

Obituary

Colin Patterson (1933–98)
Palaeontologist – reformer
of the fossil record

Colin Patterson, who died in London earlier this year at the age of 64, will be remembered for his part in the cladistic reform of palaeontology. This was the period in which the traditional method in palaeontology, the search for ancestors, was abandoned in favour of the search for the sister group — of evidence of the nearest relative.

Patterson was born in Hammersmith, west London, in 1933, and educated at Tonbridge school and Imperial College, London. His first appointment was as a lecturer at Guy's Hospital Medical School. While doing that job, he finished his PhD thesis on Mesozoic teleost fishes, which was published by the Royal Society in 1964.

It was this and other early studies of fossil fishes and their anatomy that led to Patterson's decisive response to the challenge of cladistics as it developed in the late 1960s. His response took years to mature and it was achieved through collaboration with colleagues working in museums in Europe and the United States. Eventually, he came to that vantage point of understanding described by Thomas Paine (1782): "We see with other eyes; we hear with other ears; and we think with other thoughts, than those we formerly used. We can look back on our own prejudices, as if they had been the prejudices of other people."

The challenge came in 1966 in a monograph by the senior entomologist of Naturhistoriska Riksmuseet in Stockholm, Lars Brundin: "Transantarctic relationships and their significance, as evidenced by chironomid midges", published by the Royal Swedish Academy of Sciences. Brundin summarized phylogenetic principles as developed by Willi Hennig, and critically appraised world biogeography as summarized by Philip Darlington.

Brundin's work became a favoured topic during informal and peripatetic debate at the Natural History Museum in South Kensington — then the British Museum (Natural History), where, in 1962, Patterson had been appointed scientific officer in the department of palaeontology. Discussions took place once or twice daily under the museum's colonnade, the backdoor service area where open flame and resulting tobacco smoke were tolerated. Patterson later wrote of those times that "After 10 years' work in that field, I read Brundin, and still recall the



excitement with which I realized that there is a logical basis to evolutionary relationships which I had never seen discussed".

Such evolutionary relationships include those between ancestors and descendants. Patterson explained that it is this type of connection that fossils are expected to document. When viewed as the relationship between two groups, descent means that one (the ancestral group) is paraphyletic — characterized only by lack of homologies rather than their presence. He soon came to see all alleged ancestral groups as "paraphyletic, and therefore unreal, obscuring rather than solving questions of evolutionary relationship.... Why basal ancestral groups should be an effective bar to progress finally became clear [in 1966] with the publication ... of Hennig's *Phylogenetic Systematics*, and of Brundin's exposition of Hennig's methods."

Patterson credited Hennig with the discovery of paraphyly, but it was Patterson, as much as or more than anyone else, who realized the implications of the equation of ancestry and paraphyly for the fossil record generally. This he accomplished through his empirical work, and in review articles on ichthyology, palaeontology and biogeography, and on the contrasts between morphological and molecular biology. In detail of description and eloquence of interpretation and argument, particularly in oral presentation, he was without peer. He asked, for example, "Is it not strange that the justification of phylogeny, as something beyond systematics, resides in extinct paraphyletic groups? For those groups are the inventions of evolutionists, those who appeal to them as demonstrating the path of descent." With Patterson in mind, Brundin commented

that, "Little by little some palaeontologists have perceived that Hennig's principles of phylogenetic systematics meant a revolution to their science".

Revolution provokes counter-revolution. Readers may remember an appalled Beverly Halstead and his thundering commentaries in the late 1970s and early 1980s, which with editorial blessing later became directed towards cladistics as reflected in Halstead's "Museum of errors" (*Nature* 288, 208; 1980). The target was the exhibits on dinosaurs and humans, then on display at the Natural History Museum, with explanatory texts providing interpretations according to cladistic principles. For Halstead these "present[ed] the public for the first time with the notion that there are no actual fossils directly antecedent to man. What the creationists have insisted on for years is now being openly advertised by the Natural History Museum." Creationists took notice, but the sky neither trembled nor fell — except upon Little Essex Street, then the site of *Nature's* editorial office, in the form of vigorous responses from Patterson and many others.

In the mid-1980s Patterson avidly embraced the possibilities offered by molecular systematics. Too hopefully, it seems in retrospect, he saw in the molecularly based neutral theory of evolution an equivalence in the methods of phenetics and cladistics: "It should follow that the prospects for a unified discipline of systematics are excellent; clocks and clades show the way forward". Ten years later, he ended a review of molecules versus morphology (with two colleagues of the museum): "As morphologists with high hopes of molecular systematics, we end this survey with our hopes dampened. Congruence between molecular phylogenies is as elusive as it is in morphology, and as it is between molecules and morphology."

Although he formally retired from the Natural History Museum in October 1993, Patterson continued working there as an honorary research fellow. On 9 March, however, he was mortally stricken with heart failure. His professional life is summarized, and his many publications are listed, in the first chapter of *Interrelationships of Fishes*, published by Academic Press in 1996. That legacy will last for many years to come.

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