

A New Avian Species with Tubercle-bearing Cervical Vertebrae from the Middle Eocene of Messel (Germany)

GERALD MAYR

Forschungsinstitut Senckenberg, Sektion Ornithologie,
Senckenberganlage 25, D-60325 Frankfurt am Main, Germany

Gerald.Mayr@senckenberg.de

ABSTRACT. A new avian species, *Perplexicervix microcephalon* n.gen. and n.sp., is described from the Middle Eocene of Messel in Germany. It is most unusual in that the cervical vertebrae of five of the six known specimens bear numerous bony tubercles. Such tubercles were also reported from another avian fossil from the Messel deposits, which is a representative of the extinct taxon Idiornithidae. Although the osteology of *P. microcephalon* is not known well enough for a reliable phylogenetic assignment, the new species clearly does not belong to the Idiornithidae. Compared to extant birds, it agrees with Anhimidae and Cathartidae in some osteological features. The origin of the vertebral tubercles remains mysterious. The fact that these structures are now known from two unrelated avian taxa supports previous assumptions, that they represent a pathologic condition. Not in line with this assumption, however, is their occurrence in all specimens referred to *P. microcephalon*, in which cervical vertebrae are preserved.

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Peters (1995) described a remarkable skeleton of a large bird from the Middle Eocene of Messel in Germany as *Idiornis tuberculata*. This species belongs to the Idiornithidae, stem lineage representatives of the Cariamidae. Apart from being the most complete skeleton of an idiornithid, it is of particular interest in that the cervical vertebrae and few other bones are covered by numerous small tubercles of enigmatic origin and significance.

Such tubercles were subsequently also reported on the cervical vertebrae of two other bird specimens from Messel, and on a cervical vertebra from the Quercy fissure fillings in France (Mayr, 2007). Both Messel fossils consist only of skulls with a few cervical vertebrae, and belong to a bird that is smaller than *I. tuberculata*. Because of their fragmentary preservation, a taxonomic and phylogenetic assignment was not possible. Concerning the origin of the tubercles, Mayr (2007) concluded that they most likely

are of pathologic origin and document a Paleogene avian disease without a modern counterpart.

Here I describe new fossil birds from Messel which can be referred to the same species as the above-mentioned skulls. One of them is a fairly complete skeleton that was unknown to me in 2007, and has the cervical vertebrae and few other bones likewise covered with numerous small tubercles.

Material and methods

Osteological terminology follows Baumel & Witmer (1993). Measurements are in millimetres and indicate the maximum length of the bone along its longitudinal axis; the length of the claws was measured from the tip of the tuberculum extensorium to the apex phalangis. Institutional abbreviations: SMF—Forschungsinstitut Senckenberg, Frankfurt am Main; HLMD—Hessisches Landesmuseum, Darmstadt.