

# The first photographs of a dinosaur excavation in Europe: Emile Savalle and the stegosaur from Octeville (Normandy, 1898)

*Les premières photographies de la fouille d'un site à dinosaures en Europe : Emile Savalle et le stégosaure d'Octeville (Normandie, 1898)*

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**Summary** : Emile Savalle (1834-1902) was a keen amateur geologist, palaeontologist and archaeologist with a special interest in the geology and fossils of the cliffs near Le Havre, in Normandy. In 1898, he discovered a partial stegosaur skeleton in Kimmeridgian (Late Jurassic) sediments, which was excavated by the local natural history museum under the direction of Gustave Lennier, and was eventually described by Franz Nopcsa in 1911. The photographs taken by Savalle in 1898 are apparently the oldest surviving photographic record of a dinosaur excavation in Europe.

**Résumé** : Emile Savalle (1834-1902) était un actif géologue, paléontologue et archéologue amateur qui s'intéressait particulièrement à la géologie et aux fossiles des falaises proches du Havre. En 1898, il y découvrit dans des couches kimmeridgiennes (Jurassique supérieur) un squelette incomplet de stégosaure, qui fut extrait par le muséum d'histoire naturelle du Havre sous la direction de Gustave Lennier, et fut finalement décrit par Franz Nopcsa en 1911. Les photographies prises par Savalle en 1898 constituent apparemment la plus ancienne documentation photographique d'une fouille d'un site à dinosaure en Europe.

## Introduction

Although the first photographs of fossils date to the 1840s (Davidson, 2008), photography began to be used extensively to record palaeontological field activity only during the last decade of the 19th century. The large-scale expeditions of North American museums to the fossil fields of the US West were documented by photographs of landscapes, fossil localities and excavations, notably of dinosaur sites (a good selection of such early photographs can be found in Brinkman, 2010). Fewer systematic excavations of dinosaur localities were conducted in Europe at that time, and photography was not yet widely used to record them. An interesting ex-

ception is provided by a pair of photographs of the excavation of a partial dinosaur skeleton in the marine Kimmeridgian (Late Jurassic) of the Normandy coast north-east of Le Havre in 1898. The photograph in question was taken by Emile Savalle (1834-1902), an active amateur geologist, palaeontologist and archaeologist based in Le Havre. The purpose of this paper is to briefly describe this photograph and to discuss the context in which it was taken.

## A short biography of Emile Savalle

As noted in the recent biography by Lepage (2010a), Emile Savalle was born in Jumièges (Seine-Maritime), in the valley of the Seine, on 1 February 1834. He later moved to Le Havre,

where he spent most of his professional life and where he died on 1 May 1902. He worked at the registry office of the city of Le Havre for many years, but his real interests lay in scientific field work, collecting and research. After a few unsuccessful attempts at local history, he turned to geology, palaeontology and archaeology. From 1876 to his death, he was an active member of the *Société géologique de Normandie*, based in Le Havre, and contributed 22 papers to its *Bulletin* (see list in Lepage, 2010a). The *Société géologique de Normandie* had been founded in 1871 by Gustave Lennier (1835-1905), the energetic director of the Le Havre Natural History Museum (see Buffetaut, 2011), with whom Savalle apparently had excellent relations. Savalle was described as a jovial and friendly little man, much appreciated by other amateur geologists. A photograph (Fig. 1) shows him in the field wearing a dark jacket and a bowler hat and smoking a pipe (Lepage, 2010a).



Fig. 1. Photograph of Emile Savalle by Jooss, 1<sup>st</sup> November 1893. From Lepage (2010a).

Savalle was an early convert to photography, and soon became a member of the local photographic society when it was founded in Le Havre in 1892. He obviously saw photography as a useful tool for documenting geological phenomena, and especially the geomorphological evolution of the cliffs along the Channel coast in the vicinity of Le Havre. In the late 1890s, Savalle put together an album containing 173 photographs, taken by various local photographers, including himself, and showing mainly geological sites and landscapes, as well as a few prehistoric stone tools and group pho-

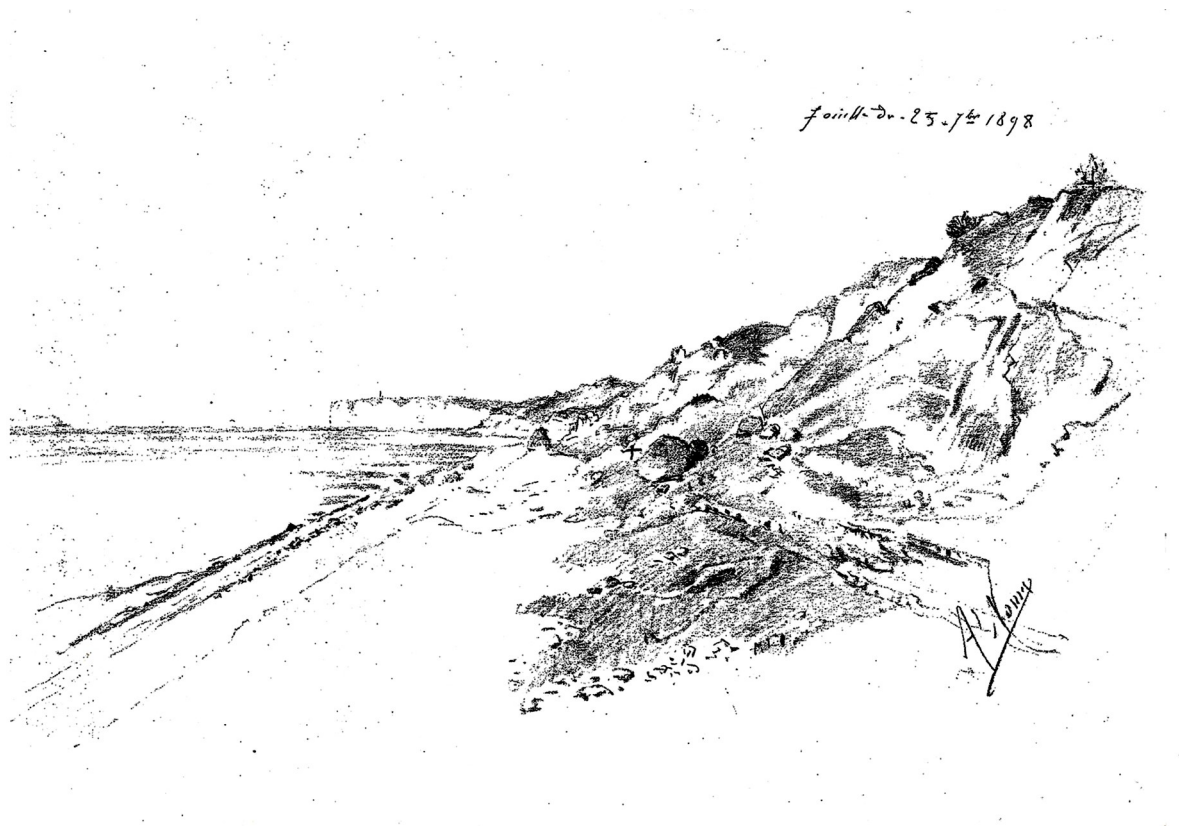
tos of geologists in the field (for a detailed study of the album and its complex history, and reproductions of all the photographs, see Lepage, 2010b).

Savalle made several important palaeontological discoveries in the cliffs in the vicinity of Le Havre (Lepage, 2010a). The most significant was that of a dinosaur skeleton, later identified as belonging to a stegosaur, which he found in 1898. A photograph was taken of the excavation of the specimen, as described below. It is historically important as probably the earliest photograph of a dinosaur excavation in Europe (or at least the earliest one to be preserved).

### The discovery of the Octeville dinosaur and Savalle's photographs

Although contradictory dates (1896, 1897) have been given for the discovery of the dinosaur skeleton found by Savalle at Octeville, it has conclusively been shown that it took place in April 1898 (Lepage, 2010a). According to Lennier (1899), Savalle first found a block of Kimmeridgian limestone containing fossil bones, lying on the pebbles of the beach, near the village of Octeville, about 5 km north of Le Havre. He notified Lennier, and the block was taken to the Natural History Museum in Le Havre. After some preparation, it became apparent that the bones belonged to a dinosaur. Lennier and Savalle then decided to start an excavation in the upper Kimmeridgian layer from which the block came. After the removal of some rubble, more bones appeared. The excavations were made difficult and dangerous by rockslides, however, and had to be discontinued, with the hope of resuming them the next Spring.

A sketch of the locality (kindly provided by Mrs Jacqueline Bonnemains, former curator of the Lesueur collection at the Le Havre Natural History Museum) was made on 25 September 1898 by the artist Arcade Noury, who frequently worked for the Le Havre Natural History Museum. It simply shows the site, without any activity taking place (Fig. 2). Noury also produced a watercolour of the site (Fig. 3) showing a group of workmen, accompanied by a dog, busy excavating the fossiliferous Kimmeridgian layer. This watercolour was first published in the paper by Nopcsa (1911) in which the Octeville dinosaur was described (it has since then been reproduced in Buffetaut *et al.*, 1993; Buffetaut, 1995; Lepage, 2010a; Buffetaut, 2011).



**Fig. 2.** Sketch by Arcade Noury showing the dinosaur site at Octeville in September, 1898. Courtesy of Mrs Jacqueline Bonnemains.



**Fig. 3.** Sketch by Arcade Noury showing the dinosaur site at Octeville in September, 1898.

IMP. LECHE, ROUEN.



Savalle's album contains two photographs of the dinosaur locality at Octeville (Lepage, 2010a, p. 235). The caption reads "La Brière : Fouilles, pour la recherche de l'Iguanodon" (*La Brière: Excavations, in search of the Iguanodon*). La Brière is the name of the site at Octeville. The bones were first erroneously referred to *Iguanodon*, see below). Photo n° 92 (Fig. 4) is of relatively poor quality. It shows the pebble beach and the cliff, with a staff apparently marking the place where the bones were found. Photo n° 93 (Fig. 5) is much more informative. It shows the whole section as seen from the shore, from the pebbles on the beach up to the top of the cliff. In the centre, a group of three people is visible. Savalle identified them with pencil annotations. The man with a long beard on the left, standing a little apart, is the artist Arcade Noury. In the middle, showing his back and leaning on a stick, is Gustave Lennier. Close to him on the right is a man in shirtsleeves wielding a pickaxe. He is a workman by the name of Mallet, nicknamed "père Mallet" (*Father Mallet*). Nothing can be seen of the fossil bones - apparently Mallet is removing the overburden (it is hoped that the extraction of the fossils was done with more delicate tools). There is no indication that the workers used any of the field techniques, such as plaster jackets, that had been pioneered at Bernisart (Norman, 1987) and were used in the American West (Brinkman, 2010). Actually, Lennier (1899) mentioned that the bones were taken out in several pieces, suggesting rather rough excavations methods. Although it shows relatively few details, Savalle's photograph appears to be earliest known photographic record of the excavation of a dinosaur site in Europe.



Fig. 4. Sketch by Arcade Noury showing the dinosaur site at Octeville in September, 1898.



Fig. 5. Top: photograph n° 93 in Savalle's album, showing excavations at the Octeville dinosaur site. Bottom: close-up showing, from left to right, Arcade Noury, Gustave Lennier and "Père Mallet". Photograph by Savalle, after Lepage (2010b).

### The subsequent history of the dinosaur from Octeville

After the 1898 excavations recorded in Savalle's photograph (and Noury's sketches), the dinosaur skeleton from Octeville had an eventful history which is summarised below (for further details, see Buffetaut *et al.*, 1993; Buffetaut, 1995; Lepage, 2010; Buffetaut, 2011). The discovery was announced at the *Société géologique de Normandie* by Lennier in November 1898, which resulted in the publication of a short note (Lennier, 1899). Lennier gave a brief account of the excavations and noted that a series of vertebrae, rib fragments, a sacrum and parts of the pelvis and a limb bone had been found. He also mentioned that preparation had taken several months and that he was not able to give a precise identification of the dinosaur, although it was probably very close

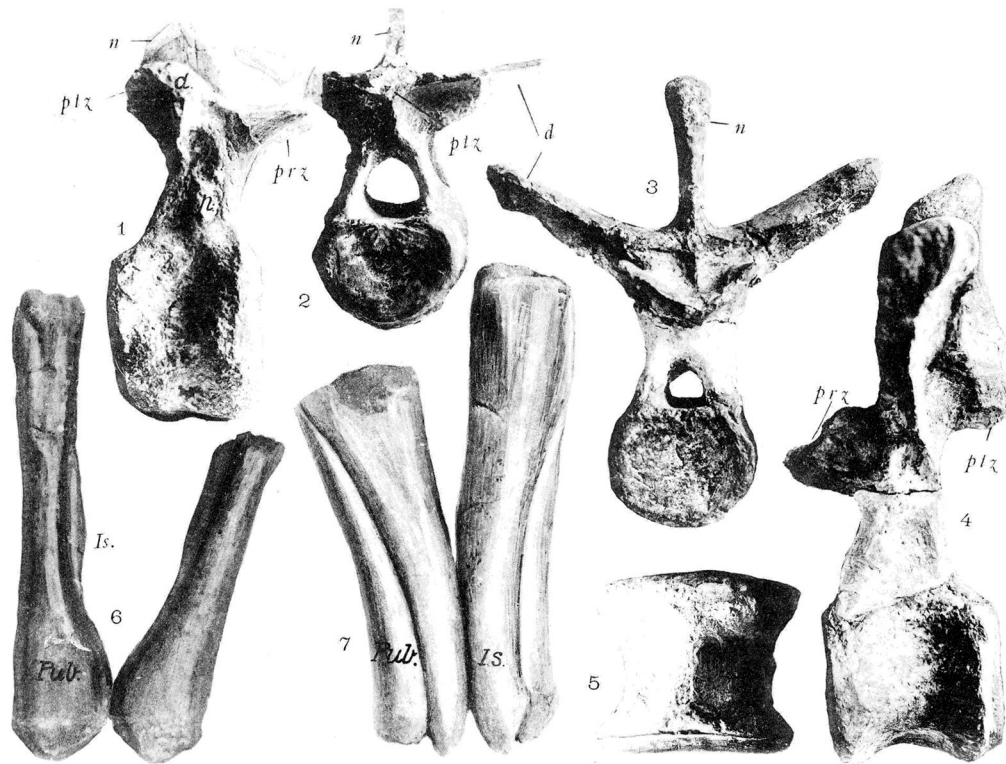


Fig. 6. Stegosaur bones from Octeville, after Nopcsa (2011).

to the *Iguanodon bernissartensis* kept at the museum of natural history in Brussels. This reflects the impact that the Bernissart discoveries, beginning in 1878, had had on the international palaeontological community. However, the tentative identification was not based on detailed comparisons. Lennier added that he had presented the discovery at a meeting at the Paris Natural History Museum, which had attracted the attention of the director (Alphonse Milne Edwards) and the head of the palaeontology department (Albert Gaudry). In his 1899 note, Lennier mentioned that the Paris scientists had offered to fund further excavations at Octeville, with the proviso that the specimen would become part of the collections of the National Museum (where a new palaeontology gallery had just been opened). Not unexpectedly, Lennier declined the offer, as he understandably wished to keep the dinosaur skeleton in Le Havre. Apparently, the renewed excavations planned for 1899 did not take place.

By the time Savalle died in 1902, the incomplete dinosaur skeleton from Octeville had not yet been described. In 1904, Lennier still mentioned it as *Iguanodon* ? in a guidebook for the Le Havre Museum (Lennier, 1904, p. 145). It was only in 1911, nine years after Savalle's death and six years after that of Lennier, that

the Octeville skeleton was finally described. At the beginning of the year, Franz Nopcsa, coming from England, stopped in Le Havre to study the specimen (see Buffetaut, 2011, for details about Nopcsa's visit). In a paper published in the *Bulletin de la Société géologique de Normandie* (Nopcsa, 1911), he identified it as a stegosaur, and referred it to a new species of the genus *Omosaurus* Owen, *O. lennieri* (Fig. 6). The name chosen by Nopcsa caused some resentment among friends of the late Savalle, who considered that the dinosaur should have been named after him (Lepage, 2010a). The skeleton from Octeville was destroyed, with the greatest part of the collections of the Le Havre Natural History Museum, by an Allied air raid in September 1944 (see Buffetaut, 2011, for details). Since no casts had been made, all that remains of it is Nopcsa's description, together with the documentary evidence about its locality provided by Noury's sketches and Savalle's photographs.

## Conclusion

In the 1890s, Emile Savalle was a pioneer in the use of photography for the documentation of geological phenomena, as attested by his remarkable album. In this context, his record of the dinosaur excavation at Octeville in 1898 can be considered as marginal, insofar as it



consists of only two photographs, which provide few details about the way the work was conducted. Nevertheless, at that time few palaeontologists outside North America took the trouble of making a photographic record of their excavations, perhaps because the available equipment was still rather heavy and cumbersome (see Lepage, 2010b, for examples). From that point of view, Savalle's efforts are noteworthy. They anticipated the rapid development of palaeontological field photography in the early 20th century, which is well illustrated by the photographic records of the German Tendaguru expeditions of 1909-1912 (Hennig, 1912) and the Central Asiatic Expeditions of the American Museum of Natural History in the 1920s (Andrews, 1932). Savalle's album is a unique and highly valuable document and it is hoped that it will be possible to preserve it for posterity under proper conditions (Lepage, 2010b).

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