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# A new contribution to the knowledge of the fossil flora at Anina, Romania

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A b s t r a c t : A new *Ptilophyllum* species - *P. maculatum* sampled from the Early Lias - Rettangium - deposits at Anina (ante Steierdorf), Romania is described.

## INTRODUCTION

The author has been studying the epidermes of the fossil leaves from the Early Liasic of Anina (ante Steierdorf) for several years. The great quantity of well-preserved material enabled us to prove the existence of a number of taxa already known macroscopically, and to describe a great number of new species. In this paper we present one of them, a new species of *Ptilophyllum*.

## MATERIAL

The author had at his disposal 10 samples, most of them coming from the collection of the Botanical Museum of the University of Cluj-Napoca.

## GEOGRAPHICAL AND GEOLOGICAL LOCATION

The town of Anina lies in Banat, south of Resita. It is geologically set on the anticline bearing the same name. Fossil plants occur in the lower half of the Early Jurassic, i.e. in Hettangium, within a sequence of sandstones and black schists alternating with coal beds.

## MACROSCOPIC DESCRIPTION

Several leaf fragments with folioles of different but approximately equal sizes. The folioles exhibit perfectly parallel edges with acute top. They are very close to each other (no empty spaces in between, or at a distance of 0.5-1 mm) on the thin rachis which is either hardly visible, or entirely covered by the lower part of the folioles. This lower part of the folioles is truncated. The angle of insertion varies between 47°-59° and 70°. The nervation is extremely fine and consists of a great number of parallel nervures which do not seem to branch out either in the lower part or higher up.

## MICROSCOPIC DESCRIPTION

Hypostomatic leaves. The upper epidermis is formed of parallel rows of round isodiametrical cells whose walls are more-or-less cutinised. These cells have a star-like shape, i.e. they exhibit deeply lobate edges. The lobation has the shape of a finger which penetrates close to the centre of the cell. The centre is covered by papilla. As a whole, the cells look like intermeshed gears.

The lower epidermis is formed of regular parallel rows with and without stomatas. In general the former are narrower. The rows which lack stomatas consist of small, round cells with irregularly waved anticlinal walls which are, at the same time, thicker than the periclinal walls, the latter being thinner and less cutinised. These cells are characterised by strongly cutinised papilla which may be simple, i.e. looking like a cutinised button, or this button may be surrounded by a ring which is also cutinised. A row which has no stomatas consist of 2-4, or even 5-6 rows of cells. The rows with stomatas consist of oval or round cells with less foulded edges, but they also exhibit the characteristic papilla. The stomata are placed in 2-3 rows; the rows are not always defined, their arrangement is comparatively irregular. In general they are directed transversally with respect to the row axis. The stomatic apparatus is of sindetocheil type. It has a round, seldom square shape. The guard cells have a half-moon shape. They exhibit a clearly visible outer edge which is curved. The extremities are sharp. Between the extremities are inserted two pairs of white cells. On these guard cells are placed the two papillae of the subsidiary cells under the form of two very specific and cutinised oval spots. The subsidiary cells are thin and they usually have a crescent like shape. It is known that they overlap the guard cells. The pore is long and narrow. It can be totally or partially covered by the two above-mentioned papillae which may touch each other above the pore.

## DISCUSSION

From a macroscopic point of view one would be tempted to assign the remains in question to *Ptilophyllum rigidum* (Andrae) Krasser. The anatomical structure indicates a different type, in favour of which plead the structure of the upper epidermis and mainly that of the lower epidermis plus the two lobe-like papillae which make the stomatic structure look as if it were stained. Similar papillae, i.e. paired, can be found in *Ptilophyllum indicum* Jacob et Jacob 1954, but here they are round. On the other hand, the macroscopic aspect is totally different. *Ptilophyllum okribense* Dolud. et Svan., forma ratchense 1969 also exhibits similar papillae, but the epidermic ones are very scarce and their macroscopic aspect is totally different. We owe the synthesis of the species of *Ptilophyllum* known till 1966 to KILPPER. He mentions 22 species out of which only 13 have papillated epidermes. I have studied all of them and have come to the conclusion that no terms of comparison can be found in the paleobotanic literature because the material differs either from a morphological point of view, or as far as the structure of the stomatas and the papillae is concerned. Thus, I consider that there is enough reason to believe that the material studied represents a new species which I propose to be named "maculatum".

**Ptilophyllum maculatum** – sp. n.

D i a g n o s i s : Ramulis cum foliolis parallelo marginatis. Apice acutis, basin versus truncatis constrictissime in axi tenui dispositis atque obtectis. Foliis hypostomaticis, epidermide superiora a cellulis stelliformibus, lobatis, quilibet papillis centralibus obtectis. Epidermide inferiora in seribeus stomatalibus atque astomatalibus cellulae plicatas instructas, sed cellularum partes superiores papilla valde cutinisata praedita. Stomatis bi-triseriatis, irregulariter dispositis, transversim in foliorum axibus collocatis, syndetocheilibus, cum duis papillis magnis atque ovalibus annexis praeditis, cellulas stomatales usque ad ostiolam obtequentes. Cellularum facies maculata.

H o l o t y p e : Nr.1828 at the Department of Geology and Paleontology of the University of Cluj-Napoca.

P a r a t y p e : Nr. 0496 at the Department of Palaentology of the University of Bucharest.

T y p e l o c a l i t y : Anina, Romania

S t r a t u m t y p i c u m : Early Liasic

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## EXPLANATION OF PLATES

Plate I.

*Ptilophyllum maculatum*
Fig. 1. private collection
Fig. 2. holotype. Univ. Cluj-Napoca 1:1

Plate II.

*Ptilophyllum maculatum*
Fig. 1. L. E. stomatas 380 ×, holotypus
Fig. 2. U. E. cells with star like shape. 380 × holotype

Plate III.

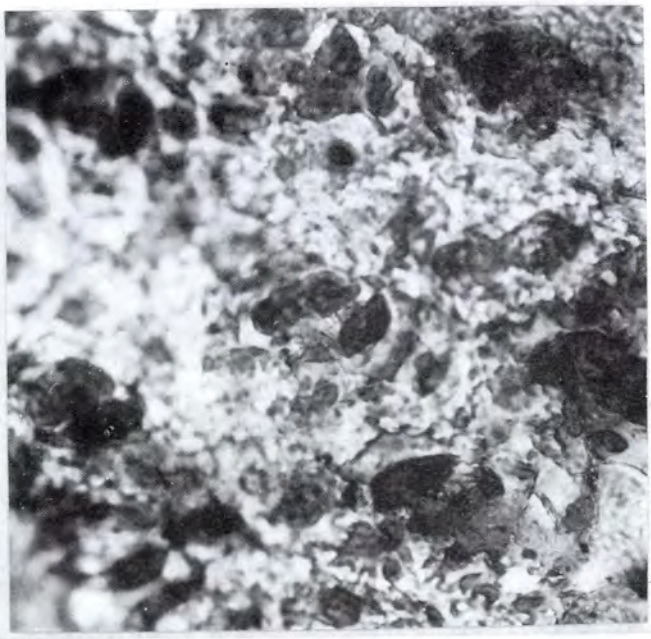
*Ptilophyllum maculatum*
Fig. 1. L. E. stomatas rows 380 ×. Botanical Museum
Fig. 2. L. E. non-stomatal rows strongly papillate. 380 ×. Botanical Museum

**PLATE I.**



## PLATE II.

1



2

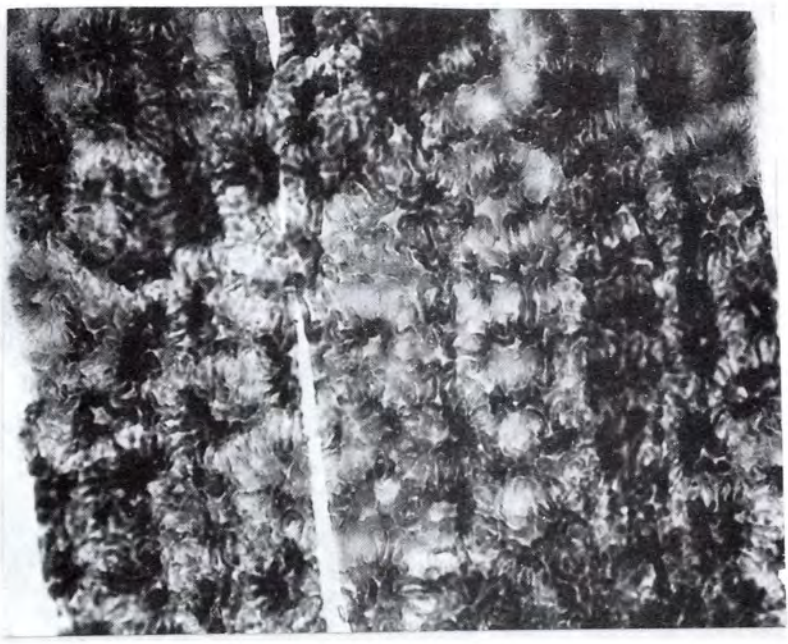


**PLATE III.**

