The elongate integumentary structures borne along the dorsal axis of the fossil vertebrate *Longisquama* are interpreted by Jones et al. (1) as being homologous with feathers, and in the News Focus article "Feathers, or flight of fancy?" by E. Stokstad (23 June, p. 2124), they say that *Longisquama* is "an ideal bird ancestor." On the basis of our study (2) of the type material and analysis of the morphology and evolutionary relationships of *Longisquama*, we reject these proposals for the following two reasons.

First, the supposed row of paired, pinnate "nonavian feathers" that Jones et al. describe consists of a single row of elongate scales that are inserted on the dorsal midline. The scales are not branched, as the authors say, but are solid, sheetlike structures with a continuous margin, and the so-called "pinnae" are pleats that helped to stiffen the thin, sail-like distal expansion. Each scale was supported by a solid central spar, and features such as the "hollow remnant of spongy air-filled pith" and "pulp cavities" reported by Jones et al. are artifacts resulting from the manner in which the main slab and counter slab split through the sediment that replicated the external surfaces of each scale. Structures identified as "sheath" and "pinnae" are all parts of the same impression of the external surface of the scale. Because of the three-dimensional nature of the animal's body, during the process of its collapse or compaction the proximal regions of integumentary structures experienced much greater disruption than distal regions and became distorted and displaced. Consequently, it is uncertain whether the base of each scale tapers as Jones et al. suggest, or whether this is due to distortion or displacement. Even if the scales were tapered proximally, the inference that they developed in follicles is highly speculative.

Second, Sharov's identification of *Longisquama* as a "pseudosuchian" (in other words, a derived archosaur) (3) has been followed by other researchers including Jones et al. (1), but Sharov relied on just two features: an antorbital fenestra and a mandibular fenestra. However, neither of these openings is at all clear in the Longisquama skull and could simply represent damage. Moreover, the location of the mandibular fenestra, lying high in the lower jaw, immediately below and behind the tooth row, is unusual and unlike the situation in any other archosaur. The known skeletal remains of *Longisquama* lack any other diagnostic archosaurian characters [the furcula mentioned by Jones et al. consists of paired clavicles, as Sharov originally noted], but they exhibit two features, acrodont teeth and an interclavicle (3), that are typical of lepidosaurs. Consequently, we suspect that Longisquama is not an archosaur.

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References and Notes

1. T. D. Jones et al., *Science* 288, 2202 (2000).

2. D. M. Unwin, V. R. Alifanov, M. J. Benton, in *The Age of Dinosaurs in Russia and Mongolia*, M. J. Benton et al., Eds. (Cambridge Univ. Press, Cambridge, 2000), pp. 177-186.

3. A. G. Sharov, *Palaeontol. J.* 1970 (no. 1), 127 (1970).