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# William Antony Swithin Sarjeant (1935–2002): A Celebration of His Life and Ichnological Contributions

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## WILLIAM ANTONY SWITHIN SARJEANT (1935–2002): HIS LIFE

William Antony Swithin Sarjeant, D.Sc., F.R.S.C. (Fig. 1), was born in Sheffield, England, on July 15, 1935, and died of liver cancer on July 8, 2002, in Saskatoon, Saskatchewan, Canada. He achieved eminence in his chosen fields of palynology, earth sciences history, and trace fossils, contributed to many other aspects of geology, and also to folk music, cultural heritage projects, industrial archaeology, literature and natural history. Bill (as he was usually known to friends and colleagues) was an only child, born to Harold and Margaret Sarjeant (née Cantrell). He was born on St. Swithin's day, and the addition of "Swithin" to his name was Bill's own decision in his student years. At the time of Bill's birth, Harold was a storekeeper in a steel works and Margaret a legal clerk; they lived in Milton Road, Nether Edge, Sheffield, and remained there for the rest of their lives. Though not well educated or prosperous, Harold and Margaret met at art school, had artistic aspirations and wide interests, and inspired Bill with a love of reading and an interest in archaeology. World War II started in the year Bill turned four. The industrial city of Sheffield was an early target for bombing raids, and excavations for an air raid shelter in the family's back yard produced fossil plants from the Coal Measure sandstones that underlie Sheffield. These fascinated Bill, and initiated his interest in geology. During childhood illnesses Bill learned to amuse and educate himself by reading. He borrowed one geology book so many times from the public library that "for the next few years, it was more often in my bedroom than in the library." (Spalding, 1997). The frustration of returning valued volumes made him decide to acquire books for himself. By coincidence one of the books he acquired was a natural history volume written by the father of one of us (M.G.L.) awarded as a prize in a school essay contest. This award was not the last of the academic accolades and honors he was to

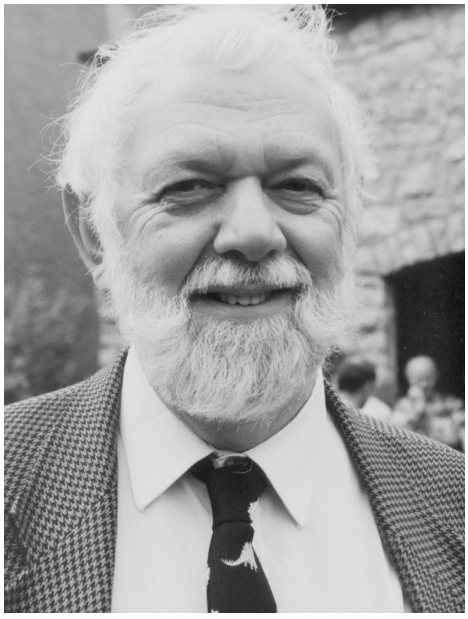

**FIG. 1.**
William Antony Swithin Sarjeant, D.Sc., F.R.S.C.
July 15, 1935–July 8, 2002

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receive. From his reading Bill developed a childhood interest in dinosaurs, at a time when these now popular creatures were little known outside professional circles.

"The trouble with you, Sarjeant, is that you're only willing to do what you like doing," said Bill's headmaster (W.E., 1991). And indeed, Bill did what he liked doing all his life, with enormous enthusiasm and energy. At Nether Edge Grammar School he developed a small circle of friends, and helped form a short-lived bird watching group. In 1950 Bill joined the city's Sorby Natural History Society, and began to deepen his geological knowledge (Sarjeant, 1989a). The society was named for the brilliant and eccentric Sheffielder Henry Clifton Sorby (1826–1908), whose pioneer microscopic work (ridiculed by his contemporaries as "looking at mountains through a microscope") led directly to modern petrology. Sorby contributed to many other scientific fields, and his eclectic scientific career could have been a model for Bill Sarjeant's.

In 1952 Bill first saw his words in print in the school magazine—fittingly an account of a fossil collecting trip with the Sorby to the Yorkshire coast. Bill was introduced to a neighbouring grocer, Leslie Ford, who was an amateur mineral collector, and together they explored the Derbyshire mining district. Around this time, Bill's father Harold followed Bill into geology with the Sorby and developed a strong amateur interest in the subject. (Sarjeant, 1981a, 1981b)

## University of Sheffield

"My passage through school was an impatient prelude to my entering, at University, what I regarded as my proper vocation," remembered Bill in later years (Sarjeant, 1980). The University of Sheffield at that time had a strong geology department led by Professor Leslie Moore, who had built a staff able to teach the broad sweep of the earth sciences. Here Bill took his B.Sc (1956), undertaking an undergraduate mapping study on a Precambrian outlier in Shropshire and an extensive essay on dinosaurs.

Following graduation, Bill continued into a Ph.D. program. Moore's own research on spores of the Carboniferous had demonstrated important scientific and economic benefits, and senior lecturer Charles Downie (later also professor of the department), was doing similar research with other microfossils in the Mesozoic. "I had wanted to study dinosaurs but could find neither material nor funding for this," recollected Bill later. "Instead, I was given two choices; to work on Carboniferous corals under Professor Moore's supervision, or to study Jurassic dinoflagellates under Charles Downie. On the whole, I was not keen on a thesis that involved much microscope work; and I am still not clear how it came about that I chose the latter alternative." (Sarjeant, 1984).

Downie had identified the possibility that dinoflagellates might be useful in stratigraphic discrimination in the Jurassic, and Bill was asked to explore this. His Ph.D. thesis, completed in 1959, was entitled 'Callovian and Oxfordian dinoflagellate cysts and acritarchs from Dorset and Yorkshire.' It began the modern study of Jurassic dinoflagellates and established their stratigraphic significance. Bill indeed found that the microscope was a strain on his eyes; he persisted, but was reluctant to stress his eyes in other ways. It was some time in this period of snowy black and white screens that he decided that television gave him a headache, and he never watched it thereafter, thus allowing himself spare time for his many interests. Despite his small income, book collecting also began to have a new focus. "Even as an undergraduate, I was already consciously collecting early works on geology . . ." remembered Bill, documenting the early phase of one of his life's obsessions (Sarjeant, 1980).

Bill lived at home while he was at university. His parents welcomed his growing circle of friends, becoming widely known as "Mother and Father Sarjeant." The first author (D.A.E.S.) was one of this group, having begun undergraduate studies in geology at Sheffield as Bill began his Ph.D. Bill continued involvement with the Sorby, creating and editing a society journal, The Sorby Record, in 1957 (Sarjeant, 1989b). As his mineral collecting led him to be further involved in the lead mining history of Derbyshire, Bill attempted to save a significant mine building from destruction; his failure led him to play an active part in the formation of a pioneer industrial archaeology group, the Peak District Mines Historical Society, in 1958–1959.

Bill also played an active part in student life, working as subeditor and then editor of the newspaper Darts, and winning the University poetry prize in 1954, 1955, and 1957. He also developed a strong interest in jazz and blues; collecting recordings, attending concerts, attempting to learn various musical instruments, and beginning to perform himself.

## Teaching and Marriage

Post-graduate positions in geology were few and hard to get in the late fifties. Bill taught through the winter of 1959–1960 at the County Technical College, Kings Lynn, Norfolk, and then for three months at New Mills Grammar School, Derbyshire, which allowed him to live in Sheffield and commute by train. He had met a neighbour, Jacqueline Patricia Scott, who had trained as a teacher. In the summer of 1960 they were married, and then moved to Stoke-on-Trent as Bill took up a position as Demonstrator and Lecturer at the University College of North Staffordshire (later to become Keele University) for a year. In 1961–1962 Bill took up a post-doctoral Research Fellowship at the University of Reading, and in 1963–1964 became Assistant Lecturer at the University of Nottingham. In 1964 he and Pat were divorced, and Bill was appointed lecturer. The following year Bill met librarian Margaret (Peggy) Crowe, and in 1966 they were married. Bill and Peggy have enjoyed an enduring marriage and three children; Nicola (b. 15 April 1967), Rachel (b. 1 August 1969), and Juliet (b. 4 November 1973).

Even when teaching school, Bill's goal was still an academic position, and he prepared a series of papers for publication based on his thesis work, and then began to develop new research. As one of the leaders in the then new field of dinofla-

gellate studies, Bill studied suites of Jurassic material first from Britain, and then from older and younger rocks and further afield. He reported the first Triassic dinoflagellates in 1963 and with David Churchill the first non-marine dinoflagellates from Australia. In 1964 he made the first attempt to correlate dinoflagellate distribution with ammonite zones. He also sought out living pioneers in the field, restudied type specimens of others, and documented pioneer discoveries. With Charles Downie, he made important contributions to the development of dinoflagellate taxonomy (Sarjeant and Downie, 1966). In Nottingham Bill began the supervision of research students, working with five before leaving the U.K.

He also continued his work on minerals, collaborating with Trevor Ford of the University of Leicester on an index of Peak District minerals (1964). While at Nottingham he was a founder of the East Midlands Geological Society, editing its journal the Mercian Geologist from 1964 to 1970. Bill's long-standing interest in the history of geology also began to blossom as a professional salary allowed him to extend his book collecting. He began to actively collect historical books and biographies of geologists, and compile a checklist to guide his acquisitions.

Bill became interested in vertebrate footprints at a time when they received little study. At Nottingham he was instrumental in rescuing a slab of fossil tracks from a building previously occupied by his department, and inadvertently abandoned in the move to a new campus. His attempt to ascertain its significance kindled Bill's interest in vertebrate footprints. His new study of the material was published in 1966, and over the next few years he sought out other material and published several papers on existing and new discoveries from the English midlands. Bill began to study the history and wider significance of these tracks, opening up a field that had been largely dormant in Britain—and indeed almost everywhere—for decades.

## Transatlantic Visits

During 1967–1968, Bill was a visiting professor at Norman, Oklahoma, accompanied by Peggy and their older two daughters. Here he had the opportunity to travel in the southwestern states, and to visit the University of Alberta in Edmonton. He enjoyed North America and forged alliances to extend his microfossil work, participating in the formation of the American Association of Stratigraphic Palynologists, only the second organization in this field. On a subsequent visit to the U.S. in 1969, Bill met fellow historian George Willard White, who encouraged Bill's developing idea of a bibliography of the history of the earth sciences, and urged the inclusion of journal contributions and works in languages other than English.

## Nottingham

In August 1968, Bill attended the International Geological Congress, held in Prague, which was abruptly terminated by the Russian invasion. He was horrified by the abrupt overthrow of the regime and the violence that he witnessed. Settling back in Nottingham, Bill continued work in all the three fields that he was now making his own.

In 1969, Bill published his translation of a paper on d'Orbigny's fundamental work on stages. He also continued his restudy of dinoflagellate type material and interviewing surviving pioneers, such as Maria Lejeune-Carpentier in Liege, France (Sarjeant and Vanguestaine, 1999). However, his Cretaceous palynological work was abruptly halted when a fire in the department destroyed much of his research material.

Bill also began to develop his bibliographical work on the history of Earth Sciences, initially in spare time in collaboration with Peggy. There was an increasingly historical aspect to his footprint work too, as in the search for earlier literature he uncovered more and more early discoveries, generally published in obscure journals and then forgotten. Bill was also describing new or unpublished discoveries from Triassic and Jurassic, from an increasing range of sites across northern England.

Outside the University, Bill became much involved in the growing revival of British folk music. He was active with the Nottingham Folk Workshop, writing and editing its newsletter and performing from time to time. In 1972 Bill became first geologist to be awarded a D.Sc from the University of Nottingham, based on 119 publications, including 66 papers on fossil microplankton and 31 papers on other geological topics. But by this time he had made his biggest professional and personal move, and had joined the faculty of the University of Saskatchewan in Saskatoon, in western Canada.

## Saskatoon

In Saskatoon Bill soon became full professor, and settled down to a long and productive academic life of thirty years, from which he was close to retirement at the time of his death. Bill carried out over 5000 hours of teaching in paleontology, stratigraphy, and economic geology, while continuing vigorous research work in the various fields that interested him, and he produced considerable results in micropaleontology, history of earth sciences, and the study of trace fossils.

Initially housed in the old General Purposes Building on the edge of the campus, Bill established his palynology lab in a trailer, struggling to undertake specimen preparation in severe winter cold, and driving or walking to the main building to give his lectures. In 1990, a fine new Earth Sciences building was constructed, in which Bill had labs and offices, and could adequately house his always growing library of earth sciences history.

Southern Saskatchewan, with its drift covered plains, he found less than stimulating geologically, but was able to compensate by continuing his extensive travels around the world, in which he eventually visited some 45 countries. On his travels he spoke at conferences, taught special courses, collected research material, and met collaborators and planned research programs.

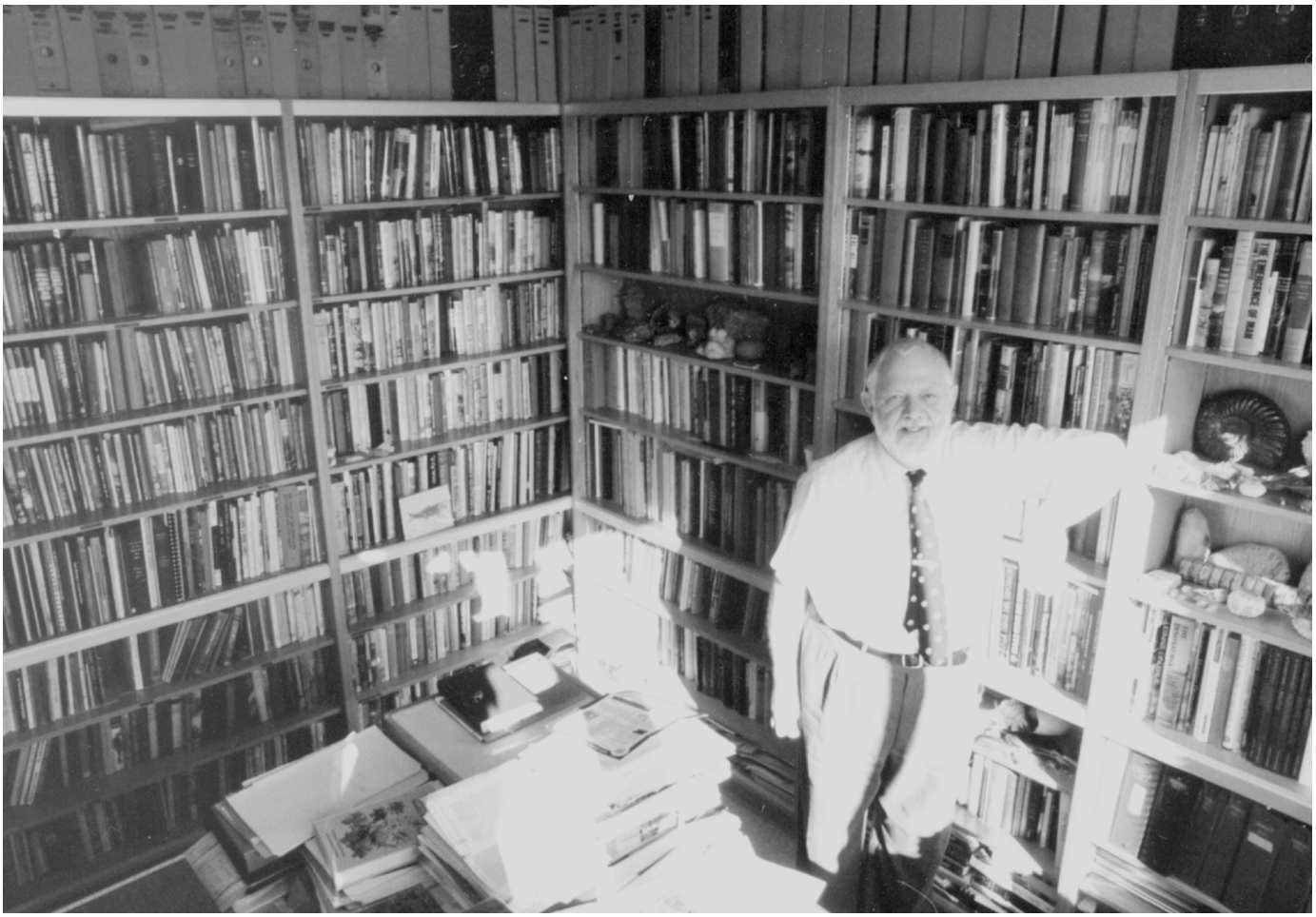

**FIG. 2.** Bill in his office at the University of Saskatchewan, his library ultimately reached a total estimated between 85,000 and 100,000 volumes, of which about half (30,000) were on the history of earth sciences.

During his years at Saskatoon, Bill supervised further graduate students; with those in England their achievements totaled 19 postgraduate degrees with three others in process. Most of the completed degrees were in palynology, but there was one in paleoichnology.

Bill continued the main thrust of his palynological work, not only of the British Isles but also on Jurassic floras from Greenland, and from the Silurian through to the Tertiary. He translated classic studies into English, continued to restudy type material in European collections, and began to publish extensively on classification, particularly in collaboration with Charles Downie, Downie's subsequent students, and in due course his own. In 1974 he published *Fossil and Living Dinoflagellates* (Sarjeant, 1974), the first textbook on the subject. In 1977 he co-edited two volumes of important papers on palynology with Marjorie Muir (Sarjeant and Muir, 1977a, b), and in 1993 collaborated on *A Classification of Living and Fossil Dinoflagellates* (Fensome et al., 1993). He attended many conferences, taking the opportunity to photograph and interview the colleagues he met. This data led to the publication of numerous biographical studies and histories (in which women pioneers were not neglected), and by the turn of the century he was able to write historical papers on palynology illustrated largely with his own photographs (Sarjeant, 1998, 2002).

Bill's interest in the history of earth sciences blossomed as he built an increasingly notable collection of books in the field. He sought new material through exchanges, review copies, many visits to bookstores on his travels, and purchase through catalogues and eventually the internet, so that catalogues and parcels frequently buried his office desk. Classic works, biographies and histories filled his office to overflowing, and his library ultimately reached a total estimated between 85,000 and 100,000 volumes, of which about half (30,000) was on the history of earth sciences (Fig. 2). The senior author has written elsewhere about Bill Sarjeant's library (Spalding, 1997).

With a serious commitment to a bibliography of earth sciences history, Bill began planning travels to visit specialized libraries so that he could locate rare volumes and index obscure journals, and he built a network of correspondents who provided otherwise inaccessible material. With his dislike of tele-

vision, Bill was at first very suspicious of computers, but was able to hire support staff to enter the vast amounts of data from his neatly written index cards, while the university helped find software that could handle the many different accents and other marks used in the different languages that were to be included. The first installment of *Geologists and the History of Geology An International Bibliography* was published in five volumes and 4,526 pages in 1980. Two supplements were produced (Sarjeant, 1987, 2 volumes, and Sarjeant, 1996, three volumes). Together the ten volumes total 8,534 pages, index 44,500 books and papers and present brief biographies of 10,000 geologists (Fig. 3). The bibliography has been referred to as "one of the greatest pieces of scholarship in all geology" (Mason, 2002), and "stupendous" (Fensome, 2002).

At Bill's death enough references had been accumulated to make a further supplement possible. Sarjeant's earth sciences history library is being placed in the University of Alberta, where it is the foundation of the Science and Technology Special Collection in the Cameron Library. In addition to the bibliography, Sarjeant has published numerous specific studies, biographical papers and reviews of works relating to aspects of Earth Science history.

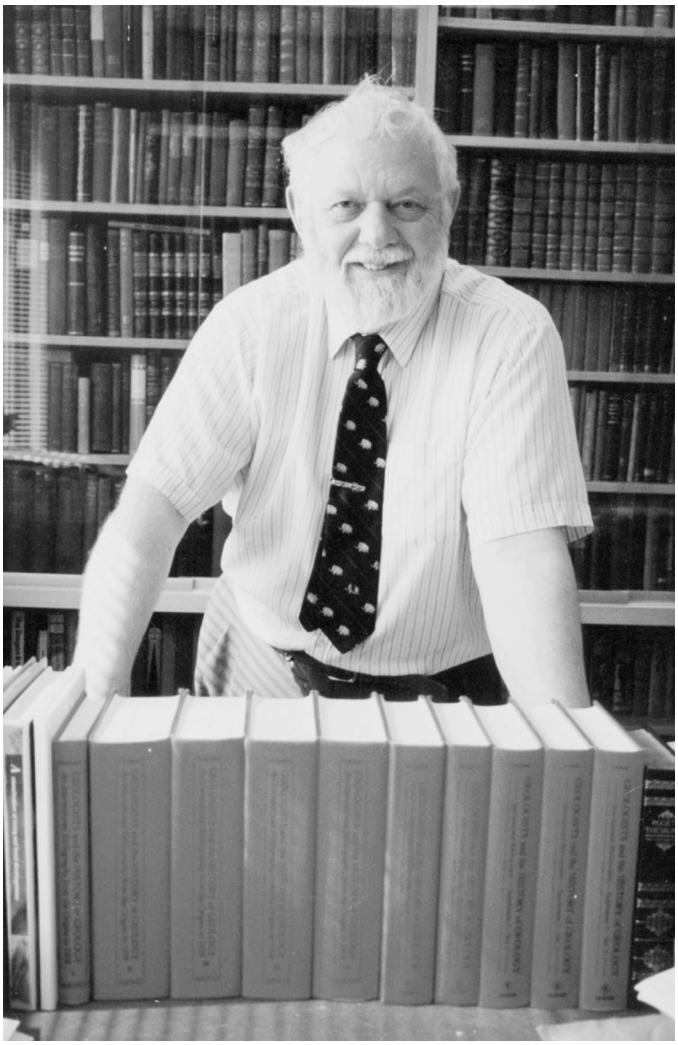

**FIG. 3.** Bill with the ten volumes of his bibliography on the history of geology *Geologists and the History of Geology An International Bibliography*, published in 3 installments in 1980, 1987, and 1996.

Bill's undergraduate mapping project had aroused an interest in the Precambrian, which led him to collaborate with Walter Kupsch, a colleague at the University of Saskatchewan, on a history of concepts in Precambrian geology (Sarjeant and Kupsch, 1979). Another early interest came through Bill's discovery in the UK of a collection of letters by Irishman Joseph Pentland (1797–1873), for which he arranged purchase by the University of Nottingham. Pentland was then a little known figure, but the letters showed he had worked in Cuvier's laboratory in Paris, and his correspondence with many British colleagues gave much new information on the study of vertebrate fossils in the early nineteenth century. In 1979, he and Justin Delair published a collection of these letters covering twelve years (Sarjeant and Delair, 1979). Bill did the transcriptions himself and coauthored the introduction. These shed new light on the early discovery of dinosaurs and led to a series of joint papers on related issues.

In 1995 Bill edited a festschrift for his friend and colleague Beverly Halstead, who died suddenly in 1991 (Sarjeant, 1995). This included Bill's substantial biography of this colorful scientist, and (in collaboration with his then research assistant and frequent collaborator Linda Dietz) a comprehensive bibliography, while numerous papers reflect the variety of Halstead's work.

In later years Sarjeant wrote valuable obituaries of his teachers and some of his associates, and (with detail based on the diaries he has kept daily since 1964) he documented his own involvement in the creation and advancement of some societies and journals. He made many contributions on eminent or neglected geologists to biographical encyclopedias. He also reviewed biographies and histories for a number of journals. His reviews were lively; Bill did not hesitate to criticize where he felt the author had failed in accuracy, emphasis or interpretation, and some of his more stringent reviews have been followed by lively published correspondence.

Bill continued publishing papers on British tracks, culminating in his 1974 pioneer synthesis "*A history and bibliography of the study of fossil vertebrate footprints in the British Isles*" which was followed by a supplement with Justin Delair published in 1985. By this time he had also begun exploration of the North American track record, pioneering development of new analytical tools for taxonomic and palaeoecological interpretation, and ultimately working on invertebrates, reptiles, mammals and birds. He also exercised his global knowledge in writing the historical introduction to the *Glossary and manual of tetrapod footprint paleoeichnology* (Leonardi, 1987). He has been listed by Lockley as one of the "seven sleuths" who re-established footprint studies in the late 20th century, by making "substantial, often innovative contributions to a science that,

before their participation, lacked much credibility" (Lockley, 1991, pp. 195–196).

Although Bill taught vertebrate paleontology courses for much of his career, his research interest in dinosaurs was mainly in their tracks. However, he also took an interest in their supposed sudden extinction as a result of an astronomical event, and published several reviews and papers from 1990 onwards in which he stressed the need for cautious interpretation of the KT boundary; most recently a 2001 paper on *"The 'Great Extinction' that never happened: the demise of the dinosaurs considered"* (Sarjeant and Currie, 2001) in collaboration with Phil Currie.

He has also presented and published papers on dinosaurs in literature, for instance uncovering the influence of Sussex discoveries of dinosaur tracks on the genesis of Conan Doyle's *Lost World*. Research programs on this scale could easily consume every hour of every day, but Bill generally kept departmental hours between 9 and 6 on weekdays and till noon on Saturdays. "The rest are devoted to what interests me," Bill said to an interviewer. "I'm very happy, fulfilled, feel very lucky, and as I look out of the window of my office, I can look at one of the most beautiful campuses in the world." (Star Phoenix, Aug 1999).

Bill's off-campus life was centered on the large house he and Peggy bought within walking distance of the campus and downtown. He proceeded to fill it with books, recordings, musical instruments, and eclectic furnishings. It served as a base for their growing family, many friends, and many meetings reflecting Bill's musical and other interests.

Bill took almost no interest in sports (though he swam and later played badminton aggressively). The seeds of his spare time interests had been sown in his childhood and student days, for Bill continued to be extensively engaged in natural history, cultural heritage and folk music activities, in his collections of books, and his writings on many subjects.

Natural history interests continued, with Bill photographing butterflies and other insects wherever he went, and publishing occasional notes on birds. As usual in Bill's life, he contributed to organizations in his areas of interest, serving as president of the Saskatoon Nature Society, and a vice president (and later a fellow) of Nature Saskatchewan, as well as a chair of Saskatoon Environmental Society.

Both Bill and Peggy became involved in the movement to protect historic buildings in Saskatoon. They were founders of the Heritage Society of Saskatoon, and Bill lobbied for the establishment of Saskatoon's Special Committee for the Identification and Listing of Historic Buildings in Saskatoon and then chaired it for five years. He became a major force in establishment of the Saskatchewan Heritage Act, chaired the Saskatoon History Advisory Board, published with co-authors three books on the history and historic buildings of the community, and edited the Saskatoon History Review for 13 years. He also served on the Saskatchewan Archives Board, the Saskatchewan Heritage Advisory Board, and SaskCulture.

With two colleagues from the geology department (Hugh Hendry, later Department chair, and Jocelyne Legault) Bill formed the Traditional Folk Trio soon after his arrival in Saskatoon. Before long this had become the nucleus of a larger group of traditional performers, known for more than 22 years as the Prairie Higglers. The group has performed widely and made several recordings. Between 1977 and 1988 Bill also compiled and broadcast several series of local radio broadcasts using his extensive collection of recorded folk music. Bill also served the Canadian Folk Music Society and its successors as vice-president, president and archivist, and was made an honorary member.

Bill's collection of detective fiction was also very comprehensive, and he began to write about the field for various magazines. He was active in forming the Casebook of Saskatoon (Canada's second-oldest Sherlockian society), and with one of his fellow members, Alan Bradley, wrote *Ms. Holmes of Baker Street*, advancing the argument that Sherlock Holmes was actually a woman (Bradley and Sarjeant, 1989).

Maps had fascinated Bill since his childhood, when he imagined a greatly enlarged version of the mid-Atlantic island of Rockall (Fisher, 1956) and had begun to develop for it detailed maps and a unique natural history. In mid life, Bill began to write an epic fantasy set there, and the first quartet of novels, *The Perilous Quest for Lyonesse* was published (under his middle names Antony Swithin) by Harper Collins in the U.K. (Swithin, 1990, 1991, 1992, 1983). A further six volumes are written but as yet unpublished. Bill was particularly delighted when some of the undersea geological formations in the region were named in the British Geological Survey's Geophysical Image Atlases after Antony Swithin and natural features of his books, the Lyonesse, Owlsgard, Sandarro, Sandastre and Swithin igneous centers (Hitchin, 1999).

### Honours

Bill was the second recipient of the Sue Tyler Friedman Medal of the Geological Society of London, and was also awarded the Golden Trilobite Award of the Paleontological Society (1995), the History of Geology Division Award of the Geological Society of America (1991) and the Founders' Medal of the Society for the History of Natural History, (1991). He was elected a fellow of the Royal Society of Canada in 1995, and was a fellow or honorary member of numerous other organizations.

## BILL SARJEANT'S ICHNOLOGICAL CONTRIBUTIONS

Bill Sarjeant was a most prolific writer and in his extensive bibliography over 62 papers were devoted to ichnological pursuits. His interest in ichnology began in 1966 with a description of vertebrate tracks from the Permian of Nottinghamshire (Sarjeant, 1966). Bill forged an enviable reputation for excellence in vertebrate ichnology. His particular *forte* was historical de-

tail and thoroughness, but he also had a bent for big picture synthesis and editorial compilations. He displayed all the outstanding attributes of a research scientist. He was careful and critical in his observations, accurate and meticulous in his descriptions, and perceptive in his interpretations. He could also be imaginative and on occasion produced controversial interpretations that are still debated. Proof of the significance of his body of work comes from the fact that many publications are widely cited and highly respected on the international scene. He edited or co-edited 3 books on the subject including *"Trace Fossils and Stratigraphy"* (Sarjeant and Basan, 1979), *"Terrestrial Trace Fossils"* (Sarjeant, 1983a), and *"The Tracks of Triassic Vertebrates; fossil evidence from north-west England"* (Tresise and Sarjeant, 1998). He contributed chapters to many books including 2 in the first book *"The Study of Trace Fossils"* devoted to ichnology edited by Bob Frey. The first was a review on plant traces that still stands as one of the best treatments on the subject (Sarjeant, 1975a) and the other was on vertebrate traces (Sarjeant, 1975b). He also contributed chapters to many other influential volumes (Sarjeant, 1987, 1989, 1990, 1994, 1995b; Sarjeant and Leonardi, 1987; Casamiquela et al., 1987; Demathieu and Sarjeant, 1987; Batory and Sarjeant, 1989; Hamblin et al., 1999; Sarjeant and Reynolds, 1999, 2001; McCrea et al., 2001).

Bill's ichnological endeavors started in the Permian around the city of Nottingham (Sarjeant, 1966) and extended to other northwest English counties (Sarjeant, 1967, 1970). He extended into invertebrate trace fossils and Texas vertebrate tracks (Sarjeant, 1971) and collaborated with German track specialist Hartmut Haubold (Haubold and Sarjeant, 1973) and later translated a Haubold paper on European Permian tracks (Sarjeant and Helmuth, 1977). Other notable studies in the late seventies were on Triassic tracks with P. Stringer (Sarjeant and Stringer, 1978) and early Canadian trackways in Nova Scotia with David Mossman (Sarjeant and Mossman, 1978a, 1978b; Mossman and Sarjeant, 1980). In 1975 (on behalf of the Provincial Museum of Alberta) the senior author asked for Bill's assistance in what became a four-year rescue excavation of dinosaur and other tracks of the Peace River of British Columbia (Currie and Sarjeant, 1979). Bill was delighted to join in the first trip with new curator Phil Currie. He was even more delighted when a chance meeting with Rick Kool, a B.C. musician/museum educator, at the Regina folk festival, led to identification (in collaboration with Tony Thulborn of Australia) of what may be the world's oldest marsupial track from the Peace River (Sarjeant and Thulborn, 1986). He was Tracks Chairman of the Trace Fossil Research Group of the Palaeontological Society (1976–1977).

Work in the eighties included study with Giuseppe Leonardi on dinosaur tracks in Brazil (Leonardi and Sarjeant, 1986) and with J.A. Wilson on Eocene mammals of Texas (Sarjeant and Wilson, 1988). In 1987 Bill met Giuseppe's father Piero Leonardi, another pioneer tracker, and eventually wrote his obituary with Giuseppe (Leonardi and Sarjeant 2000). In the nineties Bill's work continued with a collaboration with Geoffrey Tresise's masterly study of *"The tracks of Triassic vertebrates; fossil evidence from north-west England"* (Tresise and Sarjeant, 1998); and with J.B. Delair and Martin Lockley a 1998 paper on "*The footprints of Iguanodon*" (Sarjeant et al., 1998). Other work included two collaborations with Alden Hamblin and the senior author on Tertiary trackways discovered in Utah (Hamblin et al., 1998, 1999); a paper with Wann Langston, Jr. on vertebrate footprints and invertebrate traces from the Late Eocene of Texas (Sarjeant and Langston, 1994); as well as a translation of a paper on the speed of dinosaurs by Georges R. Demathieu (Sarjeant, 1995b). Recent work included study of remarkably preserved track assemblages in the Cretaceous of Alberta (Sarjeant, 2000b; McCrea and Sarjeant, 2001) and the Miocene of California (Sarjeant and Reynolds, 2001; Sarjeant et al., 2002). His expertise (Fig. 4) was sought by other ichnologists and he collaborated on track sites in Nevada (Sarjeant et al., 2002), Wyoming (Sarjeant et al., 2002), Iran (Ataabadi and Sarjeant, 2000) and Spain (Sarjeant et al., in press).

Included in the many ichnological articles that Bill wrote, eight were devoted to general principles and taxonomic philosophy (Sarjeant and Kennedy, 1973; Sarjeant and Mossman, 1978a; Casamiquela et al., 1987; Demathieu and Sarjeant, 1987; Sarjeant and Leonardi, 1987; Sarjeant, 1989, 1990, 1994) and 7 were published in a variety of popular science publica-

**FIG. 4.** Bill doing what he loved photographing tracks for a new project.

tions (Mossman and Sarjeant, 1980, 1983; Sarjeant, 1981, 1988, 1996, 1999). These served to further showcase ichnology in the eyes of both other scientists and the lay person. He proposed a new taxonomic code for trace fossils that combined elements from both the zoological and botanical codes (Sarjeant and Kennedy, 1973). Although this code met with some resistence at the time it was published perhaps it would be looked upon more favourably now because ichnology is still beset with taxonomic problems. Likewise, his paper on *'Ten palaeoichnological commandments': a standardized procedure for the description of fossil vertebrate footprints* (Sarjeant, 1989) is widely cited and constitutes a primer on how to describe fossil footprints. It is a model of brevity and common sense. In any body of science there are a number of papers that are considered to be essential reading and this one certainly falls into that category. It was deemed so important that it was translated into French so that it would be available to a wider audience (Sarjeant, 1994).

Bill was especially interested in the history of vertebrate ichnology and published 15 papers on the subject (Sarjeant, 1974, 1983b, 1984, 1987, 2000a; Delair and Sarjeant, 1975, 1985; Sarjeant and Mossman, 1978b; Batory and Sarjeant, 1989; Pemberton et al., 1996; Sarjeant et al., 1998; Tresise and Sarjeant, 1998; Leonardi and Sarjeant, 2000; Mayor and Sarjeant, 2001, Pemberton et al., in press and King et al., in press). His 1974 compilation on the history of vertebrate ichnology in the Brirtish Isles was a seminal paper that represented the first modern treatment on the history of the subject. This work was followed up in 1984 with a supplement (Delair and Sarjeant, 1984) and together these two papers laid the ground work for many other authors getting into the field. In 1998 he contributed a historical treatment on the Triassic footprints of north west England (Tresise and Sarjeant, 1998). His historical papers were always meticulously researched, insightful, and above all interesting.

Geographically, Bill worked on vertebrate tracks and trackways from all over the world. In Great Britain he described assemblages from the Permian (Sarjeant, 1966, 1982; Haubold and Sarjeant, 1973; Sarjeant and Haubold, 1973), the Triassic (Sarjeant, 1967, 1970, 1996; Willis and Sarjeant, 1970) and the Jurassic (Sarjeant, 1970, 1975a). In the United States, Bill worked on assemblages from Texas (Permian: Sarjeant, 1971; Eocene: Sarjeant and Wilson, 1988; Sarjeant and Langston, 1994), Oklahoma (Pennsylvanian: Sarjeant, 1976), Utah (Eocene: Hamblin et al., 1998, 1999), California (Miocene: Sarjeant and Reynolds, 1999, 2001; Sarjeant et al., 2002), Nevada (Sarjeant et al., 2002) and Wyoming (Sarjeant et al., 2002). In Canada, Bill did extensive work in British Columbia (Cretaceous: Sarjeant and Thulborn, 1986; Currie and Sarjeant, 1979), New Brunswick (Triassic: Sarjeant and Stringer, 1978), Nova Scotia (Carboniferous: Sarjeant and Mossman, 1978a, 1978b; Mossman and Sarjeant, 1983) and Alberta (Cretaceous: Sarjeant, 2000b; McCrea and Sarjeant, 2001). Other studies on footprint assemblages were conducted in Brazil (Leonardi and Sarjeant, 1986), Iran (Ataabadi and Sarjeant, 2000) and Spain (Sarjeant et al., in press).

Bill worked on a wide variety of track types produced by a myriad of probable track makers including; amphibians (Sarjeant, 1967, 1970, 1971, 1976, 1982; Willis and Sarjeant, 1970; Haubold and Sarjeant, 1973; Sarjeant and Mossman, 1978, Currie and Sarjeant, 1979), reptiles including prosauropods, ornithopods, pelycosaurs, coelurosaurs, pseudosuchians, rhynchocephalians, creodonts, and theropods (Sarjeant, 1971; Sarjeant and Haubold, 1974; Sarjeant and Mossman, 1978; Sarjeant and Stringer, 1978; Batory and Sarjeant, 1989; Sarjeant et al., 1998; Sarjeant et al., 2002; Sarjeant et al., in press; King et al., in press), marsupials (Sarjeant and Thulborn, 1986), mammals (Sarjeant, 1975; Sarjeant and Wilson, 1988; Hamblin et al., 1998; Ataabadi and Sarjeant, 2000; Sarjeant, 2000b; McCrea and Sarjeant, 2001), camelids (Sarjeant and Reynolds, 1999), horses (Sarjeant and Reynolds, 1999), and birds (Hamblin et al., 1998; McCrea and Sarjeant, 2001; Sarjeant and Reynolds, 2001),

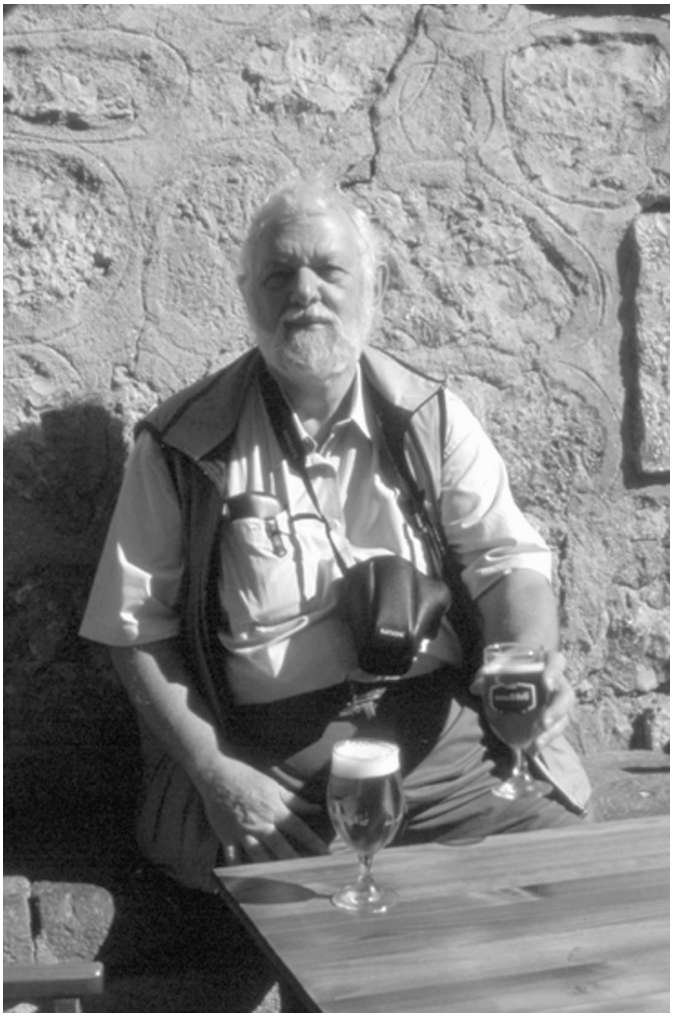

**FIG. 5.** Bill in a relaxed moment in 2002 at Albarracin, Spain.

**FIG. 6.** Bill enjoyed traveling and meeting colleagues. Here he is at the centre of a group of Spanish colleagues: Jose Lires Corbal, Guillermo Melendez, Bill, Laura Pinuela, Jose Carlos Garcia-Ramos in 2002 at Lastres, Spain.

## BILL SARJEANT IN PERSON

Bill was a commanding figure. Physically he was a big man—big in voice, big in laughter, big in appetites, and big in capacity for work and pleasure (Fig. 5). Bearded for most of his life, his hair and beard became silvery and in later life he was sometimes compared to Santa Claus. He had a strong focus, which could hold an audience, and allowed him to lead, challenge (and occasionally disrupt), a meeting. He enjoyed lapsing into his native Sheffield dialect, and occasionally played the blunt Yorkshireman, displaying an occasional innocent lack of tact that could sometimes upset colleagues. But he had infectious enthusiasm for all that he did, living life in a big way, throwing himself wholeheartedly into his myriad interests and sweeping many of his associates along with him. These attributes produced a stimulating blend of authority and imagination which allowed him on occasion to step boldly into controversial territory, sometimes stimulating replies and spirited defense of his interpretations: all the vital life-blood of scientific debate.

He is remembered as a gifted teacher, and a dedicated supervisor who did his best to help his students with personal problems as well as professional ones. "To many of his students," said Rob Fensome, "he was not just a supervisor, but also a mentor, providing crucial stepping stones in their careers and enriching their lives beyond measure." Many colleagues around the world appreciated him, not just for his enthusiastic collaboration, but also for his knowledge, humor, fund of stories, and readiness to break into song. "Renaissance man" is a frequent description; others have suggested he was "an amateur in the best Nineteenth century sense of the term . . . a giant," (Fensome, 2002); "one of palynology's true characters" says another, referring to his "sociability" and "eccentricity." (Riding, 2002)

Bill was also big in friendship, making friends in every field of his life with anyone who shared even a portion of his many enthusiasms (Fig. 6). He kept in touch over the years by phone calls, letters, and eventually emails with friends from school and university, former colleagues, contacts in the many countries he visited, and acquaintances from the worlds of folk music, detective and fantasy literature. To his closest friends, he was unendingly generous with books, recordings, and the sharing of useful information and contacts.

Within the whirl of his professional life and extensive interests, Bill valued his private life with his wife and children, and most recently his two grandsons. And for most of his adult life he was a churchgoer, most recently an Anglican. Bill was so energized by his many projects that he found it difficult to

envisage a quieter time in his life. "If I live to retirement," he said once, "I'll probably move to a place with lots of rocks to hammer."

## ACKNOWLEDGEMENTS

Much of this obituary is prepared from the first author's memories of a long and close friendship with Bill Sarjeant, dating from 1956. Bill's own autobiographical writings have been referred to, and other information has come from Peggy and other obituarists, particularly Richard Howarth. Some of the language of this obituary appears in others the first author has prepared, and other wording is borrowed from a eulogy written by the first author's wife Andrea Spalding. Bill's mineral collections are in the Potteries Museum in Stoke-on-Trent; his extensive papers and collection of photographs are deposited in the University of Saskatchewan Archives; his folk music holdings are with the Canadian Folk Music Society archives in the University of Calgary, and most of his library is in the University of Alberta.

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