

## Dinosaurs and other extinct saurians: a historical perspective – introduction

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The discovery of dinosaurs and other large extinct 'saurians', a term under which the Victorians commonly lumped ichthyosaurs, plesiosaurs, pterosaurs and their kin, makes exciting reading. The story of how early 'fossilists' first found the remains of these 'primeval monsters' has been told again and again in popular and semi-popular books about the history of palaeontology. Mary Anning making a living by collecting extinct reptiles along the Dorset coast, William Buckland and Gideon Mantell finding the 'terrible lizards' for which Richard Owen was to coin the word 'Dinosauria', O. C. Marsh and E. D. Cope fighting over new fossil vertebrates in the American West – all of these well-known stories have almost achieved the status of legends, and have often been retold with little regard for historical or scientific accuracy.

The purpose of the present volume is not to retell these tales. The papers in this collection focus on relatively little-known episodes in the discovery and interpretation (from both a scientific and an artistic point of view) of dinosaurs and other Mesozoic animals. They cover a long time span, from the beginnings of scientific palaeontology to the present, and deal with many parts of the world, from the Yorkshire coast to central India, from Bavaria to the Sahara. The characters in these stories include professional palaeontologists and geologists (some of them well known, others more obscure), explorers, amateur fossil collectors and artists, linked together by their interest in Mesozoic creatures. The papers are diverse in their scope and approach, some dealing with a particular researcher or artist, others with a well defined group of fossil organisms or the development of a scientific concept, others with a fossil locality or a region.

A first group of papers concerns collections, those who brought them together and those who studied and curated them. **Evans** focuses on the important

role of collections – and therefore collectors – in the early development of vertebrate palaeontology. Although the emphasis is on Britain, examples from The Netherlands and France are also mentioned, all showing how the growth of large collections, which sooner or later found their way into museums, was vital for comparative studies and, therefore, for our understanding of various groups of fossil reptiles. **Torrens** tells the sad story of William Perceval Hunter, a much forgotten naturalist who, among many other pursuits, studied the geology of the Isle of Wight and the large reptiles of the local Wealden, before he ended his life in a lunatic asylum. **Noë & Liston** provide new information about the life and work of Alfred Leeds, one of the most famous collectors of fossil reptiles in Britain, whose superb specimens from the Oxford Clay of the Peterborough area can be seen in many museums in England, Scotland and elsewhere. **Fanti** recalls the role of the sponsored or affluent intelligensia in the development of geology and vertebrate palaeontology as significant sciences in the late nineteenth century with an outline of the curatorial, scientific and inspirational teaching skills of Italian Giovanni Capellini. **Moody & Naish** provide a brief biography of Alan Charig, who in many ways personified British research on dinosaurs during the second half of the twentieth century by both publishing significant scientific contributions and reaching out to the general public through popular books and television programmes. Although many of the scientists who discovered and studied extinct reptiles were men, the contribution of women should not be ignored, as revealed by **Turner et al.** Mary Anning has attained an almost iconic status, but she was also the first of a long series of women working on fossil reptiles, some of whom, like Tilly Edinger, achieved prominence in their field,

while others remained obscure despite their contributions.

Quite a few of these collectors were pioneers in their field, who broke new ground by discovering the remains of dinosaurs and other Mesozoic reptiles in regions that had been hitherto virtually untouched by palaeontologists. One of them is Wilhelm (also known as Guillermo) Schulz. **Pereda Suberbiola *et al.*** provide a biographical essay on this German mining geologist who spent most of his working life in Spain in the mid-nineteenth century, and is mostly remembered for his successful search for mineral resources, but was also the first to report Mesozoic reptiles from that country. In a more exotic setting, **Carrano *et al.*** tell the often adventurous story of the discovery of dinosaurs in what was then British India, from the first finds by Sleeman in 1828 (only a few years after the epoch-making discoveries by Buckland and Mantell in England) to Matley's extensive collecting efforts between 1917 and 1933, as a result of which much is now known about the Late Cretaceous dinosaur fauna of India. In some instances, it turns out that discoveries of spectacular dinosaur specimens had been preceded by more obscure finds that attracted little attention. In this vein, **Buffetaut** shows how remains of spinosaurid theropods were discovered well before Ernst Stromer first described *Spinosaurus aegyptiacus*, from the Cretaceous of Egypt, in 1915. Teeth of these unusual dinosaurs were described as early as the 1820s by Mantell and Cuvier, but because of their peculiar morphology they were mistaken for crocodile teeth, a misinterpretation shared by later researchers such as Owen and Sauvage.

While the history of research on extinct 'saurians' contains many instances of outstanding discoveries made by individual scientists, in many cases significant advances have been the result of the efforts of a succession of dedicated researchers over longer periods of time. This is ably illustrated by **Whyte *et al.*** on the discovery of dinosaur remains in the Jurassic of the Yorkshire coast. The story, which began in the early nineteenth century and is still going on today, has taken a new turn with the discovery of abundant footprints that had largely escaped the attention of earlier researchers. Fossil footprints are also the topic of the paper by **Bowden *et al.*** about *Chirotherium*, an ichnite that long remained a mystery, but attracted the attention of a group of dedicated 'footprint hunters' based in Liverpool, who not only tried to identify the track maker but also attempted to reconstruct the environment in which these tracks were made. **Naish** shows how dinosaur discoveries in the Wealden of England during the nineteenth century gradually led such well-known experts as Owen and Seeley

to recognize the existence of pneumaticity in dinosaur bones and to speculate about its meaning.

Among the many controversies surrounding dinosaurs, one of the longest-enduring debates has been that about the origin of birds. **Wellnhofer** summarizes the many questions and interpretations raised by the 'primeval bird' *Archaeopteryx*, with its mixture of avian and reptilian characters, from the initial discoveries in the mid-nineteenth century to the present day. **Switek** discusses a directly related and important episode in the history of evolutionary palaeontology, viz. the recognition of the close relationship between birds and dinosaurs, with a detailed examination of Huxley's contribution to the question and how it developed through time. The paper by **Hansen** deals with the controversy about the identification of the digits in theropod dinosaurs and birds. He shows how conflicting interpretations were of considerable importance for the whole question of avian origins and for the now widely accepted idea that dinosaurs were ancestral to birds.

Ever since the first discoveries of skeletons of these flying reptiles, pterosaurs have been the focus of much attention on the part of palaeontologists. **Ösi *et al.*** both revise pterosaur specimens in Hungarian institutions and reconstruct their eventful histories, which in some cases goes back a long time, one of them having been part of the collection of Archduchess Maria Anna in the second half of the eighteenth century. **Martill** deals with discoveries of pterosaurs in England, which began in the early nineteenth century, and shows how their recognition was hampered by various misconceptions, although such renowned palaeontologists as Buckland, Mantell, Owen and Seeley were involved. **Witton** concentrates on the discovery of giant pterosaurs, which was initiated in England but really began with Marsh's find of *Pteranodon* in Kansas in 1870. Huge as it was, *Pteranodon* eventually lost its title of largest flying creature when even larger pterosaurs were found in the second half of the twentieth century.

Beyond scientific descriptions and interpretations, dinosaurs and other extinct saurians have also inspired artists, as illustrated by the last two papers in the volume. **Le Loeuff** depicts the life and work of Mathurin Méheut, a twentieth century painter whose art found wide recognition in his native Brittany. His reconstructions of prehistoric animals, including dinosaurs, ichthyosaurs and pterosaurs produced for the Institute of Geology of the University of Rennes in the 1940s during the German occupation of France, are an aspect of his work that deserves to be better known as an unusual example of palaeontological art. **Liston**, after briefly reviewing more conventional efforts,

draws attention to a little-recognized medium for palaeontological reconstruction, viz. the comic strip, and shows how fast it accepted the new image of dinosaurs as active and agile animals conveyed by the ‘Dinosaur renaissance’ of the 1970s. Finally, **Taylor** provides an entertaining review of how our understanding of the archetypal sauropod dinosaurs developed, showing how some rather outlandish reconstructions required the dislocation of joints to achieve the poses in which they were depicted.

We hope that this volume may reflect the diversity of possible approaches to the history of vertebrate palaeontology in general. Beyond the well-known episodes that have been retold many

times, much remains to be investigated. Further studies surely will reveal that the history of vertebrate palaeontology is more complex, richer and more fascinating than presently accepted.

During the preparation of this volume the Natural History Museum, London (NHM) changed the prefix code for its specimen numbers from BMNH to NHMUK. Both codes are to be found in this volume, reflecting the historical bias of specific manuscripts.

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