

1 OBITUARY

2

3 **John Brian Richardson (1935–2021)**

4

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10 Supplemental data for this article can be accessed online at

11

12 **1. Introduction**

13 John Brian Richardson, one of the pioneers of Silurian–Devonian spore research, passed
14 away on the 31st of December 2021 at the age of 85. He was one of the architects of the
15 nomenclatorial and taxonomic system used to describe and classify Silurian and Devonian
16 spores. Together with Colin McGregor, John developed a hugely influential dispersed spore-
17 pollen biostratigraphical scheme for the Silurian and Devonian (Richardson and McGregor
18 1986). In a sustained collaboration with Dianne Edwards and others, John also added
19 considerably to our understanding of early terrestrial plants by using in situ spores to
20 integrate the early land plant megafossil and dispersed spore fossil records. A full listing of
21 his publications is given in the Supplemental Data.

22

23 **2. Early years (1935–1953)**

24 John was born and raised in Darlington in the northeast of England along with his two sisters.
25 At school he excelled in all academic subjects, especially the sciences, and most sports
26 (particularly rugby). John passed the Eleven-Plus examination at his primary school, thereby
27 gaining entry to Darlington Grammar School. Here he came under the influence of the
28 legendary geography and geology teachers George Chapman and Jack Waltham who inspired

29 in him a profound love of geology. This was a natural progression because John was a very
30 keen Rambler who enjoyed investigating the natural history of the British countryside. After
31 passing his A-Levels, it was George Chapman and Jack Waltham who suggested he read
32 geology at the University of Sheffield. John was the first in a long line of geological talent
33 produced by Darlington Grammar School, and also influenced by George and Jack, including
34 Rex Harland, George Hart, Malcolm Hart, Bernard Owens, Jack Pattison and John Varker
35 (Sarjeant 1984, Riding et al. 2020). During this time, he also developed an interest in music,
36 for example playing the cello, and Scottish country dancing. As with most things in his life,
37 John was passionate about all these interests, although nothing could beat his love of geology,
38 the islands around mainland Scotland and walking.

39

40 **3. Undergraduate and postgraduate student life in Sheffield (1953–1960)**

41 John Richardson arrived at the University of Sheffield in 1953. Upon successful completion
42 of the somewhat generic first year, the students specialised and John found himself among a
43 class of five studying Honours Geology. His four undergraduate colleagues were Michael
44 Atherton, Bernard Knowles, Graham Sylvester and the soon-to-be palynologist William (Bill)
45 Sarjeant. The latter described their rain-sodden second year field excursion to the Isle of
46 Arran, off the west coast of mainland Scotland, where he was utterly bewildered by John's
47 love for this very cloudy and profoundly wet island (Sarjeant 1984). This enduring affinity
48 was no doubt inspired by John's first encounter with the Devonian Old Red Sandstone
49 successions of Arran.

50 At this time Professor Leslie R. Moore, who had arrived as Head of Department in
51 1949, was beginning to establish a school of palynology (Sarjeant 1984, Spinner et al. 2004,
52 Wellman 2005, Hunter 2013). Charles Downie joined Leslie Moore as a Lecturer in Geology
53 in 1952, and was beginning his seminal body of work on aquatic palynomorphs. Early
54 students at Sheffield began researching Carboniferous spores. Herbert Sullivan was soon
55 joined by Leonard Love, and Roger Neves as they returned from compulsory National
56 Service in the military. Thus, John was exposed to palynomorphs, and began to develop an
57 keen interest in their study. John was soon processing samples in the laboratory that he had
58 collected for his final year undergraduate dissertation from the Middle Devonian 'Middle Old
59 Red Sandstone' of the Orcadian Basin of his beloved Scotland. After graduating with his

60 Batchelor's degree in June 1956, Leslie Moore took on John as a PhD student to undertake
61 further research on the spores recovered from these strata.

62 When John started his PhD investigating Devonian spores, very little research had
63 been undertaken on this topic. Early palaeobotanical work had recovered in situ spores from
64 the sporangia of various Devonian plants (e.g., Clarke 1885, Arnold 1936). In a truly ground-
65 breaking work, Lang (1925) used hydrofluoric acid to recover spores from the bedding planes
66 of Middle Devonian rocks from Scotland and recognised different forms that he labelled as
67 Types A to I. Over time, palynological processing methods, specifically macerating whole
68 rocks using hydrofluoric acid for siliciclastic rocks, and nitric acid for coals were developed
69 (Riding 2021). Sporadic early work described Devonian spore assemblages using either a
70 system of 'types', or the newly developing artificial morphology-based binomial system of
71 spore nomenclature that was being developed within early palynological circles (Thomson
72 1940; 1952, Eisenack 1944, Naumova 1953, Radford and McGregor 1954).

73 It was in these fledgling days of palynological research generally, and Devonian spore
74 studies in particular, that Leslie Moore allocated the Devonian Period to John as he sought to
75 build a school covering all aspects of the exciting new science of palynology (Sarjeant 1984,
76 Spinner 1986, Spinner et al. 2004, Wellman 2005). In 1960, John successfully defended his
77 PhD thesis, which was entitled *A study of the microflora of the Middle Old Red Sandstone,
78 Orcadian Basin* (Richardson 1960a), and very quickly published his principal findings in
79 three classic papers (Richardson 1960b, 1962, 1965). At around the same time the other
80 pioneers of Devonian spore research began to publish their results. These were Colin
81 McGregor in Canada (McGregor 1960); Bill Chaloner in the UK and Canada (Chaloner
82 1963); Maurice Strel in Belgium (Strel 1964); Keith Allen in Spitsbergen (Allen 1965); and
83 Arlette Moreau-Benoit in France (Moreau-Benoit 1966) (Figure 1).

84 It is little known that, during his younger days, John was a keen active sportsman.
85 Whilst at university, he represented the local rugby union club Sheffield Tigers.
86 Unfortunately, his playing career was abruptly halted by a foot injury sustained whilst on
87 fieldwork in Orkney, an archipelago of islands off northeast mainland Scotland. However
88 John always maintained a keen interest in both cricket and rugby, and the foot injury never
89 dimmed his passion for walking.

90

91 *Figure 1 near here please*

93 **4. King's College London part I (1960–1965)**

94 After completing his PhD, John was appointed as a lecturer in the Department of Geology of
95 King's College London. He relocated south from Sheffield to London with his wife Monica,
96 whom he had met and married in Sheffield in 1959, and soon a young family began to grow
97 as their first son was born. During this busy period, settling into a new job and taking on
98 family responsibilities, John continued his work on the Scottish Devonian but also began to
99 investigate the Upper Silurian and Lower Devonian successions of the Anglo-Welsh Basin
100 (Richardson 1967). At this time, John and Monica went on to have two more boys. Family
101 life became busier and all his children could not fail to be inspired with John's infectious love
102 of the natural world.

103 The post-World War II development of palynology coincided with the emergence of
104 the Cold War as political relationships between the eastern and western blocs markedly
105 deteriorated. Thus palynology began to evolve, virtually independently, within the two
106 regions. Specifically, almost entirely separate taxonomic approaches began to develop. John
107 was aware of the early work in Russia by, for example, Naumova (1953), and was keen that
108 the political situation did not impede the development of the science. Thus he began, as best
109 he could given the circumstances, to collaborate with the Russian scientists working on
110 Devonian spores. John visited Russia on many occasions during this difficult time, usually in
111 conjunction with CIMP (*Commission Internationale de la Microflore du Paléozoïque*)
112 Working Groups. Indeed John made an effort to take lessons and learn the Russian language.
113 His reprint collection of early Russian manuscripts on Palaeozoic palynology, including
114 translations, is one of the most complete in the world.

115

116 **5. A year in the USA, 1965**

117 A fantastic opportunity arose in 1965 when John was a recipient of a sabbatical award to
118 work in the laboratory of Harlan P. Banks (1913–1998) at Cornell University in Ithaca, New
119 York State. Thus, John and his family embarked on the Royal Mail Ship Queen Mary and
120 sailed to New York City. During his time in New York State, John developed a lifelong
121 fascination with the Catskill Mountains and the Devonian geology of this region. By
122 coincidence, a young palaeobotanist, Dianne Edwards, who had just commenced her PhD

123 working on Devonian plant megafossils at the University of Cambridge, was working at
124 Cornell during John's sabbatical (Figure 1). Subsequently, John was able to collaborate with
125 Dianne on the nature of the in situ spores she recovered from her plant megafossils (Edwards
126 1968). This was the beginning of a lifelong collaboration integrating palaeobotanical and
127 palynological analyses of early land plants.

128

129 **6. King's College London part II (1965–1978)**

130 Much enthused, John returned from the USA to King's College London. However, his
131 research emphasis shifted slightly as he began to work further back in geological time on
132 Silurian plant spores from the Welsh Borderland (Figure 2). This was of interest because it
133 was here that Lang (1937) had recovered the then earliest known land plant megafossils
134 (*Cooksonia*) from the uppermost Silurian (Pridoli). At this time, extremely little research had
135 been undertaken on Silurian spores, largely because Lang's Pridoli plants were believed to
136 represent a benchmark for the origin of land plants. In a classic monograph, Richardson and
137 Lister (1969) showed that diverse assemblages of trilete spores extended back to the Early
138 Silurian. A few years later, a similar succession of Silurian spores was documented from
139 Libya on the Gondwana palaeocontinent by Richardson and Ioannides (1973).

140 Research students supervised by John at this time at King's College London were
141 Jancis Ford on the Upper Silurian–Lower Devonian of Scotland (Ford 1971), Sarfraz Ahmed
142 on the Devonian of New York State (Ahmed 1978), Thamer Al-Ameri on the Silurian of
143 Libya (Al-Ameri 1980) and Adnan Hassan on the Lower Devonian Senni Beds of South
144 Wales (Hassan 1982). John also jointly supervised the palynological work of a number of
145 other non-Silurian–Devonian spore PhD students in association with other London
146 universities.

147 During this time, John's activities on behalf of volunteer-run societies centred around
148 CIMP and the British Micropalaeontological Society (BMS) (latterly The
149 Micropalaeontological Society - TMS). John worked on a number of CIMP Working Groups,
150 and was the first Secretary of the Palynology Group of BMS. He was a lover of fine wines,
151 particularly those cultivated on Devonian outcrops! At the annual BMS/TMS meetings he
152 began the tradition of a wine reception and these soon developed legendary status for the
153 quality of the wines on offer.

154 In 1967 John and Monica went on to have two more children, when twin girls were
155 born. Professional and family life became a delicate balance in such a busy household.
156 However, John continued to inspire in all his children a love of geology, hill walking, music
157 and plants. Although none of them went on to carry the geological mantle, they were all
158 inspired by his drive and commitment to his profession. Charming, eloquent and funny, he
159 made family life fun and at the same time, as with everything in John's life, set high
160 expectations.

161

162 *Figure 2 near here please*

163

164 **7. The Natural History Museum, London (1978–1996)**

165 In the late-1970s, John took the decision to move from King's College London to become a
166 researcher in the Department of Palaeontology of the Natural History Museum (NHM) in
167 London. In hindsight, this was a prudent move because the Department of Geology at King's
168 College London was subsequently closed following the infamous Oxburgh Report (Hunter
169 2013). John established the first palynology laboratory at the NHM, and continued his
170 research without the burden of undergraduate teaching. That said, he consistently found the
171 Civil Service bureaucracy at the NHM profoundly frustrating!

172 During his time at the NHM, John's magnum opus was published in collaboration
173 with Colin McGregor (Richardson and McGregor 1986). This monumental work established
174 the first dispersed spore biozonation scheme for the entire Silurian–Devonian interval. Based
175 on three decades of accumulated knowledge from both authors, and summarising the research
176 of all other workers, it is perhaps unsurprising that this classic work is still widely utilised
177 today both in academia and industry.

178 On joining the NHM, John began to co-supervise a series of PhD students with
179 Dianne Edwards of Cardiff University. These interdisciplinary projects on in situ spores
180 combined Dianne's expertise on plant megafossils with John's knowledge of dispersed
181 spores. This succession of students initially comprised Una Fanning (Fanning 1984), Neil
182 Burgess (Burgess 1987) and Charles Wellman (Wellman 1991). A fortuitous discovery in
183 1986 was to prove groundbreaking for the science (Edwards et al. 1986). On sieving a sample
184 collected by John from the Lower Devonian (Lochkovian) of the Anglo-Welsh Basin, the

185 presence of minute plant fragments was noted. Una Fanning returned these to Cardiff where
186 Scanning Electron Microscope examination by herself and Dianne Edwards revealed that
187 they were plant axes with intact sporangia, preserved in three dimensions, with all of their
188 cellular detail perfectly preserved. Subsequently, it was shown that they had been
189 exceptionally preserved by charcoalification during a wildfire event. Thus was discovered the
190 unique North Brown Clee Hills Lagerstätte (NBCH). Work on this Lagerstätte has
191 revolutionised early land plant studies, and continues today.

192 During this time, in addition to CIMP and BMS/TMS duties, John also served as
193 External Examiner to the MSc course in Palynology run by the Department of Geology at the
194 University of Sheffield. John had always maintained his affiliation with Sheffield, and in
195 particular palynology, and was only too pleased to take on this role. He was someone who
196 took commitment and loyalty very seriously, and expected others to do so. In the early 1990s
197 when the MSc course in Palynology at Sheffield was threatened with closure, John
198 campaigned vigorously for its survival. He rallied high profile scientists from the NHM and
199 used his worldwide links to aid the cause, and no doubt helped considerably in ensuring its
200 survival at that precarious time (Wellman 2005).

201 Whilst at the NHM, John also engaged in social activities associated with the
202 Department of Palaeontology. His colleague Lorraine Cornish recalls that John was heavily
203 involved in the organisation and planning of the highly successful Sports and Social wine
204 tastings that took place in the museum. Working with a small team of staff including Lorraine
205 Cornish, Paul Henderson and Alison Longbottom, these tastings proved very popular with
206 museum staff and tickets always sold out. John's role as Treasurer also ensured that the
207 finances were well managed and the team were able to book excellent speakers from the wine
208 profession as well as some in-house experts like ex-Keeper of Palaeontology Bill Ball who
209 had a strong interest in vintage champagnes. The format was tasting eight to 12 wines with an
210 expert who would not only inform the audience about the wines, but provide some amusing
211 anecdotes. Sometimes the team were even able to include some Earth Science background.
212 All who attended the Geology of Italian Wines 'Red's under the Beds' event by Dr Peigi
213 Wallace were very enthusiastic to find out more, even if they felt slightly fragile the next day.
214 One of us (CHW) recalls that John had a bespoke, locked cabinet fitted in the Palynology
215 Laboratory to ensure the safe storage of the wines. John was also a long-standing member of
216 the NHM Rifle Club.

217

218 **8. Retirement (1996–2021)**

219 Due to Civil Services rules at the time, John had to retire on reaching the age of 60 during
220 1996. John had no intention of curtailing his research activities, and was granted emeritus
221 status by the NHM with continued access to a laboratory, office and other facilities. Initially,
222 he concentrated on a Natural Environment Research Council (NERC) research grant working
223 with Rosa Rodriguez on the Silurian–Devonian boundary successions of northern Spain
224 (Richardson et al. 2001). At this time John’s collaboration with Dianne Edwards on the
225 Upper Silurian and Lower Devonian strata of the Anglo-Welsh Basin, that included the
226 NBCH Lagerstätte, was particularly productive, producing many papers on the in situ spores.
227 This partnership was bolstered by a PhD studentship on sedimentology with Gareth Jenkins
228 (Jenkins 1998), and their final joint palaeobotanical/palynological PhD studentship
229 undertaken by Jenny Morris (Morris 2009).

230 John had always been a meticulous researcher and was a brilliant microscopist. His
231 monographical work took time to mature as he carefully examined the spores, and prepared
232 detailed descriptions and plates. John could be very critical of those who were not so rigorous
233 in their scientific work. It also meant that when John started a project, it often took many
234 years to complete it, commensurate with his exacting standards. When other workers
235 sometimes ‘encroached on his territory’, that he had been carefully working up for so long,
236 he found it extremely frustrating and this led to a number of conflicts with other researchers.
237 This, and John’s sustained frustration with bureaucracy, led to an outward perception among
238 those that did not know him well that he could be somewhat irascible. This curtness was
239 merely a veneer and, underneath the somewhat brusque façade, he was extremely charming.
240 However, if anyone published a poorly circumscribed new Devonian spore species, or
241 published a report based on a cursory examination of a spot sample from one of his long-term
242 study areas, that mask could slip!

243 Finally, age crept up on John and he realized he was never going to fully complete
244 documenting the dispersed spore assemblages from the Upper Silurian–Lower Devonian
245 ‘Lower Old Red Sandstone’ succession of the Anglo-Welsh Basin. However, John embarked
246 on his final PhD project, a joint collaboration with his alma mater the University of Sheffield,
247 and PhD student Alex Ball began work on the project. Sadly, John died on the 31st of
248 December 2021 whilst Alex was writing up during the final year of his PhD.

249

250 **Acknowledgements**

251 Dianne Edwards, David Siveter and Derek Siveter kindly provided the photographs of John.
252 Invaluable anecdotes and discussion were provided by Lorraine Cornish and Steve Stukins
253 (NHM) and Dianne Edwards (Cardiff University), with Pippa Richardson kindly providing
254 some details of family life. James B. Riding publishes with the approval of the Executive
255 Director, British Geological Survey (NERC).

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392

393

394 **Figure captions:**

395

396 Figure 1. The British Devonian palaeobotany and palynology team in 1969 comprising, from
397 left to right, John Richardson (minus his trademark beard!), Dianne Edwards, Keith Allen and
398 Bill Chaloner (photograph courtesy of Dianne Edwards).

399

400 Figure 2. John Richardson (this time with beard) collecting samples at the *Cooksonia* locality
401 at Perton Lane in the Welsh Borderland in 1977 (photograph courtesy of David and Derek
402 Siveter).

403