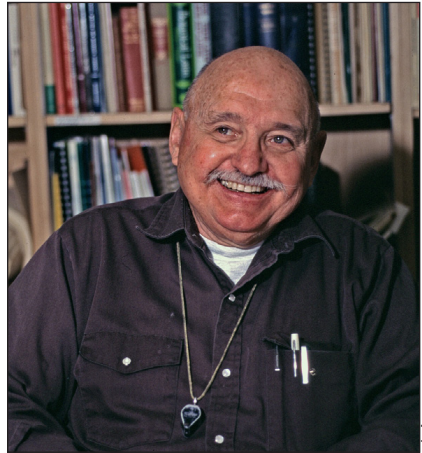


**George Eugene Ball
(25 September 1926 –
12 January 2019)**

The winter of 2019 will be remembered as a cold one in western Canada, made to seem a little colder on 12 January with the sudden passing of Professor George Eugene Ball, a leading Canadian entomologist for more than a half century. He boarded the train to the great beetle collection in the sky and its adjacent carabid country while out on his daily walk in Edmonton. Starting in 1954, George enjoyed a long and happy professional life based at the University of Alberta, during which he sponsored 40 graduate students and a number of Postdoctoral Fellows. He made large and lasting contributions to entomology in Canada and to the international scientific effort to organize and understand the evolution and ecology of carabid beetles. Although he was principally known as an academic systematist with research focused on classification, phylogeny and zoogeography, to those who knew him well George was a thoughtful, well-informed and interested partner in discussion of anything biological, all matters of general scientific principle, social issues and of life in general. His profound influence on others sprang from the exceptional reach of his interests, his principled depth of character, his generosity, his enthusiasm for his chosen life's work and his approach to life in general.

George was born on 25 September 1926 in Detroit, Michigan, the only child of Eugene and Mary Ball. His mother died tragically of kidney disease when George was 11 and his father, who worked in a lumber yard, passed on in 1951. Thus, George was without the influence of a primary birth family for much of his life. Formal schooling and the Boy Scouts were central aspects of his life while growing up in Detroit. He finished his public education at St. Theresa Primary School and the Catholic Central High School where he described the teacher-priests as being 'as tough as nails'. Nonetheless, he was well educated and credited reading a chapter in Darwin's *Origin of Species* in a high school English course as the main factor that tilted him toward an evolutionary perspective. George applied this perspective usefully in his subsequent career, and was perhaps among the early devotees of phylogenetic perspectives in systematic entomology as a result. Involvement in the Boy Scouts fostered and supported his growing interest in natural history, and the insect collection that he built in pursuit of the merit badge in 'Insect Life' paved the way for his life as an entomologist. As he finished high school, this interest prompted him to write to J. Chester Bradley, a hymenopterist and one of the authors of the pamphlet for the merit badge, to enquire about pursuing entomology as a career. Subsequently, George ended up in Ithaca, New York, living in Bradley's home as a first year student at Cornell University.

The United States entered World War II during his first year of study at Cornell. George felt the duty to respond to the call but needed his father's permission to enlist before the age of 18. Having agreed that he would complete his first year before his father would sign, George enlisted in the Marine Corps in September 1944, just before his 18th birthday, and after basic training became a rifleman assigned to the First Marine Division. After being organized on Guam, his company was injected as replacement soldiers into the raging Battle of Okinawa, the bloodiest conflict of the Pacific Theatre. There he experienced first-hand combat duties. In one engagement,



George Ball at his desk at the University of Alberta in 1998.

his life was saved by his helmet; and he was later awarded a Purple Heart for the head wound he sustained (self-described as recognition of his 'failure to keep head down' (Rice 2017)). After the fall of Okinawa, George's Division was posted to Tientsin, China, where they disarmed and removed Japanese forces from North China. George's platoon served as MPs in Tientsin working mainly to keep their fellow marines in line, something highly consistent with his sense of fair-play and adherence to principle. In addition to the Purple Heart, George also received a Presidential Unit Citation for the Okinawan Campaign, the Asiatic-Pacific Theater Medal, and the Victory Medal for his contributions to the allied efforts in the Pacific.

After mustering out of the Marines in 1946, George returned to Cornell to complete his undergraduate degree (AB) with support under the G.I. Bill. During this period, George met Ralph Chermock, a charismatic young doctoral student working on Lepidoptera at Cornell, who went on to accept an appointment in entomology at the University of Alabama. In 1948, George and fellow Cornell student and coleopterist, Barry Valentine, followed Chermock to Tuscaloosa to pursue Master's degrees. George's degree was officially conferred in 1950. His time in Tuscaloosa featured happy field outings collecting and identifying insects with Chermock and his fellow 'Chermockians', a group that included both Barry Valentine and Edward O. Wilson. Chermock was enthusiastic about entomology and spent much time in activities focused on insects with his students, a pattern of interaction that George eventually adopted as a signature feature for his own pedagogic relationships.

After completing the work for his MS at Alabama, George returned in 1949 to the entomological Mecca of Cornell as a doctoral student, first under the supervision of the lepidopterist, W.T.M. Forbes, and the hymenopterist, V.S.L. Pate. However, early during pursuit of his degree Forbes retired and Pate left Cornell, requiring a switch of supervisors to another lepidopterist J.G. Franclemont, for whom George often expressed lasting appreciation, and another hymenopterist, H.E. Evans. George had previously become fast friends with Evans during his post-war undergraduate years at Cornell, and in fact, the two of them had co-invested in a car and made an extended collecting trip to the American southwest the summer before George moved to Alabama. By this time, it should be noted that George was already a dedicated and determined coleopterist, especially interested in the Carabidae because according to him, 'they were easy to find, the first group in the key' and he had become 'completely wrapped up in trying to put the right names on ones that (he) had collected'. George's well-known general expertise and broad interest in entomology, reflected in his willingness to sponsor students working on a variety of taxa, no doubt reflects these experiences of his early life of working closely with enthusiastic entomologists of many specializations.

At Cornell, George met and fell in love with Kay Fetherston, a doctoral student from London, Ontario, who was pursuing ornithology at Cornell. They were married on 6 September 1949. Kay was a remarkable woman and an excellent life-long companion for George. They frequently participated in entomological meetings together and Kay became a formidable insect collector in her own right. Her strong interest in biological sciences supported George's entomological work, prompted bird-watching as an avocation among many of his students and made discussions with students and visitors something of a family affair. Furthermore, Kay was central in making the Ball home a welcoming hub for many biologists from near and far, contributing much to a sense of vibrant intellectual community in Edmonton. Kay completed her doctoral thesis about pheasants at Cornell in 1949, and then gave birth to two sons, Eric and Stephen, while George worked on his own doctoral thesis entitled "A taxonomic study of the North American Licinini with notes on the Old World species of the genus *Diplocheila* Brulle (Coleoptera: Carabidae)", and successfully defended it in 1954. The thesis described new species, then seen as the primary aspect of taxonomic work, but most notably advanced phylogenetic hypotheses based largely

on formal comparative investigation of morphological character systems. Although George was a consummate ‘bagger and tagger’ of specimens, he insisted that professional systematic work should contain more, and in his earliest work sought to establish connections between classification and evolution as revealed by his early approach to formal character analysis.

As George finished his dissertation, Kay yearned increasingly to return to Canada. Upon writing to one of her former professors at the University of Western Ontario, she learned about a position in entomology at the University of Alberta and encouraged George to apply. He did so and was offered the position, and thus, soon after his thesis had been accepted, the Ball family moved to Edmonton. George took up an academic position in the Department of Entomology in 1954, from which he faithfully served the University of Alberta well, contributing significantly to the local intellectual milieu for the next 65 years.

George relished field work and was an excellent field biologist. He collected widely in Canada and Alaska, travelling extensively in 1956, 1958 and 1962 with the eminent Swedish Coleopterist and dear friend, Carl Lindroth, and engaging in the foundational field work for Lindroth’s highly influential treatise entitled ‘*The Ground-beetles of Canada and Alaska*’. Fieldwork and beetle collecting also took him on travels to South America, the West Indies and New Guinea, and on 19 extended trips to the American Southwest and throughout Mexico. Over a 40-year period, George amassed an invaluable and extensive collection of Mexican carabids. Although his original dream of treating the entire Mexican fauna remained incomplete, his own work and that which he encouraged from others has made extensive use of this collection, and as a result there is a basis for study and understanding of the Mexican carabid fauna. The trips to Mexico included many of George’s students and colleagues, helping them learn the tricks and trade of field biology focused on ground beetles in the context of happy and unforgettable experiences well-steeped in the exuberant diversity of Mexican culture.

George advanced our knowledge of the taxonomy, phylogeny, and biogeography of carabids through tremendous productivity and through rigorous, detailed, in-depth analyses. In a career that lasted over 65 years, George explored the diversity of many different lineages of carabids, documenting his results in over 4700 published pages. He turned taxa that were previously poorly understood and chaotically organized into clades with well-crafted maps, thereby opening those groups up to future research. In the process, George also explored their evolutionary and natural history to bring them fully into the view of modern biology. Most notably, he often tackled some of the more difficult groups with confusing patterns of variation and unclear species boundaries; we suspect he did this out of a sense of both adventure and duty, as these were challenging groups in which few dared to tread, but George knew they needed study.

In research George was an innovator, developing new methods and embracing new ideas if his keen intellect judged them worthy. His doctoral dissertation on licinine carabids, published in



George Ball in the field collecting arboreal carabids on the Cofre de Perote, Veracruz, Mexico, in 1999.

1959, was a synthesis without equal at the time because of the breadth of characters he studied (including his novel examination of mouthparts and female ovipositors), and the thoroughness of this examination (including detailed morphometric measurements and comparisons, which was pathbreaking then). His careful reconstruction of the phylogeny of licinines used methods he developed that foreshadowed cladistics, parsimony-based methods, and the arrival of Willi Hennig's *Phylogenetic Systematics* (1966) into the English-speaking world. George received his copy of Hennig's work in May 1967, and quickly embraced some of its core arguments, becoming one of the earliest proponents of cladistics in North America (Hull, 1988). George's 1960 chapter on Carabidae in Ross Arnett's *Beetles of the United States* (Ball 1960) had tremendous impact on studies of carabid beetles, forming the groundwork for much of the research done in North America since 1960. He set a standard for systematic work throughout his career, and continually tried to improve all aspects of his work, including visualizations of character state distributions and other results. As one example among many, Ball and Shpeley's (1983) revision of the eucheiloid *Pericalina* is among the most detailed morphological studies ever done in carabid systematics, with novel graphics designed to convey more clearly the patterns observed. It should be noted that George's fruitful collaboration and excellent personal working relationship with Danny Shpeley, whom he had hired in 1974 as Assistant Curator and technician in charge of the E. H. Strickland Entomological Museum, led to exemplary systematic treatments of more than 20 carabid groups, and is surely an effective model for such partnerships in the academy.

Many of George's significant contributions to entomology are found in papers that do not include him as an author, as George was tireless in helping others complete their works through thoughtful and detailed reviewing, careful editing, or even extensive rewriting, without expectations of compensation. In fact, when pressed to be a co-author in recognition of extensive effort, his usual response was that an acknowledgement would be sufficient as he 'really hadn't done much'. His research contributions are also to be found in the collections of the world, for George felt it was his duty to identify the many thousands of specimens that were sent to him from museums around the world, and in that way small portions of the tremendous knowledge he had of beetles has been captured on insect pins far and wide.

Working as a university-based academic, George also had teaching responsibilities and he welcomed and excelled at these. In his early days at the University of Alberta, he taught undergraduate courses in General Entomology, Toxicology, and Insect Morphology and Physiology, but later in his career focused on his speciality offering in Insect Systematics. This course was a much appreciated among senior undergraduates and graduate students across campus, especially because of its focus on phylogenetic thinking. Nonetheless, there can be no doubt that George did his most outstanding work with graduate students, having guided a total of 40 successfully over the course during his career. George was an empathetic mentor for his students, generally preferring the self-description of 'sponsor' to 'supervisor', consistent with his treatment of students as junior colleagues and his commitment to the idea that graduate students were not to be 'the hands of the master'. A significant part of his work with students was accomplished in one-on-one interactions focused on encouragement and open communication, often in the context of bi-weekly meetings. Especially during his time as Chair of the Entomology Department, he confided that these meeting often provided a most interesting high point of his week, something much enjoyed as an opportunity to contemplate real entomology and a break from administrative drudgery. George also prompted and organized evening discussion sessions with his students and other evolutionary minded colleagues on campus. These were generally focused on recent books about contentious new issues in systematics and evolutionary biology and will be long remembered by all students who participated as valuable components of their development. Most importantly, George fostered for those around him an appealing sense of the

academic lifestyle as being devoted to intellectual activity that was well connected to conceptual issues of the day. His acumen as a mentor for developing systematists and the characteristics that prompted the unusual affection for George among his students were summarized by Hull (1988, pp. 370-371).

George's service and organizational contributions to his various communities were legion. His character was that of a natural leader, and people were happy to walk with him in directions that he defined through collective dialogue that he encouraged and helped bring to focus. He served in a defining role as Chair of the Department of Entomology for a decade (1974-1984). During this time he took on much of the administrative load himself, seeing his goal as 'freeing his colleagues to devote their time and energy to tasks in teaching and research', which he regarded as the central purpose of the university. George had an enviable ability to combine his genuine personal egalitarianism with a sense of organizational structure in running the Department. Everyone deserved and received his personal respect and warm friendship, but at the same time, smooth working relationships were promoted by his expectations of clear commitment of all staff and students to being effective in well-defined roles. Largely for this reason, we think, the Department ran smoothly, prospered and enjoyed international presence and impact that far exceeded its size under his leadership. He was also Curator of the Strickland Museum (1960-1992) and the active Editor of the Department's international journal *Quaestiones Entomologicae* from 1974 through its closure in 1990 (as a result of drastic university-wide budget cuts). As those who knew his pen will understand, he was a demanding and attentive editor, but oversaw publication of many influential papers in *Quaestiones*, especially in the field of systematics. George was also an active member of five entomological societies and a number of additional professional organizations. He served as President of the Entomological Society of Alberta (1957-58), the Coleopterists Society (1972-73) and the Entomological Society of Canada (1981-82). He was a founding member of the Biological Survey of Canada and guided its early work as Chair of the Scientific Committee (1983-96). He was a member of the NSERC Grant Selection Committee in Population Biology, serving as its Chair during 1987-88, and the Canadian representative to the Council for International Congresses of Entomology (1980-1996). As testament to the wide understanding of his wisdom as an academic, George also served as an invited external reviewer of many departments, institutions and programs.

Although George retired officially in 1992 at a time when mandatory retirement was still in force at the University of Alberta, his life changed very little as a result. It was a time of budgetary crisis at the University and, it was not possible to fill a position in systematic entomology immediately. Thus, George simply covered the gap until a tenure-track professorial position became available and was filled. He was in the Department working full days whenever he was in Edmonton until he and Kay moved into a retirement community at Canterbury Manor in Edmonton. Kay passed away in August 2014, and although George's time in the office was reduced after that, he still maintained a remarkable presence on campus interacting closely with students and colleagues. At the Manor, George became re-acquainted with Carol Paetz, whom he had met years before in the context of serving as a member of her late husband's supervisory committee. Carol brought renewed joy and richness to George's life. They were married at the Faculty Club in June 2017 and enthusiastically enjoyed life together with many family members and friends until the end.

It would be difficult to overstate the breadth of George's influence on the development of entomology in Canada, and on the study of ground-beetles internationally. His own work was creative, voluminous and of high quality. He authored or co-authored more than 130 publications and 5 edited books. In addition to these impressive contributions, George contributed enormously to the development of a cadre of excellent students who became international leaders in their

own right. His mark on Canadian entomology has been enormous and his international status as an insect systematist brought much attention to Canadian efforts. This ensured that his students, colleagues and associates had opportunities borne as fruit of such academic networks. George worked with the best and brought them into connection with others in his orbit. Largely through the force of his personality, strong connections were developed between the productive and innovative European school of carabid ecology and the North American school of carabid systematics that blossomed under George's influence. George was well recognized for his efforts through the award of the Entomological Society of Canada's Gold Medal in 1980, and election as an Honorary Member of the Coleopterists Society (2003) and the Entomological Societies of Canada (1994), Alberta (2000) and America (2005). His carabidological and departmental colleagues, with whom he enjoyed especially warm and friendly connections, honoured him with a retirement symposium in a Festschrift published as a special issue of *The Canadian Entomologist* in 1994, and with two 80th birthday symposia (Pittsburgh, Pennsylvania, and Blagoevgrad, Bulgaria) and a gala 90th birthday celebration and carabidological symposium in Athens, Georgia.

In conclusion, George was a wonderful human being, generous and empathetic in his personal interactions with others, and a unifying big-picture force in the holistic study of carabid beetles. He was both a steely-eyed scientist who challenged his own beliefs and inferences head-on against Nature, always looking face-on into reality. Yet this professional rigour coexisted with and was tempered by an all-encompassing compassion and consideration for other people. He was a much loved professor and will be missed and most fondly remembered both for his science and for his warm interactions with others. In short, George Ball was a most uncommon man, a steadfast friend to many, an excellent entomologist and an inspiration to all who were fortunate to know him.

George is survived by his second wife Carol and her large family, and by his children Eric (Beverly) and Stephen, grandchildren Stephanie Heming (Arthur) and Simon, and his great grandchildren Clara, Miles and Brandt. George's extended family also includes many nieces and nephews as well as their children and grandchildren.

J. Spence (Edmonton), David Maddison (Corvallis), Felix Sperling (Edmonton)

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