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Alexander von Humboldt and the hand-beast: A contribution to palaeontology from the last universal scholar

Fabien Knoll

Departamento de Paleobiología, Museo Nacional de Ciencias Naturales–CSIC, C/José Gutiérrez Abascal 2, 28006 Madrid, Spain

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Presented by Michel Durand-Delga

Abstract

Despite a certain interest in the discipline, Alexander von Humboldt did not personally contribute much to the progress of palaeozoology. His most remarkable input derived from a communication about hand-like archosaur footprints from the Buntsandstein at the very acme of the important controversy that the discovery of these fossils generated (1835). Humboldt thought that the tracks were probably from a possum-like marsupial, but he did not discount that they could be from a primate. This study is characterized by its superficiality: both the anatomical comparisons and the considerations of the functional morphology of locomotion are very poor. Its effect on the scientific community proved about nil, in both the short and the long run, and Humboldt may himself have doubted his initial conclusions in later years. Nevertheless, in contrast with some contemporaneous renowned geognosts, he had no hesitation from the beginning that the footprints were genuine. He also did not hesitate to weaken the belief of the time on the timing of the succession of organised beings in geological ages, naturally without lapsing into "antiprogressionism". ***To cite this article: F. Knoll, C. R. Palevol 8 (2009).***

Résumé

Alexander von Humboldt et la bête-main: une contribution du dernier savant universel à la paléontologie. Malgré un certain intérêt pour la discipline, Alexander von Humboldt ne s'est impliqué personnellement à faire progresser la paléozoologie que d'une manière modérée. Sa contribution la plus remarquable tire son origine d'un exposé sur des empreintes de pas d'archosaures, en forme de mains, du Buntsandstein, présenté à l'apogée (1835) de l'importante controverse que ces fossiles ont suscitée. Humboldt fut de l'avis que ces pistes étaient probablement celles d'un marsupial du groupe des phalangers, mais il ne rejeta pas qu'elles puissent se rapporter à un primate. L'étude qu'il fit publier est superficielle : les comparaisons anatomiques, tout comme les considérations de morphologie fonctionnelle, sont des plus sommaires. Son impact sur la communauté scientifique fut à peu près nul, à court aussi bien qu'à long terme, et il est tout à fait possible que Humboldt ait douté de ses premières conclusions dans les années qui suivirent. Néanmoins, à la différence de certains géognostes contemporains réputés, il n'hésita aucunement à reconnaître dès l'abord que ces empreintes de pas étaient authentiques. Il n'eut pas non plus de réticences à remettre en cause les convictions de l'époque sur l'ordre de succession des êtres organisés au cours des temps géologiques, bien évidemment sans sombrer dans « l'antiprogressionisme ». ***Pour citer cet article : F. Knoll, C. R. Palevol 8 (2009).***

Keywords: Humboldt; History of science; Ichnology; Triassic; Germany

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E-mail address: mcnfk854@mncn.csic.es.

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1. Introduction

Though somewhat inferior to the contributions that he provided to plant geography (e.g., reference [55]), the input of A. von Humboldt to historical geology and vertebrate zoology (e.g., references [58] and [62]) is still acknowledged as being as diverse as it is significant. One could therefore have expected his participation to the progress of vertebrate palaeozoology, a discipline at the interface between these two sciences, to be at least equally important. Yet this is not so.

Admittedly, Humboldt listed the study of fossils as one of the themes worthy of his attention in a letter to the poet F. Schiller in 1794 ([3], pp. 64–65), and he wrote nearly three decades later "*l'étude approfondie des corps fossiles n'embrasse qu'une petite partie de la géognosie, mais une partie bien digne de l'attention du philosophe*" ([62], p. 35). He indeed shared interest in miscellaneous issues related to palaeontology such as the preservation of large mammals in some parts of Siberia, and certainly numerous references to fossils are scattered throughout his works (e.g., in references [52,62,69,70]).

However, it seems he was not inclined to produce more than exegeses or mere general considerations. This was not a result of the lack of worthy fossil specimens at his disposal. For instance, as early as 1789, while France sank even more in the revolution, he had the opportunity to have a look at the first pterosaur discovered [78]. Yet he did not seize it to challenge the description of C. Collini [17], a former secretary of Voltaire [18], and to reveal the very particular nature of the animal. Moreover, he himself made a number of interesting fossil discoveries in the course of his various activities and travels. He directed palaeontological excavations near Bogotá [54,68,72], a fairly precursor initiative in 1801. In fact, he repeatedly found fossils in the "New Continent", particularly remains of proboscidians that he disposed of to the greatest benefit of the anatomist G. Cuvier, who called a "Mastodonte" after him (e.g., references [22,23,53,54,60]), but also "petrified" shells described by the geologist L. von Buch [15].

The sole exception to this apparent lack of sound personal involvement seems to be the case of the fossil footprints named *Chirotherium* ("hand-beast") found near Hildburghausen (then Duchy of Saxe-Meiningen, today the Free State of Thuringia) in 1833, which justifies taking a close look at the issue.

2. Discovery

The narrative of *Chirotherium* has been told several times (e.g., in reference [103]), although with varying accuracy. It appears that these footprints were first noticed in the spring of 1833 by the director of the Hildburghausen high school, the archaeologist F. Sickler (who, incidentally, was previously preceptor of Wilhelm von Humboldt's children in Italy [110]), on the slab used in the laying of the foundation wall of a small garden house. These specimens had been strongly damaged during the extraction of the sandstone panels and their transport from the quarry. Sickler promised the workers a small remuneration if they could provide him in the future with a well preserved specimen. This certainly had the desired effect because in the summer of 1834, the quarry men attentively isolated every stone that they thought could bear something of interest. The news of the discovery came rapidly to the ears of two local Hildburghausen personalities: C. Hohnbaum, a physician, and C. Barth, a copper engraver. Both brought home specimens. Through a Commissioner of Forests called H. Gleichmann, these tracks were made known to R. Bernhardi, professor of natural science at the Academy of Forestry at Dreissigacker (Meiningen), who wrote a letter on the subject (in which he interpreted the footprints as from an amphibious animal) in September 1834 [6]. In December of the same year, Sickler [107] published a brochure on the Hildburghausen footprints in which he provided not only details of the discovery but above all a plate well illustrating three types of footprints and their situation on a slab of sandstone. In this contribution, he wished that one of the most remarkable German "geognosts" of the time (and he specifically cited Humboldt as one of them) would offer a detailed investigation of the footprints of the Hildburghausen area.

3. Aftermath

Fossilised footprints have been known for centuries and the Hildburghausen examples were not even the first ones considered by the scientific community. More than 20 years earlier, dissimilar footprints were discovered in Scotland and later studied by the Reverend J. Grierson [36] and subsequent authors (Humboldt [65,66] was well aware of this discovery). We also know that *Chirotherium* footprints were discovered in England by quarrymen a dozen years before 1833 and were thought to be the tracks left by sinners attempting to escape the universal Deluge [2,93]. In fact, the commonness of *Chirotherium* in Europe and North America makes it probable that these footprints were noticed well before the 19th century, a hypothesis that may be supported by some artistic and folkloric evidence [77,92].

The short booklet of Sickler [107] was presented as a sort of open letter to the anatomist J. Blumenbach