PALÉONTOLOGIE

The first published photograph of Aepyornis eggs? Alphonse Milne-Edwards, Alfred Grandidier and the Madagascar exhibition (1895)

La première publication d'une photographie d'oeufs d'Aepyornis? Alphonse Milne-Edwards, Alfred Grandidier et l'exposition de Madagascar (1895)

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Summary: The earliest published photograph of *Aepyornis* eggs seems to be an illustration in a paper by Alphonse Milne-Edwards published in 1895. It shows three eggs on display at an exhibition about the natural history of Madagascar at the Paris Natural History Museum. The exhibition was organised by Milne-Edwards, with the help of the explorer Alfred Grandidier, to foster interest in Madagascar among the public at a time when the French army was invading the island. The *Aepyornis* eggs were part of an undisguised effort of colonial propaganda.

MOTS-CLÉS

Aepyornis
Œufs
Madagascar
Exposition
propagande coloniale

Résumé : La plus ancienne photographie d'oeufs d'*Aepyornis* paraît être une illustration d'un article d'Alphonse Milne-Edwards publiée en 1895. Elle monte trois œufs présentés à une exposition sur l'histoire naturelle de Madagascar au Muséum d'histoire naturelle de Paris. Cette exposition était organisée par Milne-Edwards, avec l'aide de l'explorateur Alfred Grandidier, pour développer l'intérêt pour Madagascar dans le grand public à un moment où l'armée française envahissait l'île. Les œufs d'*Aepyornis* faisaient partie d'un effort non déguisé de propagande coloniale.

Introduction

Aepyornis is a recently extinct giant bird which inhabited Madagascar perhaps until the 17th century (Buffetaut, 2018). It is well known for the huge size of its eggs, which can reach a volume of ten litres (Angst & Buffetaut, 2017) – they are the largest known eggs. In a recent paper (Buffetaut, 2019) I reviewed nineteenth-century illustrations of *Aepyornis* eggs, and mentioned that the first photographs of such eggs to have been published apparently were in a paper by Meyer and Heller (1900), although drawings had appeared as early as 1851 (Anonymous, 1851a, b), soon after the first description of *Aepyornis* by Isidore Geoffroy Saint-Hilaire (1851). It now turns out that an earlier photograph of *Aepyornis* eggs had been published in 1895, a few years before the paper by Meyer and Heller, by the French zoologist and palaeontologist Alphonse Milne-Edwards (1835-1900).

Milne-Edwards was a leading expert on extinct birds and on several occasions had worked

on *Aepyornis* skeletal remains collected in Madagascar by the explorer Alfred Grandidier (1836-1921). This early photograph illustrated a paper published in connection with an exhibition held at the Paris Natural History Museum in 1895, in which both Milne-Edwards and Grandidier were directly involved, for reasons that were not entirely scientific. The photograph, the exhibition and their peculiar historical context (the French invasion of Madagascar) are discussed below.

The 1895 Madagascar exhibition at the Paris Natural History Museum and its historical and political setting

In 1895, the Muséum d'Histoire Naturelle in Paris held a temporary exhibition about the natural history (including zoology, botany and geology, as well as geography and ethnography) of Madagascar. The timing of the exhibition owed nothing to chance: it took place while a French expeditionary corps was invading Madagascar, with the obvious intention of turning the island into a French possession. After many years of tension following a French attempt to establish a protectorate on Madagascar, in October 1894 war had broken out between the French Republic and the Merina (or Hova) monarchy that ruled the island. French troops had landed at Majunga, on the north-western coast, in April 1895. They trudged slowly over difficult terrain towards the capital, Antananarivo, in the central highlands, meeting little resistance from the Malagasy army but falling victim to tropical diseases (only 25 French soldiers were killed in action, while 5,756 died of disease). After the fall of Antananarivo on 30 September 1895, Madagascar became a French protectorate, and then a colony in 1896.

The Madagascar zoological, botanical and geological exhibition at the Paris Natural History Museum opened on 6 June 1895 and lasted until the end of the year (Anonymous, 1895a). It clearly served propaganda purposes, its main aim being to make Madagascar better known to the French public in order to increase support for the military expedition, at a time when anticolonial feelings were developing (Bonneuil, 1999). The papers published in the *Revue générale des sciences pures et appliquées* issuing from the public lectures given in connection with the exhibition leave no doubt about that. Caustier (1895) in his introductory paper about the geography, flora and population of Madagascar, made this amply clear, stressing the fact that a better knowledge about the island on the part of the French public was a prerequisite for successful colonisation. This exhibition was part of a more general effort by the Paris Natural History Museum to encourage and support colonial expansion (Bonneuil, 1999). As noted by Sauvage (2010: 112), "modern museums as we know them were composed according to a colonial paradigm" and justifying colonial expansion was part of their agenda – the Paris Natural History Museum was no exception (although it sent collectors to all parts of the world, not only French possessions, as noted by Bonneuil, 1999). Interestingly, as late as 1946, the Paris Natural History Museum organised an exhibition of its Madagascan collections, to celebrate 50 years of French colonial rule (Chevalier, 1946). While French scientists seem to have largely supported the invasion of Madagascar, it is worth noting that others did not share this colonial enthusiasm: in 1895, the American naturalist William Louis Abbott (1860-1936), who had collected in Madagascar for the Smithsonian Institution in 1890, traveled back to the island with medical supplies in a rather hopeless attempt to help the Merina kingdom in its fight against the French invaders (Taylor, 2015).

The 1895 Madagascar exhibition was seen by more than 120,000 visitors (300,000 according to Bonneuil, 1999). It had been initiated by the then director of the museum, the zoologist and palaeontologist Alphonse Milne-Edwards (see Lacroix, 1926a, for a biography and list of publications; **Fig. 1**), who had a special interest in Madagascar, having described many Madagascan mammals and birds, both living and fossil. As early as 1869, Milne-Edwards had collaborated with the explorer Alfred Grandidier (see Lacroix, 1926b, Monnier, 2017 and Faure *et al*., 2019 for biographies and lists of publications; **Fig. 1**) to describe *Aepyornis* remains collected by the latter during his expeditions to Madagascar (Milne-Edwards & Grandidier, 1869). This was the beginning of a scientific collaboration that lasted until the final years of Milne-Edwards's life, resulting in many papers on the extant and extinct fauna of Madagascar. Caustier (1895), in the above-mentioned paper, noted that in the preparation of the exhibition Milne-Edwards had been assisted by Grandidier, who was then a highly respected and influential authority on everything relating to

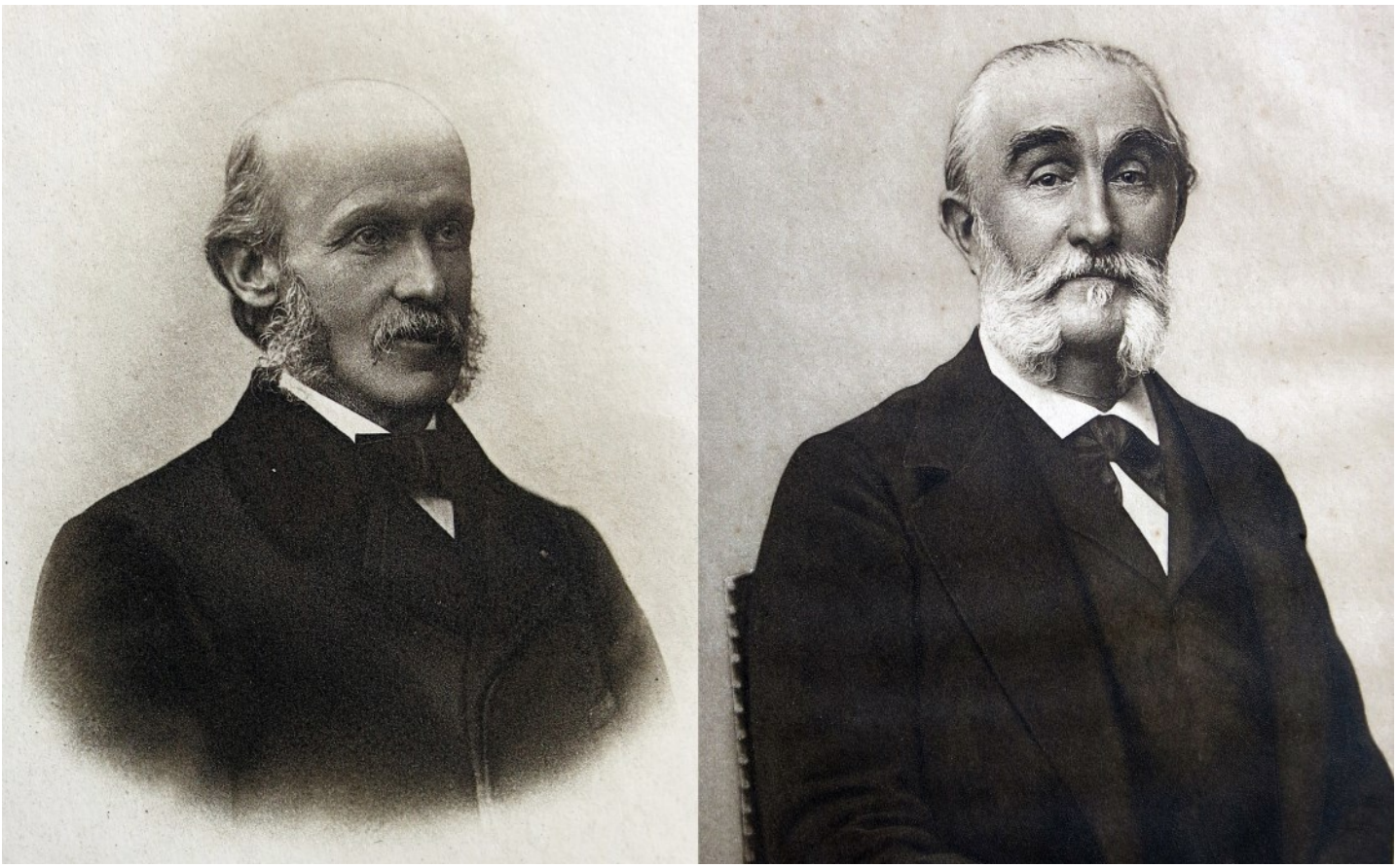

Fig. 1. Alphonse Milne-Edwards (1835-1900), left, and Alfred Grandidier (1836-1921), right, after Lacroix (1926a, b).

Madagascar (Monnier, 2017). Milne-Edwards was a member of the *Comité de Madagascar* launched in 1894 by Grandidier, a group of eminent citizens whose aim was to support French control of Madagascar in the form of a protectorate (at least initially, Grandidier opposed the idea of a colony). This committee published a monthly bulletin, in which an anonymous short description of the Madagascar exhibition was published (Anonymous, 1895b). As mentioned above, a series of lectures on various aspects of the natural history of Madagascar (including anthropology, botany and mineral resources) was organised in connection with the exhibition in the main lecture theatre of the Paris Natural History Museum (Anonymous, 1895a); they drew large audiences of more than 1,200 people (Caustier, 1895). On 30 June, 1895, Milne-Edwards gave a lecture on the animals of Madagascar, the text of which was printed, with many illustrations (Milne-Edwards, 1895), in the above-mentioned issue of the *Revue générale des sciences pures et appliquées*, published in August 1895, which contained a collection of papers on various aspects of Madagascar, including its geography, population, agriculture, mineral resources, commerce and sanitary condition.

The anonymous paper in the *Bulletin du Comité de Madagascar* (Anonymous, 1895b) and Milne-Edwards's paper issuing from his lecture on the animals of Madagascar (Milne-Edwards, 1895) are the main sources about the Madagascar exhibition of 1895 and the *Aepyornis* remains that were displayed there.

Aepyornis eggs and bones at the Madagascar exhibition

The anonymous paper in the *Bulletin du Comité de Madagascar* (Anonymous, 1895b) provides a short description of the exhibition, which was held in the newly opened (1889) zoology gallery of the Muséum d'Histoire Naturelle (today the *Grande galerie de l'évolution*). It occupied two rooms next to the main hall. One of the rooms contained plants, insects, anthropological and ethnographical specimens, as well as maps and photographs of natives, dwellings, villages and towns. The other room exhibited taxidermies of fishes, reptiles, birds and mammals as well as remains of extinct animals, including giant tortoises, large lemurs and a mounted skeleton of the dwarf hippo, *Hippopotamus lemerlei*. Especially noteworthy were remains of the giant birds *Aepyornis* and *Mullerornis*. The anonymous

author noted that next to the huge *Aepyornis* eggs were displayed eggs of an ostrich (8 times smaller), a cassowary, a hen (150 times smaller) and a hummingbird – such comparisons had been initiated by Geoffroy Saint-Hilaire (1851) in his first description of *Aepyornis* eggs and were frequently used in 19th-century publications on the topic (Buffetaut, 2019).

Milne-Edwards's paper (Milne-Edwards, 1895) is based on the lecture he gave on 6 June, 1895, on the animals of Madagascar. It is partly a piece of colonial propaganda, extolling the fight of the French soldiers to bring peace and safety to French citizens in Madagascar and encouraging colonisation by "*this France whose chivalrous and loyal spirit is never questioned*". However, the main part of the paper is a brief review of the extant and extinct fauna of Madagascar, ending with a plea to develop scientific investigations on the island, once the military conquest is over. From our point of view, the most interesting items in this paper are probably the two photographs showing one of the rooms of the Madagascar exhibition. Their resolution is not very high but at least some of the exhibited specimens can be identified with some precision. That they are two views of the same room is clear from the anonymous short description of the exhibition in the *Bulletin du Comité de Madagascar*, according to which all the vertebrate specimens, whether extant or extinct, were displayed in a single room.

One of the photographs (**Fig. 2**), depicting, according to its caption, the western part of the largest room of the exhibition, shows a large free-standing display cabinet containing a mounted skeleton. The caption explains that it is a composite skeleton of 'the small fossil hippopotamus discovered by Mr Grandidier' (*Hippopotamus lemerlei*). Below it are various subfossil *Hippopotamus* bones. Along the right wall of the room a large glass cabinet displays stuffed specimens of various mammals, including bats, lemurs and the wild pig *Potamochoerus edwardsii*.

The other photograph (**Fig. 3**) shows the eastern part of the room. Along the walls in the background are cabinets containing stuffed birds and reptiles in glass jars. The free-standing glass cabinet in the middle contains *Aepyornis* remains. On the top shelf are three complete eggs. Below, various bones are displayed. As mentioned by the caption, some are tibiae (or more accurately tibiotarsi), several placed in an upright position. Others are tarsometatarsi. Of special interest is a specimen in an upright position at the bottom of the cabinet, exactly underneath the middle egg. It is a proximally incomplete tarsometatarsus which appears to be one of the original bones described by Geoffroy Saint-Hilaire (1851) and first illustrated by Bianconi (1865). The present whereabouts of these important specimens are unknown, but casts are kept in various museums (Buffetaut *et al.*, 2019). Many more

Fig. 2. The western part of the main room at the 1895 Madagascar exhibition at the Paris Natural History Museum. The central display cabinet contains a composite skeleton of *Hippopotamus lemerlei*. After Milne-Edwards (1895, fig. 30).

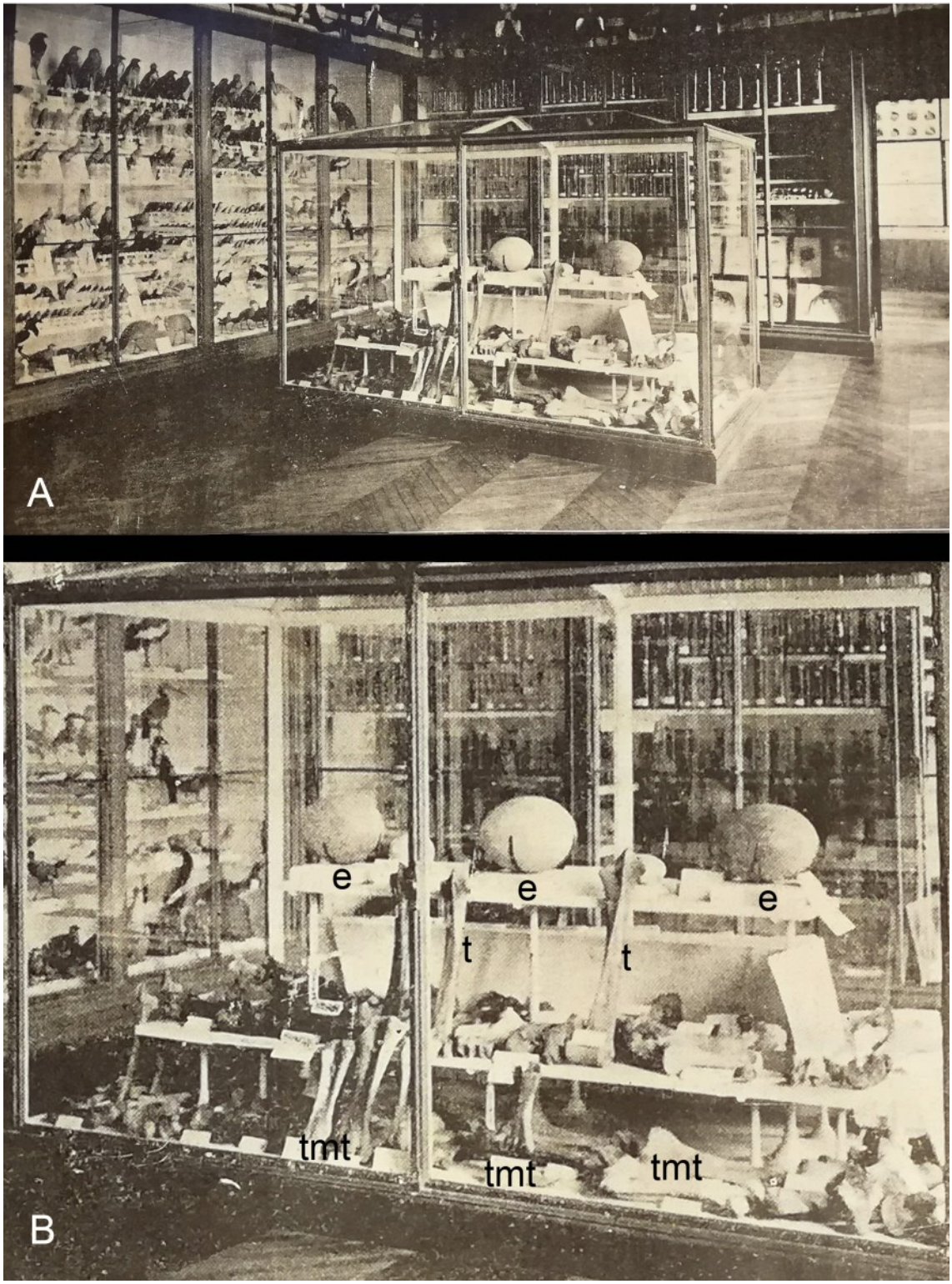

Fig. 3. A: The eastern part of the main room of the 1895 Madagascar exhibition at the Paris Natural History Museum. The central display cabinet contains eggs and bones of Aepyornis (after Milne-Edwards, 1895, fig. 27). **B**: Close-up of the central cabinet; e: *Aepyornis* eggs, t: tibiotarsi, tmt: tarsometatarsi (the specimen in the middle is probably one of the bones originally described by Geoffroy Saint-Hilaire en 1851).

Aepyornis bones are on display in the cabinet, illustrating the fact that by 1895 the Paris Natural History Museum had acquired a rather large collection, thanks to the efforts of several collectors, including Muller (who collected bones mainly at Antsirabe, in the central highlands, before being murdered by bandits in 1893 – Grandidier, 1894) and Grevé (who collected on the west coast, before being taken prisoner and shot by Hova soldiers at the beginning of the French invasion in 1895 – Grandidier, 1895). Milne-Edwards and Grandidier (1894, 1895) gave brief descriptions of this material and in his general paper on the Madagascan fauna, Milne-Edwards (1895) provided a short review of these discoveries.

Relatively few details can be provided about the three *Aepyornis* eggs on display on the basis of the photograph. They may include the original eggs described by Geoffroy Saint-Hilaire (1851), which had been collected by Captain Abadie in 1850. The original shipment, via Réunion island, included three eggs but one had been broken in transit (it seems to have been subsequently repaired). However, more eggs were later brought to France and in at least some instances acquired by the Paris Natural History Museum (Geoffroy Saint-Hilaire, 1855, 1856), but they were seldom described in detail (except for their dimensions) or illustrated, and therefore it is extremely difficult to identify individual eggs, all the more so on the basis of an image showing very few details. From a purely palaeornithological point of view, the main interest of the figure is that it seems to be the first published photograph of *Aepyornis* eggs, antedating by five years the much better photos (collotypes) published by Meyer and Heller (1900). However, it cannot be completely excluded that further research will reveal even older photographic illustrations of *Aepyornis* eggs.

As noted previously (Buffetaut, 2019), the huge *Aepyornis* eggs were especially attractive to the 19th-century public and drew considerable attention. It is no surprise that the organisers of the Madagascar exhibition chose to display several of them in a rather central position. As remarked in a previous paper (Buffetaut, 2019), despite the attention they attracted, very few illustrations of *Aepyornis* eggs appeared in scientific publications during the second half of the 19th century, after Geoffroy Saint-Hilaire's initial (and unillustrated) original description. Pictures of *Aepyornis* eggs, however, appeared in various publications aimed at the general public, including books, magazines and catalogues of casts. The photograph showing three eggs published in Milne-Edwards's paper in the *Revue générale des sciences pures et appliquées* is no exception: this periodical was essentially a semi-popular science magazine, aimed at educated readers with a strong interest in scientific and technical matters; its director (Louis Olivier) had a solid scientific background (he held a doctorate in botany) and the articles were mainly written by experts in their fields. Many of the papers were rather technical, using mathematical equations and chemical formulas, but Milne-Edwards's article uses non-technical language to describe the animals from Madagascar and what he writes about the subfossil fauna is rather brief. Although the eggs of *Aepyornis* are mentioned, little is said about them except that their volume is 8.5 litres, six times that of an ostrich egg; the reader is referred to the figure for a better idea of what they are like.

Previous to this photographic illustration, all published figures of *Aepyornis* eggs appear to have been engravings or lithographs, the first of them having been published in 1851 (Buffetaut, 2019). The long time it took for a first photograph to appear in print is linked to the general evolution of natural history illustration. As noted by Chansigaud (2009), in this field the spread of photography was a 'slow revolution'. Knight (1977) remarked that in Newton's *Dictionary of birds*, published in 1896, which contains a very large number of illustrations, only one is a photograph (showing the trajectory of a crow's wing), the others being woodcuts. Photographs were used to illustrate palaeontological papers and books as early as the 1840s, often as photolithographs (Davidson, 2008), but they did not provide better detail than well executed lithographs and they did not become very widely used until the 1890s (Chansigaud, 2009), when the development of the halftone and collotype techniques allowed easier printing of good-quality photographic images. From that point of view, the excellent photographs (collotypes) of the *Aepyornis* eggs in the Dresden collection published by Meyer and Heller (1900) mark a turning point: from then on, illustrations of *Aepyornis* eggs in both scientific papers and more popular publications are almost exclusively photographs. The earlier photograph in Milne-Edwards's article is actually rather incidental: unlike the plates in Meyer and Heller's paper, it is not intended as a detailed illustration of specimens aimed at enhancing a scientific description. The eggs are only a few - admittedly spectacular - items among a large array of natural history objects displayed at an exhibition and an image with a somewhat limited resolution was sufficient for that kind of illustration.

Conclusion

The illustration of Milne-Edwards's paper on Madagascan animals including three *Aepyornis* eggs, on display at the 1895 Madagascar exhibition at the Paris Natural History Museum, seems to be the earliest published photograph of such eggs. One of the main aims of the exhibition clearly was to foster interest in

Madagascar among the French public for colonial purposes, at a time when the French army was invading the island. Because of their huge size, *Aepyornis* eggs attracted public attention and natural history museums were keen to acquire specimens. They must have been among the most spectacular items in the Madagascar exhibition. No attempt was made at that time to mount a composite *Aepyornis* skeleton using the bones available in Paris; the first mounted *Aepyornis* skeleton was displayed at the British Museum (Natural History) in 1897 (Andrews, 1897 – the paper includes a halftone showing the skeleton,, but the other illustrations are drawings). It was not until 1913 that a complete composite skeleton was mounted at the Paris Natural History Museum in 1913 (Monnier, 1913). Milne-Edwards's paper does include a rather crude figure showing an *Aepyornis* skeleton (**Fig. 4**), but it is clearly redrawn from a better drawing in a popular paper by Oustalet (1894), which is an artist's vision of what an *Aepyornis* skeleton may have been like. The anonymous author of the short piece about the Madagascar exhibition in the *Bulletin du Comité de Madagascar* gave only a cursory list of the zoological specimens on display but devoted several lines to the *Aepyornis* eggs, including the rather hackneyed size comparison with the eggs of the ostrich, the hen and the hummingbird. He must have been especially impressed by these enormous eggs.

Aepyornis remains, because of their large size, were much sought after as spectacular items to be displayed at exhibitions about Madagascar. After the conquest of the island, the governor-general of the new colony, General Galliéni, instructed the colonial engineer Antony Jully, an architect by training, to conduct palaeontological excavations at Antsirabe, a locality on the central highlands well-known for its subfossil remains, including abundant *Aepyornis* bones (Jully, 1898). One of the main aims of the excavations was to obtain specimens of the giant bird to be displayed at the upcoming international exhibition in Paris. *Aepyornis* remains collected there were duly put on display, together with eggs, in the Madagascar pavilion (designed by Jully) of the *Exposition Universelle* held in Paris in 1900 (Charles-Roux, 1900). Thirty years later, an *Aepyornis* egg was purchased for 6,000 francs

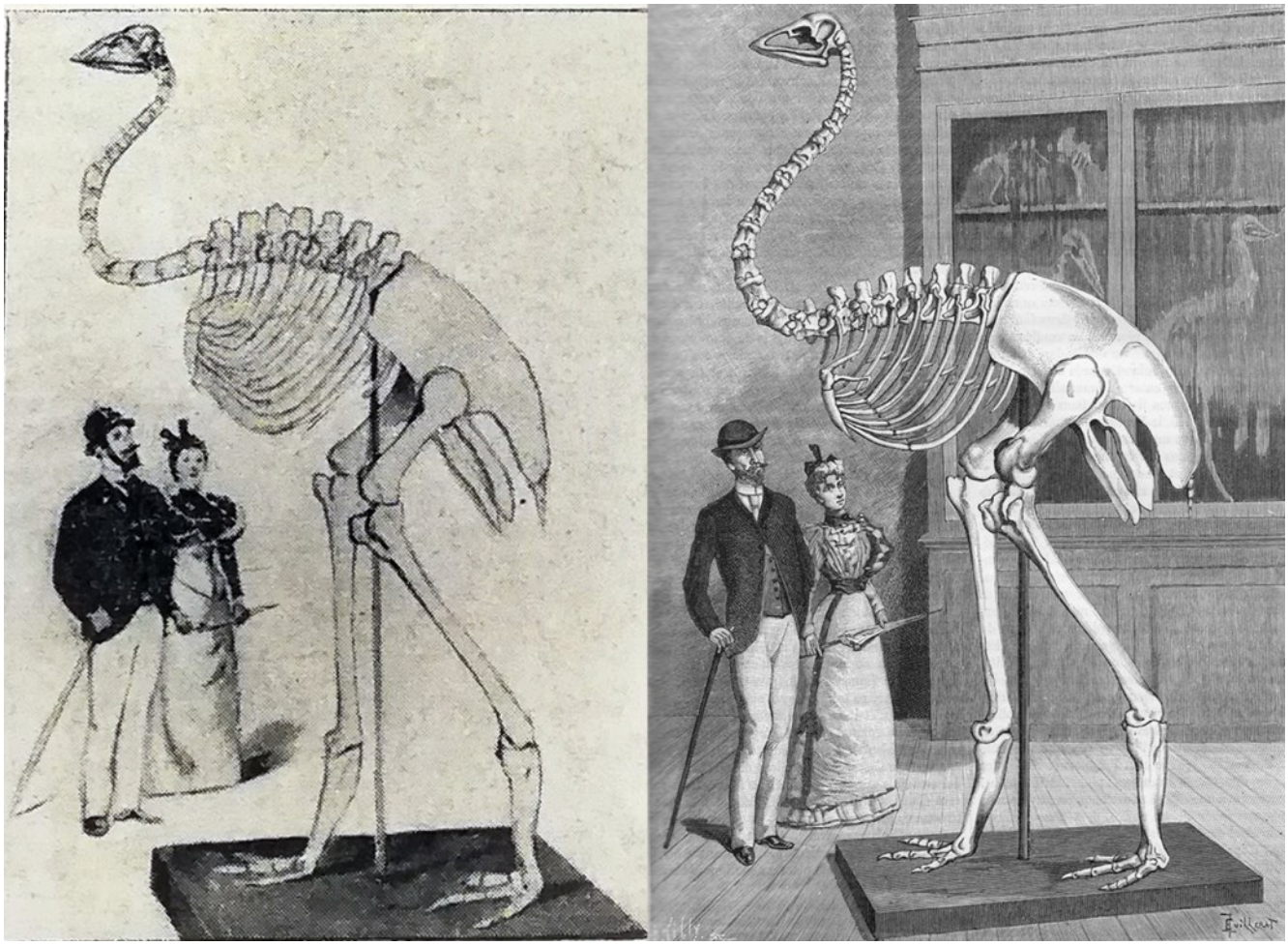

Fig. 4. Reconstruction of an *Aepyornis* skeleton after Milne-Edwards (1895, fig. 29), left, and its source in Oustalet (1894, fig. 3), right.

(about 3,000 €) for display at the Madagascar pavilion of the *Exposition coloniale internationale* held in Paris in 1931 (Decary, 1950).

Besides being apparently the first *Aepyornis* eggs to have been depicted in a published photograph, the three eggs in question were part of an exhibition aimed at the general public, which combined scientific information with a political agenda about which the organisers made no mystery. This is clearly shown by Milne-Edwards's comments at the end of the paper in which the photograph appeared (my translation): 'Once the military expedition has reached all its aims, it will be our turn to continue its work by lifting the veils which still hide this part of the globe'. Scientific conquest was to follow in the footsteps of miliary invasion. In a way, together with many other natural history specimens, the spectacular eggs of the giant bird *Aepyornis* were thus turned into propaganda ploys in favour of French colonisation of Madagascar.

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