

JAMES HAMLIN WILLIS (1910–1995): A MYCOLOGICAL APPRECIATION

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James Hamlyn Willis died on 10 November 1995 at the age of 85 after a short illness. Willis was one of the greats of Australian Botany and his wonderful character engendered universal admiration and affection. His personal qualities and his manifold contributions to Botany, Natural History, Conservation and Botanical History are highlighted in obituaries by Aston (1995), Leon Costermans (*Melbourne Age*, 20.11.1995; *Australian*, 26.12.1995), Anne Latreille (*Melbourne Age*, 25.11.1995), and others to appear shortly in *Muelleria* and the *Victorian Naturalist*. During his long botanical career Willis made important contributions to Australian mycology—through his numerous publications, as an indefatigable collector of fungi, and as an inspirational educator. Fungi were the subject of his first publication, and remained an interest that he pursued enthusiastically for more than 65 years.

James (universally known as Jim) was born in Oakleigh, Victoria on 28 January, 1910. His family soon moved to Stanley in northern Tasmania, where his father was Manager of the local Bank of Australasia. Jim was educated at home, and then at the local school, and from 1924 to 1927 boarded in Melbourne while attending Melbourne High School. After matriculating in 1927, he commenced studies towards the Diploma of the Victorian Forests Commission at the Victorian School of Forestry, Creswick. Willis graduated in 1930 and began employment in the Forestry Commission as a cadet field officer in the Creswick district. He subsequently worked as a Forestry Officer in the Belgrave, Cockatoo, Maryborough, Bealiba and Daylesford districts.

During the time of his boyhood in Stanley, Willis developed a keen interest in nature, but it was at the Forestry School that his fascination with fungi took hold. The Principal of the School, Edwin Semmens, was a regular contributor of fungal collections to the American mycologist Curtis Lloyd. Semmens encouraged Willis to collect and identify fungi, and provided access to standard mycological works. Highlights of his time at Creswick recorded by Willis (1993) included collecting *Boletellus obscurecoccineus* on the day of his engagement to Mavis Howie, and the discovery of a pink *Amanita* which fitted the description of the rare *Metrarhia insignis* (now thought to be based on mixed type material).

In 1928 (aged 18) Willis published an article on the Polyporaceae of the Creswick Forest, in which ten species are discussed, and by 1930 he had noted 150 fungal species in the forests around Creswick (Willis, 1930). Once fungi had claimed his attention, the varied displays of bright colours and intriguing forms in autumn would have further stimulated his mycological interest, especially in the wetter forests of the Dandenong Ranges where he was stationed during the mid 1930s.

Willis soon produced a major treatment of the Agaricaceae of Victoria, published in the *Victorian Naturalist* for 1934. In this he provided a key to and descriptions of 70 species of gilled fungi. This was a masterful work, especially given that the available literature was scattered in numerous publications, and the only Australian fungal flora, Cooke's *Handbook of Australian Fungi* of 1892, was of little use in the determination of species. The descriptions are clearly based on first-hand knowledge, and are couched in a uniquely conversational style which summed up in a few phrases the essential characters and the habit and habitat of each species. A typical example is his description of *Mycena viscidocruenta* as 'a tiny, inch-long thing that brightens the dank sticks in mossy forest dells with splashes of vivid blood-red or twinkles, ruby-like, upon fallen cones and needles ...' (Willis 1963). The text of the article on Agaricaceae was accompanied by line drawings by the author, and by black and white and colour reproductions of paintings by Malcolm Howie, who was Jim's close friend and brother-in-law. Howie's watercolour studies of fungi are true to form and colour and show structures of importance in the classification of the species. Before his early death in 1936 Howie completed depictions of more than 200 species of fungi, many of which remain unpublished (Barrett 1936; Willis 1993).

The 1934 article, expanded to cover 120 species, was published in book form in 1941 as *Victorian Fungi*, which also included essays on vegetable caterpillars and various other fungi. This work was reissued as *Victorian Toadstools and Mushrooms* in 1950, with subsequent editions in 1957 and 1963. In its various editions *Victorian*

Toadstools and Mushrooms was for almost 50 years the only illustrated work on Victorian fungi, and was much consulted throughout south-eastern Australia. Whilst a number of field guides have been published in the last two decades, many with copious coloured illustrations, contemporary authors are yet to combine the power of colour illustration with text and keys of the utility of those provided by Willis.

From his time at the Forestry School, Willis had wished to make botanical science his career, and so in 1937 he willingly took up the opportunity of a secondment to the National Herbarium of Victoria. He was appointed to the staff of the Herbarium in 1939 as Assistant (Herbarium), and remained at the institution until his retirement in 1972. Through part time study at the University of Melbourne he qualified for the Bachelor of Science degree (with honours) in 1940. From 1961 he was Assistant Government Botanist and for the 15 months prior to his retirement he was also Acting Director of the Royal Botanic Gardens and National Herbarium. In 1958 and 1959 he spent 14 months as Australian Botanical Liaison Officer, based at the Kew Herbarium. His most significant contribution during his time at the Herbarium was the publication in 1962 and 1973 of the two volumes of his *Handbook to Plants in Victoria*.

The *Handbook* earned him a Doctorate of Science from the University of Melbourne in 1974. Further awards received by Jim Willis in recognition of his contributions to Science and Natural History, and reflecting the esteem in which he was held by a wide circle of colleagues and naturalists include the Australian Natural History Medallion and the Silver Medal for Research of the Royal Society of Victoria; he was also made an honorary Fellow of the Faculty of Science, Monash University, and a Fellow of the Linnean Society of London (*Honoris causa*), and in June 1995 became a Member of the Order of Australia.

Most of Willis's publications in the 1930s were on fungi, but once at the National Herbarium much of his time was claimed by the vascular flora. He nevertheless continued his interest in fungi, now benefiting from the ready access to a compound microscope and the collections and library at the Herbarium. His mycological publications over the next half century include notes on rare or unusual species (including a fossilised fungus), careful and sympathetic book reviews, compilations of knowledge of groups such as earth stars, secotiums and resupinate polypores, comprehensive bibliographies on *Polyporus mylittae* and *Omphalotus nidiformis*, and historical articles. His works are characterised by accuracy of citation of specimens and literature, based on a familiarity with the diverse historical literature on Australian fungi. His meticulous presentation is nowhere shown better than in his 1959 work on the genus *Cordyceps* in Australia, where complicated synonymies are unravelled, and a key provided.

The middle part of the twentieth century was a time of great changes in the taxonomy of the macrofungi, based on an increasing reliance on the microstructure of the fruit body. Much of this work was carried out in major centres of mycological research in the Northern Hemisphere, with a few exceptional contributions by other individuals such as Gordon Cunningham in New Zealand. In Australia, the period from 1935 (when John Cleland completed his *Toadstools and Mushrooms and Other Larger Fungi of South Australia*) to 1970 was one of stagnation for taxonomic studies of macrofungi, with extremely limited prospects for employment in the field. Willis did maintain close links with Cleland, Ethel McLennan (University of Melbourne) and the few other taxonomic mycologists in Australia at the time. He also readily accepted the taxonomic and nomenclatural changes of modern classifications, but despite his wide ranging publications on fungi, he rarely carried out detailed taxonomic or revisionary work on them. He described only two new species (*Mutinus curtus* and *Calostoma fuhreri*—the latter with George Crichton), and for the most part his publications do not include comprehensive descriptions of both macroscopic and microscopic characters. Apart from his relative isolation from mycological colleagues, his duties at the Herbarium would have left little time for the great effort required to tackle the 'appallingly difficult subject' of modern taxonomic mycology (Willis 1967—'Polyporaceae ...' review). It would have no doubt been a different story if in 1934 Willis had been able to follow a career in taxonomic mycology, a course which has only in very recent times become a possibility in Australia. The fact that he maintained such a strong interest and was able to contribute so much to a highly complicated and fast developing field over nearly 70 years remains a major achievement.

Willis was an indefatigable collector not only of vascular plants, but also of shells and rocks and minerals, and of course fungi. His delight in collecting remained undimmed throughout his life and his collections of Australian macrofungi are significant in their extent, their excellent preparation and documentation, and their geographical

coverage. Many of his collections were lodged at the National Herbarium of Victoria during his time on the staff, but were never incorporated into the main fungal collection. Two further batches were donated to the Herbarium in the 1990s, and these and the earlier collections are now being incorporated. There are at least 1000 Willis collections of fungi on the Herbarium specimen database, with many more specimens yet to be accessioned. There are collections dating back to his time as a forestry officer, from the Creswick, Cockatoo, Belgrave and Gembrook areas, and numerous other collections from across Victoria and Australia, including central Australia and the Kimberleys. All the collections are well dried, although some have suffered from mould attack through having been stored in damp conditions at some stage. Willis did not use collecting numbers but all his collections are meticulously labelled with comprehensive data in Jim's characteristic legible handwriting. His collections are further distinguished by the remarkable array of packages in which they were received—matchboxes, cigarette tins, and packets from diverse items from sweets to toothpaste. Most of the collections are named to species. Willis added 46 species to the list of Victorian fungi (Anon. 1975), and more new and interesting species undoubtedly await discovery among his collections.

Cunningham made extensive use of Willis collections in his monographs on the Polyporaceae and Thelephoraceae of Australasia. Although acknowledging the various mycologists who provided collections, Cunningham does not provide full specimen data when listing material. Amongst the localities cited by Cunningham are such favourite Willis collecting areas as the Dandenong Ranges, Cockatoo, Tonimbuk, and Creswick. Correspondence in the archives of the National Herbarium confirms that Willis sent to Cunningham for determination numerous of his own collections, and also much other historical material from the National Herbarium. Willis's collections were also utilised by Rudolph Maas Geesteranus in his works on Australasian hydneous fungi. *Steccherinum willisii* was named by Maas Geesteranus from a collection by Jim Willis and Gordon Beaton made in Lamington National Park, Queensland.

In addition to his collections, Willis compiled many lists of fungi from specific localities. Some of these were published in reports of excursions, but others remain no doubt amongst his papers. These lists are among the first floristic lists of fungi for Australia (as opposed to State by State checklists) and Willis was the first to note the huge diversity of macrofungi which can occur at a single site—recording more than 250 species from Sherbrooke Forest in visits over several decades.

Willis was a longtime member and office bearer of the Field Naturalists' Club of Victoria. He contributed numerous articles to the Club's journal, the *Victorian Naturalist* (perhaps the most by any one author), and from 1948–1951 was its editor. Jim Willis had an exciting writing style which combined intimate knowledge of his subject with an exuberant celebration of the diversity of nature, as exemplified by the following passage introducing 'Fungus haunts and habits' from a 1940 article in the magazine *Wild Life*:

... those who are fortunate enough to live near bushland may, if they care, still witness strange things taking place on the forest floor—old stumps and logs resplendent with multi-coloured fringes and brackets; fallen branchwood and the leaf mould beneath beset with blebs of living jelly or innumerable battalions of tiny elf-like parasols, white, grey, brown, red and more rarely blue ones intermingling; even the bare ground supports a gaudy array of quaint flesh caps, clubs, balls and coral-like masses in bewildering variety.

Jim's spoken delivery was characterised by the same clarity of expression, exuberance and desire to educate and he entranced many meetings of the FNCV and other naturalists' groups with his well-prepared and well-illustrated lectures on fungi (and a huge range of other topics). From the mid 1930s Willis led fungal forays for the FNCV and other groups, on which he always willingly imparted his knowledge and transmitted his enthusiasm for fungi.

Through his writings, lectures and leading of excursions Willis played an important role in making accessible the sometimes difficult topics of fungal taxonomy and ecology. He identified many fungi sent in over the years to the National Herbarium, and encouraged others to collect and study fungi, notably Gordon Beaton, Cliff Beaglehole, George Crichton and Bruce Fuhrer. Jim Willis was always ready to give advice or assistance, and corresponded widely with mycologists in Australia and overseas. Jim will be greatly missed by his many friends in the Australasian mycological community.

Publications by J.H. Willis of mycological interest

See Anon. (1975) for full list of publications by J.H. Willis.

- 1928 Willis, J.H., Polyporaceae in the Creswick Forest. *Sylvanite* 1928, 54–55.
- 1930 —, A bird's eye view of the Creswick Flora. *Sylvanite* 1930, 40–43. [Mentions that he had noted 150 species of higher fungi in the district.]
- 1934 —, The Agaricaceae or 'gilled fungi'. *Victorian Naturalist* 50, 264–298.
—, 'Beef-steak', 'punk', and 'Blackfellows' bread'. *Victorian Naturalist* 50, 298–301.
—, 'Vegetable caterpillars'. *Victorian Naturalist* 50, 302–304.
—, Species gathered during the foray. *Victorian Naturalist* 51, 46–47.
—, Two remarkable fungi of the springtime. *Victorian Naturalist* 51, 172–174.
—, The Geastrae or 'earth-stars' of Victoria. *Victorian Naturalist* 51, 115–124.
—, The fairyland of fungi. In: C. Barrett, *Gems of the Bush* (Sun Nature Book 5), pp. 53–55. (Sun News-Pictorial: Melbourne). [Unattributed, but listed among Willis' publications by Anon. (1975).]
- 1935 —, Revision of the Agaricaceae or gilled fungi. *Victorian Naturalist* 52, 68–70.
H[ooke, A.G.] & S[tewart, H.], Excursion to Sherbrooke Forest. *Victorian Naturalist* 52, 76. [Includes a list of fungi, supplied by J.H. Willis.]
- 1936 —, Notes on the illustrations. *Victorian Naturalist* 53, 21–22.
W[illis, J.H.], H[ooke, A.G.] & S[tewart, H.C.E.], Excursion to Sherbrooke Forest. *Victorian Naturalist* 53, 39. [Includes a list of 27 fungi.]
- 1937 —, Spring time fungi and a giant *Boletus*. *Victorian Naturalist* 54, 102–104.
McLennan, E.I. & —, Excursion to Humphries Hill, Frankston. *Victorian Naturalist* 54, 144.
- 1938 —, A suburban colony of 'earth-stars'. *Victorian Naturalist* 54, 143–144.
- 1939 —, April fungi of the forest gullies with special reference to resupinate forms and the genus *Poria*.
Victorian Naturalist 56, 3–8.
- 1940 —, Fungus haunts and habits. *Wild Life* (Melbourne) 2(7), 7–9, 46.
- 1941 —, *Victorian fungi*. (Field Naturalists' Club of Victoria.)
- 1942 —, The wonder-lily of Beenak. *Victorian Naturalist* 59, 90–91. [Mentions *Cyttaria gunnii* and *Polyporus pulcherrimus*.]
- 1943 W[illis], J.H. & B[ibby], P.N.S., Excursion to Ferntree Gully National Park. *Victorian Naturalist* 60, 39. [Mentions *Mitremyces fusca* and *Stereum elegans*.]
- 1945 —, [Additional comments to 'A large fungus']. *Victorian Naturalist* 61, 216.
- 1947 —, An undescribed Victorian phalloid fungus. *Victorian Naturalist* 63, 217–219.
—, Botany of the Bogongs. *Victorian Naturalist* 63, 249–250. [Mentions *Aseroe rubra*.]
- 1948 —, Beenak fungus foray. *Victorian Naturalist* 65, 69–70.
- 1949 —, Botanical pioneers in Victoria—II. *Victorian Naturalist* 66, 103–109. [Includes a section on those interested in fungi.]
- 1950 —, *Victorian toadstools and mushrooms*. (Field Naturalists' Club of Victoria.)
- 1951 —, Fungus friends and foes. In: *Australian Junior Encyclopedia*, vol. 2, pp. 718–720.
- 1953 —, Mycological excursion to Sherbrooke Forest. *Victorian Naturalist* 70, 20.
—, Amendments to the nomenclature of some Victorian Polyporaceae. *Victorian Naturalist* 70, 110–111.
—, The Archipelago of the Recherche. Part 3. Plants. 3a—Land flora. *Australian Geographical Society Reports* 1, 3–35. [Includes list of higher fungi.]
- 1954 —, *Craterellus multiplex* Cke. et Mass. An uncommon and remarkable fungus. *Victorian Naturalist* 70, 181–182.
- 1955 —, Notes on the flora of Safety Cove. *Tasmanian Naturalist*, new ser., 2, 23–32. [Includes list of higher fungi.]
- 1957 —, Rediscovery of a rare Victorian toadstool (*Hygrophorus lewellinae* Kalchbr.). *Victorian Naturalist* 74, 71–72.
—, Victorian records for *Secotium*. (A remarkable genus of fungi in the Gasteromycetes.) *Victorian Naturalist* 74, 87–88.
—, *Victorian toadstools and mushrooms*. 2nd edn. (The Field Naturalists Club of Victoria.)

- 1958 —, A list of Victorian Clavariaceae (with an artificial key to the eleven genera of known representation in the state). *Victorian Naturalist* 74, 127–133.
- , Fungi. In: A.H. Chisholm (ed.), *The Australian Encyclopedia*. 2nd edn, vol. 4, pp. 231–234. (Angus and Robertson: Sydney.)
- 1959 —, Australian species of the fungal genus *Cordyceps* (Fr.) Link. *Muelleria* 1, 67–89.
- 1960 —, Two notes on fungi in Victoria. *Victorian Naturalist* 76, 265.
- 1963 —, *Victorian toadstools and mushrooms*. 3rd edn. (The Field Naturalists Club of Victoria.)
- 1965 —, & Gill, E.D., Fossil fungus (*Hypoxylon*) from Tertiary brown coal, Yallourn, Victoria, Australia. *Proceedings of the Royal Society of Victoria*, new ser., 78, 115–117.
- 1967 —, A bibliography of the 'Blackfellows' Bread', *Polyporus mylittae* Cooke & Masee. *Muelleria* 1, 203–212.
- , A bibliography of the 'Ghost Fungus', *Pleurotus nidiformis* (Berk.) Sacc. *Muelleria* 1, 213–218.
- , Further *Cordyceps* collections in Australia. *Muelleria* 1, 223–224.
- , Review of 'The Thelephoraceae of Australia and New Zealand' by G.H. Cunningham. *Muelleria* 1, 246.
- , Review of 'Polyporaceae of New Zealand' by G.H. Cunningham. *Muelleria* 1, 246–247.
- 1968 —, Fungal excursion to Sherbrooke Forest. *Victorian Naturalist* 85, 228–229.
- Cochrane, G.R., Fuhrer, B.A., Rotherham, E.R. & —, *Flowers and plants of Victoria*. (Reed: Sydney.) [Includes five fungi.]
- 1971 —, Dyes from plants native to Australia. In: J. Lloyd, *Dyes from plants of Australia and New Zealand*, pp. 25–26. (A.H. & A.W. Reed: Wellington.) [Mentions *Piptoporus australiensis*.]
- 1977 —, Fungi. In: B.W. Pratt (ed.), *Australian Encyclopedia*. 3rd edn. (Grolier Society of Australia: Artarmon, N.S.W.)
- 1978 —, The toadstool genus *Amanita*. *Victorian Naturalist* 95, 44–46.
- , Fungi. In: Anon., *Natural history of the Coranderrk Bushland portion of the Sir Colin Mackenzie Fauna Park, Badger Creek, Healsville, Vic.* Sir Colin Mackenzie Fauna Park, Healsville.
- , John Lhotsky and Australian Botany, In: Dr. John Lhotsky. *The turbulent Australian writer, naturalist and explorer*, pp. 57–70. (Australia Felix Literary Club, Melbourne.) [Mentions collection of *Aseroë* by Lhotsky.]
- 1981 —, Review of 'A field guide to fungi of south-eastern Australia' by Ross Macdonald & John Westerman. *Australian Forestry* 44, 71.
- , The history of botanical exploration in Central Australia. In: J. Jessop (ed.), *Flora of Central Australia*, pp. xiii–xx. (Reed: Frenchs Forests, N.S.W.) [Mentions collection of *Itajahya galericulata* by Cliff Beaglehole.]
- 1983 —, Review of 'Common Australian Fungi' by Tony Young. *Victorian Naturalist* 100, 40–42.
- 1985 —, Five good camp-outs (Cathedral Range, Snowy Plains, Mt. Kooyoora, Howqua River and Creswick). *Victorian Naturalist* 102, 167–177. [mentions *Geastrum* sp. and *Tyromyces pelliculosus* from Mt. Kooyoora, and *Amanita muscaria* from Creswick.]
- 1986 Crichton, G.A. & —, A new species of *Calostoma* Desv. (Gasteromycete fungi). *Victorian Naturalist* 103, 4–7.
- 1987 —, Review of 'A field guide to the larger fungi of the Darling Scarp and south-western Western Australia' by Kevin [sic] Griffiths. *Victorian Naturalist* 104, 120–121.
- & Crawford, I., A magnificent blue toadstool (*Entoloma nitidum*). *Victorian Naturalist* 104, 85.
- 1993 —, Some highlights of my 65 years among fungi. *Victorian Naturalist* 110, 62–64.

In addition to the above publications, mycological exhibits at meetings of the Field Naturalists' Club of Victoria by Jim Willis are noted, for example, in *Victorian Naturalist* 59, 94 [*Septobasidium clelandii*, *Cordyceps robertsii*], 61, 46 [*thyphallus rubicundus*], 61, 115 [*Phellorina strobilina*], 61, 141 [*Polyporus mylittae*], 64, 209 [*Cyttaria gunnii*], and 83, 243 [*Podaxis pistillaris*].

References

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- Aston, H.I. (1995). Obituary. James H. Willis. *Australian Systematic Botany Society Newsletter* 85, 22–23.
- Barrett, C. (1936). A painter of fungi. *Victorian Naturalist* 53, 19–21.