INTRODUCTION

During the general conference of the Italian Geological Society held in Catanzaro on September 26th, 1889, Meli reported the finding of remnants of a vulture into “peperini” tuffs cropping out at the foothills of “Monti Tuscolani”, nearby the milestone of km XIX of Via Anagnina, SE of Rome (Fig. 1). Quite surprisingly, feather casts and natural counter-moulds of head, neck, windpipe and feet of the vulture were preserved, along with a number of its bones.

Recently, during the reorganization of the palaeontological material stored at the “Leonardo da Vinci” I.I.S.S. (once “Regio Istituto Tecnico”) of Rome, some “peperino” blocks were found (Fig. 2), previously reported in the inventory as containing “palm leaf casts”. These remnants correspond perfectly with those described (but not figured) by Meli (1889, 1892), also considering that the Author taught for some time at the “Regio Istituto Tecnico”.

THE EXECUTION OF THE MOULD

Meli informs (1892) that he made some casts of this hole, utilizing clay mixed to gelatine for one and rubber for one other. However he groans to do not the exact shape of the beak. Meli thought the hook-tipped beak did not permit to make a complete cast. Therefore he hypothesized to cut this “peperino” block for making a complete cast. Fortunately this block was not cut.

To day, generally casts are taken from moulds of silicone. Silicones are without doubt the most easily usable and the most efficient material for moulds, due to their high performances.

The technical utilised for making this cast is here described. Before to make the cast, we have cleaned with a vacuum cleaner the hole. Then the surface of this hole was carefully sounded. From this analysis resulted that the hole surface was in good condition of preservation, with several anatomical characters excellently impressed: plumage, eyes, beak and overall the tongue (Fig. 2)! Besides we are able to note that the lower part of the upper beak was still preserved (only a small fragment). It explains because Meli (1892) was not able to make a complete cast of the beak. However, for not injuring the cast, the fragment of the beak was mechanically and chemically (using HCl at 1% in H2O) destroyed, and stored to determine the chemistry of the fossilization process and to determine the isotopic composition of O and Sr.

Besides, for verifying the possible presence of a tunnel between the lower and upper beaks, distilled water was strained into the upper beak: then an eventual passage of water into the lower beak was verified. Then the entire surface was consolidated with mowilith. Later a silicone separator was sprayed. The cast was made simply straining 800 gr of silicone into the hole. Particular attention was necessary to did not produce air bubbles during this phase. After the silicone became hard, it was pulled out from the hole manually. This operation was not easy due to the hook-tipped beak.

THE VULTURE

The mould (Fig. 3) shows the perfectly preserved head and neck of a vulture. The head, moderately elongated, gradually connects to the upper beak; the head and the neck lack plumage, whereas the skin shows several parallel folds; the eyebrow arch is prominent; the upper beak, oblong, has a sub triangular section; a very

THE EURASIAN GRIFFON, GYPS FULVUS (HABLIZL, 1783) IN THE “PEPERINI” HYDROMAGMATIC DEPOSITS OF THE ALBAN HILLS (ROME, ITALY): A CASE OF EXCEPTIONAL PRESERVATION

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ABSTRACT - Since the late XIX century, Meli described some pieces of peperino, coming from Alban Hills Volcanic District, containing bones and casts of head, feathers and plumages of an Eurasian griffon specimen (Gyps fulvus). We are able to find part of this material (casts) among the collections of the “Leonardo da Vinci” I.I.S.S., Rome.

KEY WORDS: Griffon, fossilization, mould, late Pleistocene, Alban Hills.
marked suture divides it in two parts; the upper beak is curved towards down and the distal edge is very beyond the level of the lower beak; the lower beak is considerably smaller than the upper, a marked callosity is present on its inferior surface. The roughness of the skin suggests that the head and neck were covered with down, we can also detect a ruff of feathers at the base of the neck. These features are distinctive of *Gyps fulvus* (Hablizl, 1783).

Moreover the perfect preservation enables us to notice some other morphological details: in the eyes, the cornea retains a convex shape and little feathers are observed on the lower eyelid rim; the beak, quite thin and relatively weak, with a typical sub triangular section, is open, the tongue being visible: the latter does not seem affected by volume loss. The naked neck appears long and robust. In an other “peperino” block, which also contains feather casts, the casts of the collar feathers are perfectly preserved and arranged in several overlapping layers.

**THE “PEPERINO”**

The “peperino” that includes the vulture remnants is a lithified pyroclastic deposit, made up of well-sorted, clast-supported, centimetre-thick layers of millimetre-sized, dark grey, scoria lapilli, alternating with poorly sorted massive layers of grey coarse ash, containing millimetre-sized scoria fragments and analcime crystals, along with sparse centimetre-sized leucite inclusions. Unfortunately, the deposit where the specimen comes from is no longer exposed in the field, due to heavy anthropization of the area, and this prevents a detailed reconstruction of eruption and fossilization conditions.

However, from the mere observation of the available rock-type, this can be referred to a moderately energetic explosive activity involving ash and scoria lapilli fallout and intermittent pyroclastic current episodes, as it was typical of the scenario of late hydromagmatic eruptions of the Alban Hills Volcanic District. Moreover, the location of the finding indicates the Albano edifice as the most probable source vent of these eruption products, thus putting a reasonable age constraint of 70-30 ka (Marra et al., 2003) for the finding. Preliminary analyses allow us to hypothesize that the vulture came to death within an erupted cloud of ash and then was captured by either primary, relatively cold, pyroclastic currents (*i.e.* wet pyroclastic surges) or secondary volcaniclastic flows (*i.e.* mud flows).

**CONCLUSIONS**

*Gyps fulvus*, which was relatively common during Upper Pleistocene, now lives mostly in scarcely vegetated areas of hilly, mountainous or highland settings. It nests in zones of rough topography, such as high rocky walls and deep canyons. Its occurrence in the “peperini” at the foothills of the Tuscolano relief, corresponding to the Tuscolano-Artemisio caldera wall, may suggest that arid and relatively cold climatic conditions existed at that time, consistent with those characterizing the Tyrrenian margin during glacial phases (?Oxygen Isotopic Stage 4).

Various hypotheses can be forwarded on the possible causes of death and mechanisms responsible of such a surprising state of preservation. It appears that concomitant favourable factors were:
- the burying penecontemporaneous to the death of the specimen;
- the presence of abundant fine-grained pyroclastic material that acted both significantly to reduce the aerobic attack and to favour a faithful reproduction of external soft body;
- the presence of acid gases that initially inhibited from putrefying the soft body;
- the circulation of CaCO3-rich waters favouring the permineralization of the skeleton.

Studies in progress will allow us to refine the nature and age of the enclosing deposit, as well as the nature of taphonomic processes leading to the preservation of the remnants.
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