, Stephen (“Steve”) T. Moss (1943–2001). Gareth was Vice-President

(1986–7) and President (1992) of the British Mycological Society and made a Centenary Fellow of the Society in 1996. In addition, he served as Chair of the Comité International Permanent pour la Recherche sur la Préservation des Matériaux en Milieu Marin (COIPM) in 1993–2003) and as a member of the Advisory Committee on Pesticides for 17 years.

He has published widely and edited five books including ones on marine and freshwater fungi and fungal-like organisms (Jones & K.L. Pang 2012, Jones *et al.* 2014), and co-edited a special issue of *Botanica Marina* on recent advances in marine mycology.

Gareth’s spare time interests include classical music, especially opera, and gardening which we trust will add to his pleasure in the years ahead around his home in Southsea, near Portsmouth.

Jones EBG, Pang K-L (eds) (2012) *Marine Fungi and Fungal-like Organisms*. Berlin: de Gruyter.

Jones EBG, Hyde KD, Pang K-L (eds) (2014) *Freshwater Fungi and Fungal-like Organisms*. Berlin: de Gruyter.

[Partly based on a tribute prepared by D. Jayarama Bhat.]

## IN MEMORIAM

### Joop van Brummelen – A champion of the discomycetes (1932–2017)

On 12 September 2017 Johannes (“Joop”) van Brummelen passed away. Joop was born in the city of Haarlem on 19 February 1932. He became interested in fungi at a very young age and became a member of the Dutch Mycological Society at the age of 16. He served on the board of the society from 1973–78. His professional career as a mycologist started at the Rijkherbarium in Leiden in 1957, as a student to work on coprophilous fungi in the taxonomic mycology department. Being a most promising student, Joop was appointed to the staff in 1959 by Marinus A. Donk (1908–72), who had become head of the department in 1956 following his return from Indonesia. Joop thus joined with Cornelius (“Kees”) Bas (*Agaricales*) and Rudolph A. Maas-Geesteranus (lichenized and other ascomycetes). Besides describing new taxa, Joop made extensive studies of the structure and ontogeny of ascomata, ascospore ornamentation, and ascus tips, to assess the value of these features for advancing the understanding of phylogenetic relationships among the genera of operculate discomycetes, *Pezizales*. He completed his PhD thesis, a meticulous and superbly illustrated world monograph of the genera *Ascobolus* and *Saccobolus*, in 1967

(Van Brummelen 1967) which remains the key reference work on these fungi to this day.

Joop set up cultural techniques in Leiden and also implemented transmission electron microscopy, which was becoming the gold standard for investigations into the structure of fungi in those days. Over the years he published a series of papers revealing a surprising amount of diversity in (ultra-)structure of the ascus tip in the operculate discomycetes. His first graduate student Emily Merkus (1972–76) worked on the ultrastructural analysis of ascospore walls in *Pezizales*. I had the privilege of being Joop’s graduate student from 1990–94, studying the ultrastructure of ascus tips in inoperculate discomycetes (*Helotiales*). I fondly remember his patience and dedication to train a student who had much to learn. Joop was an excellent field mycologist and mushroom hunter, with a broad knowledge of species. Each year he travelled to France to join in forays of local mycological societies, where he was well-known and respected. In 1995 Joop published his last major work, a world monograph on the genus *Pseudombrophila* (Van Brummelen 1995). It is of a similar high standard as his thesis, for which Joop



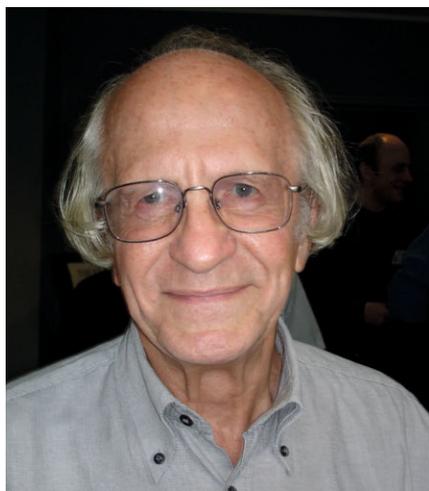
has been praised by many of his peers. For many years he was also editor of *Persoonia*, until his retirement in 1997. We owe Joop van Brummelen a lot of gratitude for his outstanding contributions to mycology and his friendly tutorship.

Van Brummelen J (1967) A world-monograph of the genera *Ascobolus* and *Saccobolus* (*Ascomycetes*, *Pezizales*). *Persoonia*, Supplement 1: 1–260.

Van Brummelen J (1995) *A World-monograph of the Genus Pseudombrophila* (*Pezizales*, *Ascomycotina*). [Libri Botanici vol. 14.] Eching: IHW-Verlag.

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# Otto L. Lange – Pioneer lichen ecophysiologicalist (1927–2017)



Otto Lange at the International Association for Lichenology Symposium (IAL 5) in Tartu, Estonia, 2004. Photo: DLH.

Otto Ludwig Lange passed away on 14 August 2017, peacefully after a sudden and unexpected illness. And just one week before what would have been his 90<sup>th</sup> birthday. His passing was a shock to everyone who knew of him, and he will be greatly missed but also remembered as a great lichenologist. Above all, Otto was a lichen enthusiast who collected and studied lichens from his school days and, in a never-ending drive to understand how they worked, developed methods to study gas-exchange with an emphasis on field studies that underpin modern techniques. Present investigators of lichen and plant photosynthesis stand on his shoulders.

Otto was born on 21 August 1927 in Dortmund, but spent his school years in Göttingen. At age 16 he was drafted into military service and, as a result, is probably the only lichenologist who started their career as a prisoner of war. These events affected him greatly and led to him being an anti-war activist and later to research in Israel. He studied at Göttingen University from 1946–52, obtaining his doctorate for a dissertation on “Heat and desiccation resistance of lichens as related to their distribution”. In 1959 he received his Habilitation, with a thesis on “Investigations on temperature relations and heat resistance of desert and savannah plants in Mauritania”. This title predicted his later interests in plant (and lichen) performance and

extreme environments. He became a full Professor at Göttingen in 1963, moving to the University of Würzburg in 1967 where he remained until retirement as Emeritus Professor in 1992.

The main theme of Otto’s research was to explain processes in plant and lichen ecology in physiological, biophysical, and biochemical terms. To achieve this, he quantified and analysed responses to environmental conditions, concentrating on photosynthesis, productivity, and heat and drought resistance. He characteristically combined accurate measurement and experimentation in the field with studies under carefully controlled conditions in the laboratory. Post-war conditions meant he had to use simple techniques and study responses that were relatively easy to measure. He soon realised that photosynthesis was a key process for following environmental effects. Handicapped by a lack of suitable equipment, he developed a career-long collaboration with Heinz Walz GmbH, a company that remains a world leader for equipment to study photosynthesis. This included the development of cuvettes for monitoring photosynthesis and transpiration useable in the field. Small H<sub>2</sub>O/CO<sub>2</sub> porometers were developed that allowed rapid measurements of leaves and lichens; they were awarded the Adalbert-Seifritz Prize for technology transfer in the area of ecophysiological instrumentation in 1990.

Otto built collaborations with researchers throughout the world, and also locally. In Würzburg his collaboration with Ulrich Heber and Ulrich Schreiber resulted in the PAM fluorescence technique which now dominates photosynthesis research. In 1986 Otto and Ulrich Heber received the Gottfried-Wilhelm-Leibniz Prize from the Deutschen Forschungsgemeinschaft for their contribution to photosynthetic studies.

He was a leader in researching the ecophysiology of vascular plants, especially under extreme (desert) conditions, but here we concentrate on his studies on aspects of lichen ecophysiology. His early research on the temperature limits for photosynthesis in lichens remains as classic studies which have been rarely repeated. His first major paper (Lange 1953) showed that all the lichens

tested could stand temperatures above 70 °C, the best survive 101 °C, though a later study showed that hydrated lichens rarely survived above 35 °C (Lange 1966), so drawing attention to the protective effects of the poikilohydric life-style. Conversely, *Cladonia foliacea* could still photosynthesize at -24 °C (Lange 1965). In 1966, in a project initiated by Vernon Ahmadjian, Otto helped carry out the first gas exchange measurements of lichens in Antarctica, also making a vegetation survey published much later (Green *et al.* 2015). Although he never returned to Antarctica, one of his research assistants at Würzburg, Ludger Kappen, became the world leader in photosynthetic studies of Antarctic lichens and later leader of the Institut für Polarökologie in the University of Kiel.

Otto developed gas exchange systems that could be used in the field, and Figure 4 of his paper on daily activity of *Ramalina maciformis* in the Negev with its early morning gulp of photosynthesis is probably one of the best-known results in lichen ecophysiology (Lange *et al.* 1970). Ernst-Detlef Schulze, one of Otto’s doctoral students, later head of the Max-Planck Institut für Biogeochemie, reminded us that, due to equipment failure, they had to manually read all the data from this work from records on punched tape. He continuously improved the equipment, and in the early 1990s carried out long-term studies, some over a year in length, with the so-called Klapp-cuvette, a system that automatically measures lichen photosynthesis every 30 min (Lange 2003). He further showed that *R. maciformis* could regain positive net photosynthesis by hydration from humid air (Cowan *et al.* 1992), a property of green algal but not cyanobacterial lichens. The diffusion of water vapour and CO<sub>2</sub> does not follow the same pathways in lichens as plants, so different techniques were needed. Otto solved this problem elegantly by measuring net photosynthesis in both normal air (80 % nitrogen) and helox (the nitrogen is replaced by helium); CO<sub>2</sub> diffuses at different rates in nitrogen and helium allowing actual resistances to be measured. This remains the only exact determination of diffusion resistances in lichens (Cowan *et al.* 1992).

A sabbatical leave with Jayne Belnap at

Utah in 1985 raised Otto's interest in soil crusts and, as a result, soil crusts have moved from being almost unknown to a major research field, as evidenced by a book they edited together (Belnap & Lange 2001); this effectively became the bible for soil crust studies.

In all he published over 360 papers and was Founding Editor and Chief Editor of the Springer book series, *Ecological Studies*, now with 230 titles. He was also Editor or Co-Editor of *Oecologia* (1970–2007), *Flora* (from 1964), *Trees* (1986–1998), *Photosynthetica* (1967–1995) and *Botanica Acta* (1987–91). Otto received many honours as befits such a successful research life, including Honorary Membership of the British Lichen Society (1991), the Acharius Medal of the International Association for Lichenology (1992), and the Eminent Ecologist award of the Ecological Society of America (2009). In addition to having three lichens named after him (*Peltula langei*, *Hubbsia langei*, and *Jackelicia ottolangei*), he is honoured by Lange Peak, a 2435 m mountain in the Admiralty Range, Antarctica, awarded for his research at Hallett Station in 1966.

A list of publications and more information about Otto's honours and awards can be found in the publication celebrating his 80<sup>th</sup> birthday Büdel (2007).

Belnap J, Lange OL (eds) (2001) *Biological Soil Crusts: structure, function, and management*. [Ecological Studies no. 150.] Berlin: Springer Verlag.

Büdel B (2007) Otto Ludwig Lange—80 years: eco-physiology—the key to understanding the function and distribution patterns of plants and lichens. *Flora* 202: 590–607.

Cowan IR, Lange OL, Green TGA (1992) Carbon-dioxide exchange in lichens: determination of transport und carboxylation characteristics. *Planta* 187: 282–294.

Green TGA, Seppelt RD, Brabyn LR, Beard C, Türk R, Lange OL (2015) Flora and vegetation of Cape Hallett and vicinity, northern Victoria Land, Antarctica. *Polar Biology* 38: 1825–1845.

Lange OL (1953) Hitze- und Trockenresistenz der Flechten in Beziehung zu ihrer Verbreitung. *Flora* 140: 39–97.

Lange OL (1965) Der CO<sub>2</sub>-Gaswechsel von Flechten bei tiefen Temperaturen. *Planta* 64: 1–19.

Lange OL (1966) Der CO<sub>2</sub>-Gaswechsel von Flechten nach Erwärmung im feuchten Zustand. *Berichte der Deutschen Botanische Gesellschaft* 78: 441–454.

Lange OL (2003) Photosynthetic productivity of the epilithic lichen *Lecanora muralis*: long-term field monitoring of CO<sub>2</sub> exchange and its physiological interpretation. III. Diel. Seasonal, and annual carbon budgets. *Flora* 198: 277–292.

Lange OL, Bertsch A (1965) Photosynthese der Wüstenflechte *Ramalina maciformis* nach Wasserdampfaufnahme aus dem Luftraum. *Naturwissenschaften* 52: 215–216.

Lange OL, Schulze E-D, Koch W (1970) Experimentell-ökologische Untersuchungen an Flechten der Negev-Wüste. II. CO<sub>2</sub>-Gaswechsel und Wasserhaushalt von *Ramalina maciformis* (Del.) Bory am natürlichen Standort während der sommerlichen Trockenperiode. *Flora* 159: 38–62.

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## Donald Mackenzie – Distinguished Medical Mycologist (1929–2017)



Donald Mackenzie, distinguished medical mycologist whose long career spanned work in Northern Ireland, New York, and London passed away on 12 July 2017 after a long battle with Parkinson's disease, and surrounded by his family. He entered the relatively unexplored world of medical mycology as a young postgraduate in the late 1950s, obtaining a PhD from the

University of Edinburgh for studies on the biology of pathogenic fungi. He excelled and was appointed as a lecturer in medical microbiology in Queens University Belfast in 1959, where he investigated a large outbreak of scalp ringworm. In the course of this investigation, he developed a brush technique for sampling scalp infections and first pointed out the problems associated with eliminating *Trichophyton tonsurans* from endemic foci of infection. In 1967 Donald moved to Cornell University, New York, where he extended his interest in medical mycology to a much wider range of deep fungal infections. Here he developed a particular interest in the morphogenesis of *Candida* species during infection.

He returned to the UK in 1972 as Director of the Mycology Reference Laboratory (MRL) of the Public Health Laboratory Service (PHLS) located at the London School of Hygiene and Tropical Medicine (LSHTM). Here he combined his scientific interest in investigating and assessing new diagnostic methods, from counterimmunoelectrophoresis and antigen detection to early molecular studies of

dermatophyte taxonomy. He developed a clinical diagnostic partnership with microbiology laboratories both in the UK and elsewhere, and had a stream of overseas visitors from all parts of the world. Donald took an almost impish delight in slightly off-centre ideas, and the topic of fungal viruses and erythrocyte binding of fungal antigens brought a little gleam to his eye. He taught on the Diploma of Bacteriology and MSc in Medical Microbiology courses in LSHTM, and lectured widely in the UK and Europe. His name is commemorated in *Rhinochlaidiella* (*Ramichloridium*) *mackenziei*, a cause of cerebral phaeohyphomycosis.

Towards the end of his career, there were major changes in the organization of the PHLS and his laboratory moved to Colindale in North London where he continued his work, but regretted that the move distanced him from clinical colleagues and students, whom he considered essential for fostering and maintaining scientific and diagnostic progress.

He was tremendous company, with a seemingly limitless repertoire of stories, tall

and otherwise, as well as jokes delivered with a deadpan expression followed in a few minutes by a gentle smile. He was a key member of a large and growing group of international medical mycologists, becoming the General Secretary (1982–87) then President (1988–91) of the International Society of Human and Animal Mycology (ISHAM). He also served as President of the British Society for Medical Mycology (1991–94), in which he was one

of the leading lights for many years.

Donald was born in Edinburgh and his warmth for his homeland remained undiminished throughout his life. A keen athlete, he represented Scotland in the javelin in his early 20s, but as his career advanced he developed a keen interest in golf, becoming after retirement a staunch member of the Woburn Golf Club, where his humour and companionship made him many friends. He leaves a widow, Joyce,

three children, and nine grandchildren. We remember him as an ingenious, hospitable, and warm man who made wherever he worked an exciting and challenging place to be.

[Based on an account by Roderick Hay, Frank Odds, and Colin Campbell which appeared on the ISHAM website: <https://www.isham.org/about-isham/mycological-heroes/donald-mackenzie>]

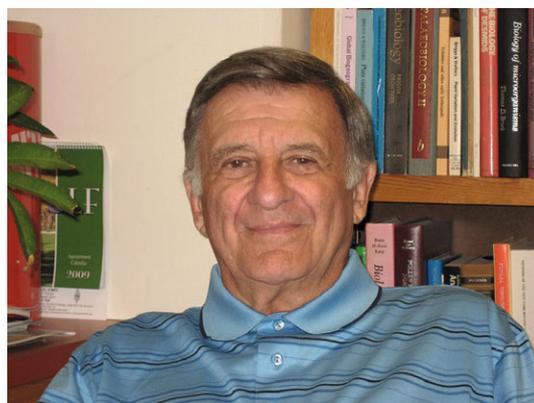
## Thomas N. Taylor – Pioneering palaeomycologist (1937–2016)

Thomas (“Tom”) Norwood Taylor passed away on 28 April 2016 after several years battling cancer. He was the Roy A. Roberts Distinguished Professor of Ecology and Evolutionary Biology at the University of Kansas (KU), Curator of Paleobotany in the Biodiversity Institute and Natural History Museum at KU, and senior paleobotanist in the National Science Foundation’s US Antarctic Program. A passionate and non-nonsense, but at the same time generous and selfless, person, Tom was one of the most internationally renowned, versatile, prolific, and influential advocates for fossil plant and microbe research of the last decades. He has left a profound void in his discipline, and his students and colleagues far poorer for his loss.

Born in the State of Ohio on 14 June 1937, Tom earned his BA in Botany at Miami University (of Ohio) in 1960, and his PhD in paleobotany at the University of Illinois in 1964. He moved to Yale University for postdoctoral work in 1964–65, researching the morphology and anatomy of Carboniferous seed ferns, ferns, and sphenophytes. In 1965 Tom accepted an Assistant Professorship at the University of Illinois at Chicago Circle, where he intensified and expanded his studies of late Paleozoic plants by building massive collections and maintaining an extremely active study program, pioneered the use of the scanning electron microscope in botanical studies, and developed many of the electron microscopy techniques in common use today. In 1972 he moved his laboratory and students to Ohio University, and in 1974 to Ohio State University where he chaired the Department of Botany until 1978. In 1982 he became a member of the Byrd Polar Research Center at Ohio State, and began studying plant fossils from

Antarctica, a loving endeavour that he continued to pursue for the rest of his life and that has dramatically expanded our understanding of plant evolution and vegetational turnover on the supercontinent of Gondwana.

In 1981 Tom hosted a sabbatical leave for his close friend and chytrid mycologist, Charles E. Miller of Ohio University. That collaboration spurred his interest in fossil fungi, and laid the groundwork for Tom’s pioneering development of paleomycology. Initially focusing on fungi of Pennsylvanian age (~300 Myr-old) coal balls, Tom’s interests quickly extended to the Lower Devonian (~410 Myr-old) Rhynie chert, one of the most important sites yielding comprehensive information on early continental plant, animal, and other life. His contributions on the fungal fossils of the Rhynie chert, which he first studied with Winifred Remy (Münster, Germany), included detailed accounts on the endomycorrhiza in sporophytes and gametophytes of the land plant *Aglaophyton major*, which involve a glomeromycotinan fungus producing arbuscules in the host cortex (Taylor *et al.* 1995, 2005b). Equally acclaimed was his work on *Winfrenatia reticulata*, a lichen-like organism from the Rhynie chert constructed of a layer of hyphae forming pockets on the upper surface that contain unicellular cyanobacteria with a network of hyphae (Taylor *et al.* 1997). He also documented chytrid parasites of land plants and charophyte algae (e.g. Taylor *et al.* 1992a, b), mycoparasitism (e.g. Hass *et al.* 1994, Krings & Taylor 2014), *Paleoblastocladia milleri* (a fossil of the *Blastocladiomycota* (Remy *et al.* 1994, Taylor *et al.* 1994), and the perithecial



ascomycete *Paleopyrenomycites devonicus* (Taylor *et al.* 1999, 2005a). For more than 30 years Tom collaborated extensively with Hans Kerp, Hagan Hass, Michael Krings, and others to fundamentally reinterpret the scope of fungal and other microbial interactions that can be inferred from the Rhynie chert. Fungal fossils from the Permian and Triassic of Antarctica became increasingly important to his research later in his career when he became interested in late Paleozoic and Mesozoic high latitude paleoecosystems with polar light regimes (Harper *et al.* 2016). Tom’s accomplishments in the field of paleomycology have recently been compiled in the first comprehensive paleomycology textbook *Fossil Fungi* (Taylor *et al.* 2015; see *IMA Fungus* 6: (30)–(31), June 2015).

In 1995 Tom retired from Ohio State University and moved to the University of Kansas as Distinguished Professor in Botany, Curator of Paleobotany in the Biodiversity Institute and Natural History Museum, and Courtesy Professor in Geology. During his career he delivered several hundred papers at scientific meetings, published 468 peer reviewed journal articles and book chapters, edited

four books, and authored four textbooks. He also mentored 11 MS and 14 PhDs, 19 postdoctoral researchers, and 26 long-term guest researchers. He was known for the creativity of his advice, the high level of his expectations, and the continuing support he generously provided to all. He became both an inspirational colleague and a steadfast friend to those that knew him.

Tom was awarded nearly 60 externally funded research grants, including more than 50 years of continuous support from the National Science Foundation. He was the recipient of numerous awards and honours, including the Alexander von Humboldt Senior Research Award (1994–96) that initiated his work on the Rhynie chert fungi, Distinguished Teaching Award of Ohio State University (1989), and the Paleobotanical Section of the Botanical Society of America Award for a lifetime of contributions to Paleobotany (2012). He was inducted into the National Academy of Sciences in 1994, and also received National Science Board recognition for outstanding service to science (2006–12).

One of the most influential paleobotanists of the last 100 years, who also set new standards for in the study of fossil fungi and fungal interactions, he

dramatically elevated the quality and stature of paleobiological inquiry. We will always be grateful for the years of guidance, support, criticism, encouragement, and inspiration that he continued to offer and demanded to provide. We honour his legacy through the continuation of the work that he so loved.

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## Cletus P. Kurtzman (1938–2017)

Just as this issue was going to press, we learnt of the sudden death of Clete on 27 November 2017. A tribute will appear in the next issue of *IMA Fungus*.