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A land plant saga: tribute to Jean Galtier – Introduction

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This special issue dedicated to Jean Galtier celebrates the more than 60 years he devoted to palaeobotany. Jean Galtier is recognized as an international authority on Paleozoic floras and paleoenvironments. His expertise in early ferns and early seed plants is acknowledged worldwide.

Jean Galtier was born on 17 March 1940 near Montpellier and has spent his entire life in this region of southern France to which he is greatly attached. Hired by the French National Center for Scientific Research (CNRS) in 1963, he joined the laboratory of "Palaeobotany and Plant Evolution" at the University of Montpellier. Its director at the time, Prof. Louis Gambast, offered him a thesis on the anatomically preserved plants of the Lower Carboniferous deposits of France, thus continuing the work initiated by a famous predecessor, Bernard Renault, for whom Jean Galtier has a deep admiration (Galtier, 2016). Jean Galtier's (1970) thesis was followed by numerous other publications, by him alone or with his students and post-docs, on the plants of the Tournaisian of Montagne Noire and the Viséen of Roannais and Esnost, near Autun. It was during his thesis project that Jean Galtier began to work on the early ferns, which are widely represented at Esnost, and on the early Pteridospermales, which are dominant in Montagne Noire.

His interest in ferns increased when, after Louis Grambast's death in 1976, he supervised the PhD and subsequent researches of John Holmes for over 10 years. This work focused on reconstructing Late Carboniferous ferns from the coal balls they collected in Lancashire, England (Holmes & Galtier, 1976). Another milestone in Jean Galtier's work on ferns is his collaboration with Tom Phillips, which began in the mid-1980s, and led to three important reviews on the evolution and ecology of the Late Paleozoic Zygopteridales, Tedeleaceae, and Anachoropterids (Phillips & Galtier, 2005, 2011 ; Galtier & Phillips, 2014).

Another decisive collaboration regarding his favourite plant groups is the one he built in the early 1990's with Charles Beck on the diversification of the calamopityacean pteridosperms. A series of papers was produced describing new genera and clarifying the systematics of the family (Beck et al., 1992 ; Galtier & Beck, 1995). Regarding seed plants, Jean Galtier also published several papers detailing the structure and morphology of Paleozoic ovules, emphasizing their diversity (Combourieu & Galtier, 1985 ; Galtier et al., 2007). He showed with *Coumiasperma*, the only permineralized ovule discovered from Montagne Noire, that some early ones may have departed from the classical hydrasperman type (Galtier & Rowe, 1989).

Jean Galtier was much interested in comparing the morphological and architectural evolution of the early ferns and early pteridosperms, both groups being characterized by the

45 possession of large and complex fronds. One of the most important papers he devoted to this
46 question is certainly his review on the evolution of the megaphyll (Galtier, 2010).

47
48 Jean Galtier's long friendly and fruitful collaboration with Andrew Scott on Early
49 Carboniferous plant assemblages from Scotland started in the early 1980's (Galtier & Scott,
50 1985 ; Scott et al., 1986). It involved numerous field trips, revisiting Albert Long's localities in
51 Berwickshire and discovering many new localities yielding anatomically preserved plants.
52 Numerous papers were published on the new plant assemblages, their environment and
53 composition, with many new taxa described. The Scott et al. (1984) paper is one of the most
54 widely cited among those devoted to Early Carboniferous floras.

55
56 In 1993, Jean Galtier was awarded a "Distinguished Visiting Professor" fellowship for a
57 three-month visit at Tom Taylor's laboratory at Ohio State University. This was the beginning of
58 a new friendly collaboration, which gave him the opportunity to describe a new filicalean fern
59 from the Permian deposits of Antarctica, and to enter the hidden world of fungi with the Taylor's
60 team (Taylor et al., 1994 ; Krings et al., 2007 ; Harper et al., 2016).

61
62 Early in his career when he collected fossils in the Autun surroundings, Jean Galtier
63 became interested in Permian fossils. However, it is around the late 1990's that he started to
64 spend more time in studying Permian plants and assemblages through collaborations with Jean
65 Broutin, Ronny Rößler, Shi-Jun Wang and Jason Hilton. With the former, he revised the
66 succession of floras preserved in the Lodève basin (southern France) (Galtier & Broutin, 2008).
67 He contributed with Shi-Jun Wang and Jason Hilton to the description of new taxa of diverse
68 affinities from China (Wang et al., 2006 ; Hilton et al., 2009). Ronny Rößler involved him in the
69 description of new ferns and fern-allies from Brazil (Rößler & Galtier, 2002, 2003). There are
70 few continents that Jean Galtier did not investigate. Apart from Europe, America, China, and
71 Antarctica, his work on plant assemblages from North Africa and Australia are also noteworthy
72 (Galtier et al., 2007 ; Decombeix & Galtier, 2017).

73
74 Throughout his career, Jean Galtier enjoyed prospecting, collecting and preparing his
75 fossils himself. He considerably expanded the palaeobotany collections of the University of
76 Montpellier. In the 1980-90's, it was not uncommon to find him breaking rocks in the garrigue of
77 Montagne Noire or around the Stephanian coal deposits of Graissessac, when he was not in the
78 laboratory preparing peels with hydrofluoric acid. In his articles, he has always been careful to
79 provide numerous illustrations to support crucial points of structure and development. For his
80 drawings, he relied heavily on the use of the camera-lucida, of which he is an avid user. In order
81 to compare his specimens with already known taxa, Jean Galtier has never been satisfied with a
82 purely literary knowledge of the fossil record. He visited museums and laboratories around the
83 world to examine the types himself. His unparalleled expertise of all major Paleozoic plant
84 groups is based on his extensive knowledge of most major collections in Europe and North
85 America.

86
87 Jean Galtier won prestigious awards. Just after his thesis he received the bronze medal of
88 the CNRS then, in 1989, the Paul Bertrand prize of the Academy of Sciences in Paris, and, in

89 2010, the W.J. Jongmans medal for excellence in palaeobotany and palynology. Jean Galtier
90 actively promoted and served palaeobotany. After having been vice-president of the International
91 Organization of Paleobotany (IOP) for four years, he was elected president for the period 1996-
92 2000. He has also long served on the editorial board of two journals, *Review of Palaeobotany and*
93 *Palynology*, and *Palaeontographica B*. He has been a corresponding member of the Botanical
94 Society of America since 2006.

95
96 Jean Galtier retired in 2005 and obtained the status of emeritus. For his retirement, a well-
97 attended meeting, which included a field trip to his favorite locality of Graissessac, was held in
98 April 2006 in Montpellier. Since his retirement he has remained very active, assisting and
99 collaborating with numerous younger colleagues.

100
101 The present issue, which honors Jean Galtier's career and dedication to palaeobotany,
102 contains 24 research papers dealing with taxonomy, ecology and evolution, and written by his
103 colleagues, close collaborators and friends. It covers 400 million years of plant evolution, from
104 the Lochkovian to the Neogene, the largest section being devoted to the Paleozoic. All major
105 groups of land plants are considered, i. e., the eophytes, early tracheophytes, lycopsids, ferns and
106 allies, pteridospermales, putative cycads and ginkgos, conifers, and angiosperms. Charophytes,
107 fungi and micro-organisms are also represented, with three papers. The 24 articles in this issue
108 open as many windows on major steps in the evolutionary saga of land plants and their
109 increasingly better understood environmental contexts.

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113 complicated context of the Covid-19 pandemic, and the more than 50 reviewers who have given
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116 117 **Supplementary Data**

118 S1: List of Jean Galtier's publications.

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