



The Pterosaur Database

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EUDIMORPHODON RANZI GEN. NOV., SP. NOV, A TRIASSIC PTEROSAUR

(Preliminary note)

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Presented by Silvio Ranzi (Meeting of the 11th October 1973)

SUMMARY. The Author describes a new genus and new species of Pterosauria: *Eudimorphodon ranzii*; the fossil has been collected in triassic soil (Noric superior) of Cern (Italy).

In the fossil locality of Cern (Bergamo Italy), in the number of paleontological searches which I programmed with Sig. Mario Pandolfi, Director of the Municipal Museum of Natural Sciences of Bergamo, recovered the excellently preserved almost entire skeleton of a Pterosaur. The fossil was found within the Formation of Zorzino (= Inferior) of the upper Norico formation that is a lateral extension of the main Dolomite. The most ancient Pterosauro known previously was from the lower Lias. This example belongs to an unknown type and, species.

Eudimorphodon (2) gen. Nov.

Slender and light skull, upper concave previously to half of its profile. The orbit relatively very large and triangular anteorbitale opening high and similar to the orbit and of similar length than height. Premaxilla very long with an ascending suture meeting above the mean position of the orbit. The nasal opening, cranial fenestra is antorbital, the orbit, extended in sense back anterior, with a square bone determining the inclination. Branches of the jaw bone do not bind at the symphysis of the lower edge of the jaw which is strongly concave. It is on the jaw that there are seen large conical teeth associated with numerous small polycuspid teeth.

The cervical vertebra are, strong; they are in number 12 (10 clearly are visible, the other. and precise the first two, itself exposed in the X-ray radiograph), the sacral are 4, unfused: of the caudal in the fossil the first three are visibly, rather strong.

Eudimorphodon shows characters close to the characteristics of the family Dimorphodontidae; from this it is distinguished by the presence of teeth small with multiple cusps themselves alternating with large conical teeth (all the other Rhamphorhynchoid pterosaurs only possess conical teeth).



Fig. I. *Eudimorphodon ranzii* Nov. gen. Nov. sp. of the upper Norico of Cern

The skull of *Eudimorphodon* is considerably lightened by the presence of large fenestrations and the orbit is a lot more spacious and the antorbital fenestra and the quadrate are much inclined in opposite directions which compares with the skull of *Dimorphodon* of the lower Lias; the breadth near the orbit with respect to the length of the skull, the height and the shape of the antorbital fenestra as well as the concavity of the lower edge of the mandible in its anterior reflex, they are characters that help to distinguish *Eudimorphodon* from the other relatives of the family *Dimorphodontidae*

Eudimorphodon shows the contours of the skull, and the collapsed nature of the bones and the inclination of the quadrate being more developed in *Dimorphodon*.



Fig. 2. *Ranzii* Nov. gen. Nov. sp. : detail of the skull

The importance, of the report and the necessity of presenting and drawing up of this preliminary note is that I reserve a study to be appropriate: I believe that the conditions of the observed scapular (presence of clavicle?) is notably different from that of the other *Rhamphorhyncoidea*, which will be able to clearly define, the character, the affinity of the new group.

Eudimorphodon ranzii sp. nov.

Its length of the metacarpal corresponds to $\frac{3}{7}$ of that of the ulna; the humerus lies proximal, being wide (its width is about $\frac{1}{2}$ of its length) and its length is about $\frac{5}{7}$ of that of the ulna. The pteroid bone is very large; the tail (3) is long. The sternal plate is broad, with small high carenations, compressed, to an acute crest that caudally disappears before reaching the back edge of the breastbone. The border close and parallel to the carena show a concavity and pronounced ledges for the attachment of the ribs. Seen in profile, the skull anterior is a little convex, then almost directed in a long line. Therefore it is slightly concave until its final length where its shape becomes a slight convexity than posteriorly and followed from a modest concavity and from a new convexity. The jaw again presents an upper convexity and a prominent lower concavity. The remaining lower edge is almost directed, the upper edge is directed until $\frac{1}{4}$ from its end, then a short prominent back ledge to which raises itself the jaw degrades towards the articulation. No trace of the sclerotic ring. The premaxilla is equipped with 4 conical teeth which are very robust: the two anterior, a little smaller, one bends towards the back, the other right. The maxillae are equipped anteriorly with 11 tricuspid teeth, smaller than the others (the second is the smallest one), gradually increasing in size; followed immediately by two conical teeth similar to those of the premaxilla (but ornate with small outlines of cusps); posterior to which are about 12 teeth with 5 cusps, the first larger, like the end 3 cusps, then becoming gradually smaller to the back of the jaw. The heights of the conical teeth are almost three times that of the largest polycuspid teeth. In these the central cusps start high and gradually become lower. The enamel of the conical teeth between the polycuspids is decorated with thin longitudinal lines. On the lower jaw, posterior to the small observed row of teeth, and two conical teeth are positioned in the middle of the row, being similar to those of the premaxilla: the anterior curved backwards, the other way. Posteriorly to the second, without interval, begins a row of tricuspid teeth increasing in size; first 7 (the second is the smallest one) with 3 cusps (after the third tooth, irregularly new cusps begin to appear), then a short interval and other two teeth they continue from a short interval. Then follow other 14 teeth with 5 cusps, whose height decreases towards the posterior. The anterior line of the jaw, before the prominent convexity, is devoid of teeth.

The humerus length is 45 mm, the ulna 64 mm, the wing metacarpal 27 mm and the femur 41 mm. Radius and ulna are quite well developed; the carpus is composed of at least 5 elements; the first is small and quite well preserved, the others are partially preserved in the fossil.

The specimen carefully collected from Cern and preserved is placed in the Municipal Museum of Natural Sciences of Bergamo with the specimen number 2888.

As well as this exemplary type, fragments have been collected from the same locality of two other examples that are preserved in the Eboli Museum which compare favourably with this complete example, poorly preserved, collected always in the same layer, and perhaps a young individual of the same species. The skeleton is distinguished by a long tail. It is clearly seen that the relation between the length of the polycuspid teeth and of those conical is significantly greater.

Notably the first Pterosaur found in Italy. Bassani (1886) in truth placed in the group of the Pterosaurs, under the name of *Tribelesodon lonyobardicus* two restive fossils of Besano (Lombardy) of the lower horizons of the Upper Triassic, but after various interpretations (Arthaber 1911, Nopcsa 1923, Wiman 1925), Peyer (1931) it was established in an unequivocal manner, though these fossils are now lost today, appear to be a species attributed to the genus *Tanystropheus* (reptilia, squamata).

I sincerely thank the Town administration of Bergamo that it funded the excavations at Cern and to Prof. Emilio Gavazzeni that kindly performed the radiographs of the specimen. A special thanks to the Professor Antonio Valle, Director of the *Museo Civico di Scinze Naturali di Bergamo*, for his advice and support of my work. I dedicate the new species to Prof. Silvio Ranzi, Professor of zoology at the *Università statale di Milano*.

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footnotes

(1) From *Museo Civico di Scinze Naturali di Bergamo*.

(2) From *Dimorphodon* (type of the most ancient pterosaur currently known).

(3) present single partially specimen.