C. R. Palevol 15 (2016) 595–605

Contents lists available at ScienceDirect

Comptes Rendus Palevol

www.sciencedirect.com

Histoire des sciences (Histoire de la paléontologie)

L'abbé Bacheley et la découverte des premiers dinosaures et crocodiliens marins dans le Jurassique des Vaches Noires (Callovien/Oxfordien, Normandie)

Abbé Bacheley and the discovery of the first dinosaurs and marine crocodilians from the Jurassic of the Vaches Noires (Callovian/Oxfordian, Normandy, France)

Arnaud Brignon

5, villa Jeanne-d'Arc, 92340 Bourg-la-Reine, France

INFO ARTICLE

Historique de l'article :
Reçu le 21 août 2015
Accepté après révision le 18 novembre 2015
Disponible sur internet le 17 mars 2016

Géré par Philippe Taquet

Mots clés :
Histoire de la paléontologie
Georges Cuvier
Dinosauria
Theropoda
Thalattosuchia
Teleosauridae
Metriorhynchidae

RÉSUMÉ

C'est à partir de la collection d'un certain « *abbé Bachelet* [sic], *naturaliste à Rouen* » que Georges Cuvier donna en 1808 les premières descriptions scientifiques de dinosaures et de crocodiliens marins (Thalattosuchia). Selon Cuvier, « *Bachelet* » n'avait rien publié sur les circonstances de la découverte de ces fossiles et un doute subsistait jusqu'à présent sur leur origine stratigraphique. Cet article dévoile pour la première fois l'identité de l'abbé Charles Bacheley (1716–1795) et présente une biographie de ce pionnier de la paléontologie normande. Il est l'auteur d'une notice publiée en 1778 sur les pétrifications des côtes du pays d'Auge entre les Vaches Noires et Trouville-sur-Mer. Ce travail passé totalement inaperçu révèle que les spécimens de la collection Bacheley étudiés par Cuvier proviennent des Marnes de Dives (Callovien supérieur) ou de Villers (Oxfordien inférieur) visibles au pied des falaises des Vaches Noires. Bacheley attribue ces restes de dinosaures et de crocodiliens marins à des « poissons », terme qui servait encore à cette époque à désigner, selon l'usage populaire, les cétacés. Bacheley n'excluait pas la possibilité que ces ossements pétrifiés pussent appartenir à des formes animales sans analogues vivants.

Keywords:
History of palaeontology
Georges Cuvier
Dinosauria
Theropoda
Thalattosuchia
Teleosauridae
Metriorhynchidae

ABSTRACT

Georges Cuvier published in 1808 the first scientific descriptions of dinosaur and marine crocodilian (Thalattosuchia) remains from the collection of a certain "*Abbé Bachelet* [sic]", a naturalist in Rouen (Normandy, France). According to Cuvier, "Bachelet" never published any papers about the circumstances of the discovery of these fossils. Since then, there has been some doubt about their precise geographic and stratigraphic origin. This article reveals for the first time the identity of Charles Bacheley (1716–1795) and presents the biography of this pioneer in Norman palaeontology. He is the author of a note published in 1778 on the petrifactions found on the coast of Pays d'Auge (Calvados) between the

Adresse e-mail : arnaud.brignon@yahoo.com

http://dx.doi.org/10.1016/j.crpv.2015.10.004

Vaches Noires and Trouville-sur-Mer. This study has gone completely unnoticed and reveals that the specimens from the Bacheley collection studied by Cuvier come from the "Marnes de Dives" (Upper Callovian) or the "Marnes de Villers" (Lower Oxfordian) of the Vaches Noires cliffs. Bacheley identified these dinosaurs and marine crocodilian remains as belonging to "fishes," which at that time also included cetaceans according to popular usage. Interestingly, Bacheley did not exclude the possibility that these petrified bones could belong to animals distinct from living forms.

Abridged English version

Georges Cuvier (1808) published the first scientific description of dinosaur remains from the vicinity of "Honfleur" in Normandy. Of course, at that time the concept of the dinosaur had not yet been invented (Desmond, 1979), and Cuvier believed that the strange opisthocoelous vertebrae found in Normandy belonged to a completely unknown crocodile. These vertebrae later served as the type material of the theropod dinosaur *Streptospondylus altdorfensis* Meyer, 1832 and are still kept in the collections of the Muséum national d'histoire naturelle (MNHN) in Paris (Allain, 2001). According to Cuvier, these fossils came from the collection of a certain "Abbé Bachelet, naturalist from Rouen". This collection also contained several remarkable remains of marine crocodilians (Thalattosuchia), many of which were illustrated and described by Cuvier (1808, 1824). A large part of what Cuvier called "gavials of Honfleur and Le Havre" was based on the fossil bones in the "Bachelet" collection. Many scientists of the 19th century then created several species on the basis of this material (Geoffroy Saint-Hilaire, 1825; Gray, 1831; Holl, 1829; Meyer, 1832), usually without clear descriptions, leading to one of the most puzzling nomenclatural problems in the history of palaeontology.

There is still some doubt as to the precise geographic and stratigraphic origin of these fossils (Buffetaut, 2013; Buffetaut et al., 1991; Hua, 2013; Taquet and Welles, 1977). Cuvier always merely indicated that the fossil bones in the Bacheley collection had been found near Honfleur. In his 1808 paper, he stated that the layer in which they had been probably discovered can be seen on both sides of the mouth of the Seine, at Cap de la Hève near Le Havre, on the one hand, and at the Vaches Noires cliffs between Dives-sur-Mer and Villers-sur-Mer, on the other. It is now known that these localities expose different formations. At Cap de la Hève, vertebrate remains are particularly abundant in the Lower Kimmeridgian clays, while at the Vaches Noires, they are rather found in "Marnes de Dives" (Upper Callovian) and "Marnes de Villers" (Lower Oxfordian) formations (Buffetaut, 1983).

Cuvier (1808: p. 89) also mentioned the work of Abbé Jacques-François Dicquemare (1733–1789). This naturalist published in 1776 a paper entirely devoted to "ostéolithes" ("bone-stones") from the Vaches Noires and Cap de la Hève. The material studied by Dicquemare could include remains of plesiosaurs and maybe even dinosaurs (Buffetaut, 1983, 2011; Taquet, 1994). The similarity highlighted by Cuvier between the fossils of the "Bachelet" collection and those described by Dicquemare introduced further confusion (Delametherie, 1816: p. 3; Passy, 1832: p. 271). Indications given by Cuvier might suggest that the fossils of "Bachelet" could come from either the Callovian/Oxfordian of the Vaches Noires, the Kimmeridgian of Cap de la Hève, or even the Kimmeridgian of the region of Honfleur, near Villerville or Cricquebœuf, for instance (Bigot, 1938; Buffetaut et al., 1991: p. 26).

Although the biography of Dicquemare is well known (Buffetaut, 1983, 2011; Taquet, 1994), the mysterious "abbé Bachelet" mentioned by Cuvier has remained up to now completely unknown. However, this naturalist holds the key to the problem, namely the origin of a great part of the "gavials de Honfleur" described by Cuvier. This question was doomed to remain unanswered; Cuvier himself wrote "I do not find that Abbé Bachelet has published anything on their deposit or how he made their discovery". The present paper finally unveils this forgotten Norman naturalist, the "victim" of a typographical error in his name, because the "naturalist from Rouen" mentioned by Cuvier was actually Abbé Bacheley. This article also answers the question of where the dinosaur and marine crocodilian fossils kept in the former Bacheley collection were discovered.

Charles Bacheley was born on January 5, 1716 in Clarbec, Diocese of Lisieux in Normandy. He embraced the ecclesiastical career and entered the priory of Saint-Hymer near his native village. Bacheley was interested in natural history and especially in geology and palaeontology. As a secular priest, he could wander at leisure the region surrounding Saint-Hymer in search of rocks and fossils. Bacheley was certainly influenced by his meeting with the versatile scientist Jean-Étienne Guettard (1715–1786), famous for being the main initiator of geological maps. Bacheley sent him fossils from Normandy (Fig. 1) and Guettard (1770) described and illustrated many of them in his *Mémoires sur différentes parties des Sciences et Arts*. Bacheley then came to settle in Rouen in 1772. He was appointed in 1779 canon of the collegiate church of Saint-Sépulcre, also known under the name collegiate St. George. He delivered free public lectures on natural history in Rouen. He died on July 10, 1795 at the age of 79.

The first known work by Bacheley dates to 1755. He communicated to the Academy of Rouen a paper in which he sought to demonstrate that rocks were formed from shellfish and other marine animals left on the lands formerly covered by the sea (Le Cat, 1757). To support his idea, Bacheley sent to the Academy a large collection of rocks containing fossils. In January 1761, Abbé Bacheley also sent to the Royal Academy of Sciences in Paris other