

In Memoriam: Ian R. Ball (1941-2000)

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Ian Raymond Ball (1941-2000) at the height of his scientific career. Picture taken from the group picture of delegates at the 3rd ISBT held in Diepenbeek, Belgium, August 1980

One of the best and most influential papers on triclad phylogeny and biogeography (BALL, 1974a) ends with a quotation from Schopenhauer “Thus, the task is not so much to see what no one has seen yet, but to think what nobody has thought yet, about that which everybody sees”. Professor Ian Raymond Ball, a creative scientist, good polemist and excellent writer was the author of the paper (BALL, 1974a) and the quote seems to encapsulate his perspective on science. Ian died in Kingston, Jamaica, on 26th of January 2000 at the young age of 58.

One of Ian’s main concerns was to bring some rationality into turbellarian classification, particularly within his

favoured group the freshwater triclads, and to relate the phylogeny of the group with ecology and biogeography. He believed classification must be based on phylogeny and not vice versa; hence, recency of common ancestry and not phenetic distances have to be the core of classification. He was the first to bring cladistic analysis to triclad phylogeny and to extrapolate from it a sound biogeographical explanation of today’s world-wide triclad distribution. He had a unified, holistic attitude to systematics and was assertive to any new development, conceptual, methodological or technical, helping to improve extant classifications. Thus, to the usual morphological characters, he added karyological characters from the mid 1970s, and embraced molecular techniques from the mid 1980s. Had it not been for several personal problems

plaguing him since the late 1980s, which undermined both his health and his scientific career, the modern molecular and combined (morphology+molecules) approaches to triclad and turbellarian phylogeny may have had Ian Ball as one of the leading figures.

A BIOGRAPHICAL AND SCIENTIFIC SKETCH

Born in Southport (Lancashire, UK) on June 13, 1941, Ian Ball graduated in Zoology and Botany at the University of Liverpool in 1962. Up to May 1964 he served as Officer/Naturalist at the Letchworth Museum, Hertfordshire (UK) in charge of the educational services of the museum and carried out research on different freshwater invertebrates, planarians among them. His first publications on triclads stemmed from this period (BALL, 1964, 1965, 1967). From 1964-66 he held a position of Research Officer in the Huntington Research Centre (UK) studying the effects of drugs and pesticides on mammals, fish and aquatic invertebrates, and from 1966-67 as Assistant Experimental Officer at the Water Pollution Research Laboratory at Stevenage, UK, carrying out research on the lethal and sublethal effects of pollutants on fish and on biological surveys of polluted rivers.

In 1967 he moved to the University of Waterloo, Ontario (Canada) to undertake a Ph.D. thesis on the systematics and biogeography of freshwater Turbellaria. In April 1971 he was awarded the Ph.D. degree in Biology with a dissertation "A contribution to the Phylogeny and

Biogeography of the Freshwater Triclads (Platyhelminthes, Turbellaria)" (BALL, 1971). A year earlier, he received a National Science Foundation award to read, as invited speaker, a summary of this work at the Libbie H. Hyman Memorial Symposium sponsored by the American Society of Zoologists, the Society of Systematic Zoology and the American Microscopical Society within the meeting of the AAAS in Chicago (USA). This work, published 4 years later (BALL, 1974a) has been extremely influential to people working on triclad taxonomy, phylogeny and biogeography. His research on Turbellaria continued as Postdoctoral fellow at the National Museum of Natural Sciences in Ottawa (1971-72) and as Assistant Curator at the Royal Ontario Museum in Toronto (1973-75). Between 1968 and 1976 Ian Ball published almost 30 papers related to turbellarian (mostly triclad) taxonomy and biogeography. Prominent among them are those in biogeography and plate tectonics (BALL & FERNANDO, 1969), on triclads from the Oriental Region (BALL, 1970), from Central and South America (BALL, 1971), from Australia (BALL, 1974b), a methodological paper on the nature and formulation of biogeographical hypotheses (BALL, 1975) and revisions and monographs on different genera of the family DugesIIDae: *Cura* and *Neppia* (BALL, 1974c) and *Spathula* (BALL, 1977a). He found time to travel and sample in Central America, Brazil, and Australia and to pay visits to different world museums. I regard the 10 years spanning from 1968 to 1977 as the most productive and influential of Ian's career.



Ian Raymond Ball (right) at the first ISBT Meeting, held in Chicago (1970), in honour of Libbie H. Hyman, in which he delivered a talk on his new taxonomy and biogeography of Tricladida. Left: Prof. Th. Lender; center: Prof. M. Kawakatsu. Photograph kindly provided by Prof. M. Kawakatsu.

In 1976, then 35 years old, he was appointed Reader of Special Zoology at the University of Amsterdam (The Netherlands) to become a Professor in 1980, holding the post up to 1985. At Amsterdam, Ball established a productive research programme and gained some funding for his own research. He attracted several promising students, some of them (e.g. Ronald Sluys) now at the forefront of triclad taxonomy and phylogeny. Always ready to challenge authority he followed his path, both personal and professional, with little regard to consequences. He could be fun and charming but also outrageous. His personality frequently drew attention and could engender both good and bad feelings amongst those with whom he interacted. Throughout this 'Dutch period', he extended his description of new species and genera of freshwater triclads from all over the world, and in particular from Australia, North and South America and Europe (BALL, 1977b, 1980; BALL & TRAN, 1979; BALL et al, 1981; DE VRIES & BALL, 1980); reviewed and reshaped his views on the phylogeny of triclads (BALL, 1977c, 1981a); published a series of conceptual papers on taxonomy, phylogeny and biogeography (BALL, 1981b, 1982, 1983) and, with Professor Tom B. Reynoldson, co-authored the handy and useful book on British Planarians within the series of synopses of the British Fauna (BALL & REYNOLDSON, 1981). Additionally, he supervised the Ph.D. dissertations of his students Elisabeth De Vries and Ronald Sluys, on the taxonomy

and phylogeny of the genus *Dugesia* (DE VRIES, 1987), and on a taxonomical revision of maricolan triclads (SLUYS, 1989). Ball also encouraged them to publish independently (see summaries of their publications in DE VRIES, 1987; and SLUYS, 1989). Altogether, the numbers of papers of him and his team during the 'Dutch period' went up to 40.

In September 1985 he left Amsterdam and moved to the Memorial University of Newfoundland in St. John (Canada) as Professor of Biology and Head of the Department of Biology. There, he tried to initiate a group on molecular evolutionary studies and raise some funds. The outcome was close to a failure since, as far as I am aware, only a short technical note stemmed from that period. He became dispirited with science, and physical accidents and personal troubles soared. In 1992 he made his last professional move, becoming Professor at the Department of Zoology of the University of West Indies (UWI) in Kingston, Jamaica. Unfortunately he could not fulfil the trust UWI put on him to move the Department ahead. Personal and professional problems escalated beyond Ian's control.

SOME PERSONAL RECOLLECTIONS

I first met Ian in Amsterdam in 1979 though we had corresponded earlier. So impressed was I by his 1974 paper (BALL, 1974a) that in February 75 I wrote him a long letter praising his new taxonomy of triclads and dugesiids and his new biogeographical explanation of its world-wide distribution. However, I also expressed my dissent on several aspects of his phylogenetic tree of the genera of Dugesidae. At that time, I firmly believed karyology was a highly important phylogenetic character. That made it difficult for me to understand his placement of the genus *Schmidtea* as a rather derived group compared to the basal position held in that tree for *Girardia* and related genera. He was kind enough to send me in May 1975 a long and beautiful letter. This letter was my first introduction to the new world of cladistics. I was impressed but, to be fair, not convinced. In 1977 he published in *Acta Zoologica Fennica* (BALL, 1977c) a somehow different view on the phylogeny of dugesiids. There, *Schmidtea* was placed close to *Cura* and to other basal genera, now in the new family erected by Ronald Sluys, the Dimarcusidae (SLUYS, 1990). Later on, and recalling these letters, he said I was probably right on the placement of *Schmidtea* but for the wrong reasons. I think he was right. I had the intuition; he had the right methods, which, whilst we should follow them, do not always produce the correct result.

A bit later, and oddly enough, we joined forces on *Schmidtea*. In 1980, one of his students in Amsterdam, Elisabeth De Vries, found an asexual *Schmidtea* population in the island of Mallorca bearing an anomalous karyotype. Back in 1970, I had already observed a similar anomaly in an asexual population of *Schmidtea mediter-*

ranea found in the city of Barcelona (BAGUÑA, 1973). In the first papers dealing with *Schmidtea mediterranea* (at that time *Dugesia mediterranea*), which I published together with Professor Benazzi and colleagues (BENAZZI et al, 1972, 1975) this anomaly was not even mentioned. Professor Benazzi was, to say the least, not prone to even consider a chromosome anomaly as the cause of asexuality in this or any other species. He believed mendelian factors were the actual cause. Now, it is fair to say that asexuality may have different causes, some mendelian, some due to chromosomal changes. Elisabeth De Vries, Ian Ball, and I made a detailed analysis of the anomalous karyotypes of *Schmidtea mediterranea* from Barcelona and Mallorca, and together with rather wild speculations on this species distribution in the Mediterranean based on microplate dispersal, published it in 1984 (DE VRIES et al, 1984). The chromosomal anomaly, the unequal size of the third chromosomal pair, was interpreted as a duplication. Later on, in our lab in Barcelona, my student Maria Ribas showed very convincingly that such an anomaly was actually not a duplication but a translocation from one of the first pair chromosomes to one of the third pair (RIBAS, 1990). These results were formally published, rather ironically, in a paper in tribute to professor Benazzi (BAGUÑA et al, 1999).

In February 1981 Ian visited Barcelona for the first time. He lectured on 'The problems of historical biogeography' and on 'Philosophy, phylogeny and classification'. Accidentally, his visit coincided with the last, and luckily failed, 'coup d'etat' in Spain. He told me he couldn't imagine I was so kind to organise such an event for him. Shortly after he moved from Amsterdam to Newfoundland (October 1985) I had the chance to referee a grant application from him to the NSERC of Canada: "Evolutionary Genetics and the Systematics and Biogeography of Freshwater Planarians". Even though the application preceded the seminal paper of HILLIS & DAVIS (1986) on the utility of ribosomal DNA restriction patterns, Ball was advocating the use of this tool to place the Platyhelminthes among the Metazoa and to sort out the phylogenetic relationships among freshwater planarians. Although he was not acquainted with molecular techniques he had the feeling, and had the nose, that this was the right way to go. In that sense he was prescient. The last time I met Ian Ball was in Barcelona in January 1989.

From October 1990 I lost track of him. He did not attend the Hirosaki (1990), Abo (1993) and Brisbane (1996) ISBT Meetings. The only news from him came through Ronald Sluys and later on from Tim Littlewood who met him two or three times when vacationing in Jamaica.

In several ways, Ian Ball was a multifaceted figure. Besides science, he was very interested in classical music as listener, performer, teacher and critic. He wrote a book of piano music for beginners. He was fond of history and philosophy and seems to have been good at fencing (as a sport and during controversies). To me he was a friendly

guy, very brilliant, very good at arguing, and extremely good at writing. We clashed on particular musical tastes (he preferred the music-maker, pompous Handel to the true genius of my beloved J.S. Bach, and overrated some 19th and 20th century British composers). Nevertheless, we had a lot of fun together. But he also had a complex and troubled family life. He married twice and had three children and a step-son. And I know he had also, as everybody has, a dark side which other people know better than I do.

But as regards science is concerned, and to flatworm and triclad biology in particular, he made clear and significant contributions. He will be mainly remembered for his contributions on the taxonomy, phylogeny and vicariance biogeography of the Tricladida and, namely, the Dugesiidae, by his contributions to the knowledge of Australasian faunas, by starting to clear the mess of the *Dugesia gonocephala* species complex and by his contributions to systematic and taxonomic theoretical thinking. He published close to 70 papers and could have published a lot more were it not for his policy, rather uncommon those days and today, to encourage graduate students to publish independently. Although Ian Ball's contribution to turbellarian and evolutionary biology was highly influential and earned him an international reputation, I believe that his personal character and circumstances, from the mid 1980s, prevented the full realization of his talents when may be the best was yet to come.

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