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Late Palaeozoic foliage from China displays affinities to Cycadales rather than to Bennettitales necessitating a re-evaluation of the Palaeozoic *Pterophyllum* species

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The epidermal anatomy of *Pseudoctenis samchokense* is described revealing non–bennettitalean characters of these
leaves from the Permo–Carboniferous of China (and Korea). The specimens were originally described as *Pterophyllum samchokense* suggesting a bennettitalean affinity. They can no longer be considered bennettitalean since their cuticles lack the distinctive brachyparacytic stomata of that clade. *Pterophyllum* was originally erected as a morphogenus for segmented leaves from the Mesozoic and has subsequently been clearly assigned to the Bennettitales. The segmented leaves from the Permo–Carboniferous of Shanxi and Hebei, China described herein require a new ordinal and generic assignment since the non–bennettitalean cuticular characters documented reinforce the uncertainties in attribution of any foliage older than Late Triassic to the Bennettitales. Based on leaf–architecture and epidermal anatomical characters, the specimens are at best assigned to the cycadalean genus *Pseudoctenis*. This genus was formerly known only from Mesozoic rocks. Consequently, the specimens are highly significant, as they are among the oldest known vegetative remains of cycads. Re–evaluation of the affinities of all specimens assigned to *Pterophyllum* from Palaeozoic rocks is thus essential. Based on a review of other Permian–Carboniferous fossil leaves assigned to *Pterophyllum*, we conclude that none yet reveals definitive bennettitalean characters.

Key words: Cycadales, Bennettitales, *Pseudoctenis, Pterophyllum*, cuticle analysis, epidermal anatomy, Carboniferous, Permian, China.

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