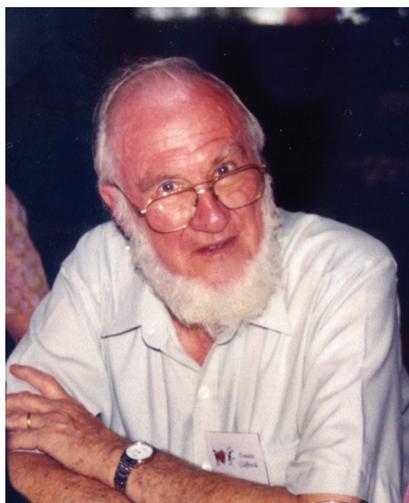


## OBITUARY FOR H. T. CLIFFORD, 1927–2019

### A Multiversed Generalist in Plant Sciences



Harold Trevor Clifford (hereafter Trevor) gained his primary degree in Geology and Botany at Melbourne University, subsequent to which he tutored in Botany at that university and took up a cadetship at the National Herbarium of Victoria. During this period he worked with Jim Willis on the mosses of Victoria (Clifford & Willis, 1951), and later on the mosses of Macquarie and Heard Islands (Clifford, 1953), from where he recorded his first fossil with Isabel Cookson (Clifford & Cookson, 1953). Many decades later he reinterpreted this specimen as the operculate seed of *Typha* (Clifford & Dettmann, 2000). He studied for his masters degree at Melbourne University on the biogeography of the Dandenong Ranges under the supervision of the Professor of Botany, John Stewart Turner (JST), and co-supervision of Maisie Fawcett (later Carr). Unable to determine the precise taxonomy of the eucalypt species he found there, he identified a ‘hybrid swarm’ for which he developed an explanatory model, subsequently published in the Nature journal *Heredity* (Clifford, 1954), collaborating on two other articles with F. E. Binet, a statistician from the CSIRO (Clifford & Binet, 1954; Binet et al., 1959). This became one of the themes of his research career. While in Melbourne he met R. A. Fisher, the famous statistician from the Rothamsted Experimental Station and later the University of Cambridge, UK, who was visiting at the time, as well as David Goodall, then a lecturer at the University doing his pioneering work on

interspecific correlation. These were both influential connections for Trevor.

Fisher encouraged Trevor to continue his work on the hybridisation of species, and with the connections that JST was able to provide, he gained a scholarship to do his PhD on hybridisation in primroses at Durham University under David Valentine. After his PhD, and with a new family, he took a job in Ibadan, Nigeria, where he was a lecturer in Agricultural Botany from 1955–1958. He worked on problems related to grain storage, in particular breaking of dormancy and seed dispersal. This was perhaps the start of his major work on grasses and germination behaviour throughout the plant kingdom. In 1958 he took a position at the University of Queensland, where he stayed until his ‘retirement’ in 1992.

The next phase of his career was multi-faceted, each facet informing the other. His research work fell into four main strands: the taxonomy of monocots (especially grasses), numerical classification, evolutionary taxonomy, and hybridisation. The unifying principles across these were, as he said in his professorial lecture in 1985, ‘Taxonomy, Tradition and Technology’. Taxonomy in broad terms was his main passion, with its ubiquitous application to almost every aspect of life: we name and classify things all the time, giving meaning to each. In doing so, traditions develop, which, although our knowledge and understanding may improve (stimulated by advances

in technology in particular), are often hard to shift. This passion revealed itself in his fascination with the linkages between ‘things’ across time and space, and the use of nomenclature to describe the nature of those ‘things’. His love of discussion was enormous as he explored the world, bouncing ideas off people and, in doing so, probing concepts in his head, following this intellectual life with rigorous and diligent measurements and observations.

He brought his research interests and sense of curiosity into his academic life and teaching. The University of Queensland was a fairly young institution when he joined it, and he rose to the occasion and co-authored many books directed at students and the wider public. He ensured that plant identification keys were both accessible and understandable, thinking carefully about the audience. For example, in the *Vegetation of North Stradbroke Island* (Clifford & Specht, 1975) he started with obvious plant traits such as flower colour, leaf shape and texture, latex production and so on, to help the lay-user identify their plant. Apart from his notably engaging teaching style, he was a member of many committees, somewhat unusual for an academic in the days of the ‘God-professor’. He mentored postgraduate students, his own and others, particularly through his enjoyment of challenging conversation, including memorable discussions around the joys of the Fibonacci series. His service to the University was sometimes serendipitous, such as when he ‘provided’ the material for the ‘Avenue of Honour’ in the Great Court. The gardeners needed trees and found his – apparently all uniformly identical – young plants from one of his eucalypt ‘hybrid swarm’ experiments and used them. The resulting trees varied wildly in shape at maturity, to Trevor’s glee and the horror of the gardeners, and reminded many of Trevor for many decades to come.

Trevor was one of the early data scientists, initiating discussions in Brisbane on the new techniques of numerical classification, inviting Geoffrey Lance and Bill Williams, FRS, to participate in a seminar group at the University to further the field. This seminar group turned into a subject at the University (with Bill Stephenson, Professor of Zoology), a trans-disciplinary book (Clifford & Stephenson, 1975), and many applications of numerical analysis in his publications (e.g. Clifford & Williams, 1973, 1976, 1980; Clifford et al., 1969; Williams & Clifford, 1971; Williams et al., 1971a,b). This field has grown massively in importance as computing power and the discipline of data science has grown, and many of his students developed out-

standing international careers benefitting from the foundation he gave them.

His work on evolutionary taxonomy took him to Denmark to work with Rolf Dahlgren, where he expanded his expertise on grasses to cover the whole of the monocots, becoming one of the foremost experts on these plants and producing many articles combining his interest in nomenclature, numerical classification and evolutionary taxonomy. Their joint work on family circumscription in the monocotyledons has had a profound and lasting influence well into the molecular age (Dahlgren et al., 1985). Dahlgren’s taxonomic classification of flowering plants formed the foundation of the arrangement of many floras, such as the *Flora of New South Wales* (Harden, many volumes), and much of it still survives in the current Angiosperm Phylogeny Group classification of the flowering plants (Angiosperm Phylogeny Group, 2016). Trevor thought innovatively, and his *Nature* article with Rod Rogers and Mary Dettmann was an excellent example of this, even though it generated significant ire from some members of the botanical community at the time (Clifford et al., 1990); so much so, that at a subsequent dinner with Sir Ghillea Prance (then Director of the Royal Botanical Gardens, Kew) and his wife, Prance’s wife commented upon meeting him: “You don’t have horns!”

Trevor’s palaeobotanical research was rekindled towards the end of his academic career at the University of Queensland when he collaborated with Mary Dettmann in studies of fossil ferns and their spores. At retirement he continued palaeobotanical research at the Queensland Museum on fossil bryophytes, early ferns (some ~350 million years old), conifers and angiosperms, including 95–100 myo, anatomically preserved flowers and a range of extinct plants from Queensland sediments. During his retirement, he and his collaborators collectively “have done more to document the northern Australian fossil macroflora than any other research group” (pers. comm. Andrew Rozefelds). At the time of his death, Trevor had a paper in press describing one of the youngest fossil horsetails known from Australia, extending their persistence here by about 50 million years.

Concurrent with the research at the Queensland Museum, Trevor was an Honorary Associate at the Queensland Herbarium, and took an active interest in botanical matters at the Brisbane Botanic Gardens (Mt Coot-tha). His advice was frequently sought on botanical matters in a wide range of areas. For example, he freely gave of his knowledge in the planning of the handbook *Wild Plants of Greater*

Brisbane published by the Queensland Museum, and to authors on botanical aspects in several other fields, for example, *A Doctor in the Garden* by John Pearn (2001) and *The Flower Chain; The Early Discovery of Australian Garden Plants* by Jill, Duchess of Hamilton (1998).

Trevor was a great collaborator, hard-working, diligent, exploratory, generous, intellectually critical but kind. He enjoyed the spoonerism of his name to

‘Clever Triffid’ – ironically predating Wyndham’s 1952 book [*The Day of the Triffids*] – regarding it, quite rightly, as an expression of respect and fondness. Discussing his Emeritus status in his self-deprecating way, he drew attention to the definition of emeritus in Stearn (1992), ‘that [which] has become unfit for service, worn out, burned out extinguished (Lewis and Short): applied by Ovid to horses, by modern universities to retired professors’.

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