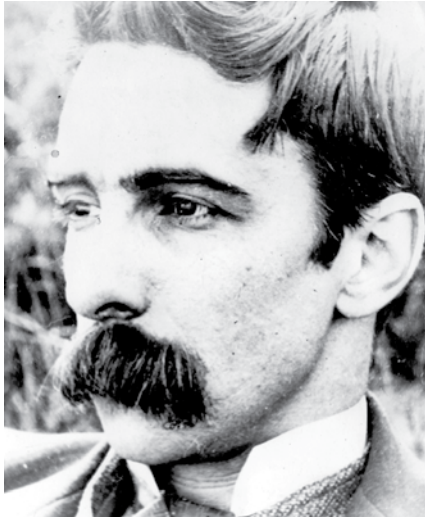


Irish 'Rock Stars'

Patrick Wyse Jackson, Trinity College Dublin, continues his series

John Joly (1857-1933)



John Joly: an early photograph (Courtesy of the late Ted Nevill).

When the Russian scientist Dmitri Mendeleev developed the idea of the Periodic Table of the elements over a two-week period early in 1869 it is unlikely that he would have predicted the nationalistic fervour that marked the discovery and naming of elements in the late 1800s. Gallium (for France) in 1875, Germanium in 1886 and Polonium in 1898 were so named. In 1922 John Joly of Trinity College, Dublin named Hibernium, a new radioactive element he had discovered in granite. Unfortunately for both Joly and Ireland it was later discovered that the new element was in fact Samarium that had been isolated over sixty years earlier.

Joly was born on 1st November 1857 in Hollywood House (the Rectory), Bracknagh, County Offaly, the third and youngest son of John Plunket Joly and Julia Anna Maria Georgina née Comtesse de Lusi, and this year we are celebrating the sesquicentenary of his birth. He was a distinctive man who sported a bushy moustache and wore pince-nez perched on his nose. By all accounts he was highly popular with his students, and very generous to colleagues with his time and expertise.

Educated at the Rathmines School in Dublin, and later at Trinity where he studied classics and modern literature and later engineering. He was to remain there for the rest of his life, holding

assistantships in engineering and then in physics before obtaining the Chair of Geology and Mineralogy. In his early career he can be regarded as being an inventor and physicist. His steam calorimeter allowed for the measurement of the specific heat of minerals and this piece of equipment later played an important role in the development of the kinetic theory of gases.

Joly had the ability to focus his mind on a wide variety of subjects outside his immediate academic discipline, and together with his life-long friend the botanist Henry Horatio Dixon, he explained the mechanism of the 'ascent of sap' or transportation of water in plants. They showed that this was driven by a pressure gradient set up in plant vessels through the loss of water from the surface of leaves by transpiration. In the late 1890s he invented a system of colour photography called the '**Dublin method**' or 'Joly Method' in which he produced colour images by lining up a glass plate marked with thin lines of the primary colours with a negative. Many of his images are still-life compositions of plants but also include a stuffed parrot. He established a business on Brunswick Street (now Pearse Street), Dublin to exploit his invention but it failed, as it proved difficult to produce colour prints from his glass slides. Until the advent of digital methods Joly's invention was essentially the scheme used for colour photography.

After his professorial appointment in 1897 he shifted his focus to matters more geological, but he cannot be regarded as a field geologist. To my knowledge he never drew a geological map, nor did he accumulate large collections through his own collecting. However he is now remembered in geological circles for his considerable and important research into geochronology and in the fledgling subject of geodynamics and tectonics.

Towards the end of the nineteenth century William Thomson (later Lord Kelvin) argued that the Earth was between 24 and 40 million years old. However in 1899, Joly published an influential paper in the Scientific Transactions of the Royal



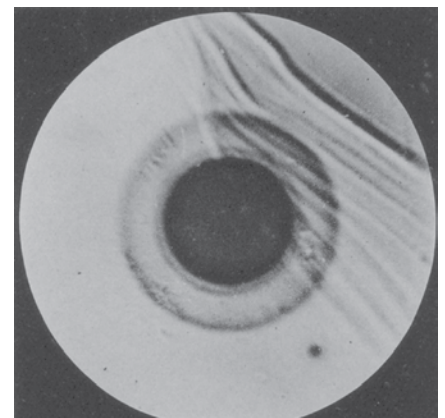
Colour image of a parrot taken by Joly using his 'Joly Method'. This stuffed bird is now in the Department of Geology, TCD.

Dublin Society in which he calculated the Earth to be 100 million years old, and soon the earlier estimate evaporated away. Joly derived his global time-span from an estimate of the volume of sodium in the oceans that he divided by the rate at which it was carried into the oceans by rivers. It is not surprising that he turned to the sea for his inspiration as he was a notable yachtsman, who was also a Commissioner for Irish Lights for whom he undertook an annual inspection of lighthouses. He was a pioneer in the field of radioactivity and its connections to geology. In 1907 he demonstrated that pleochroic halos found in biotite in some granites were formed as a result of the decay of radioactive zircon crystals. He established the Irish Radium Institute in 1914 that exploited the medical advantages of radium.

Joly was probably the most brilliant Irish scientist of his generation. He was elected a Fellow of the Royal Society before being admitted to the Irish equivalent, and received medals from the Royal Society, the Royal Dublin Society and the Geological Society.

He died in Dublin on 8th December 1933 and is buried in Mount Jerome Cemetery. Forty years later he had a crater on Mars named for him, which was appropriate given his research on the nature and origin of Martian Canals.

Patrick N. Wyse Jackson, Trinity College, Dublin



Pleochroic halos in Leinster Granite from Co. Carlow.