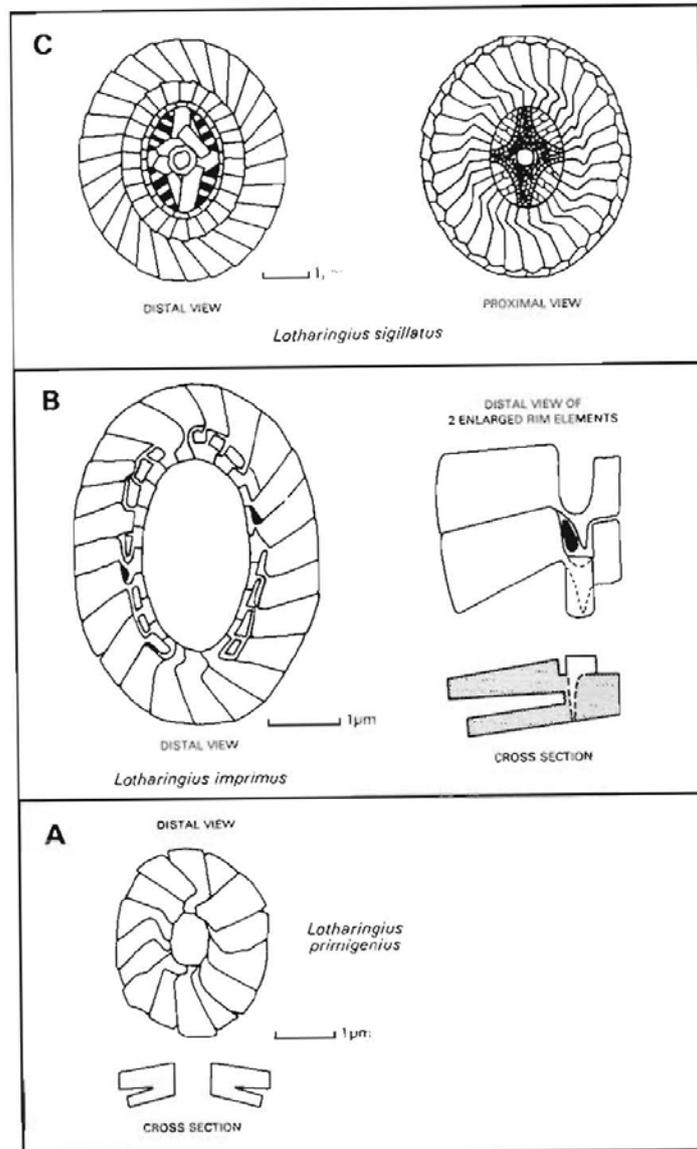
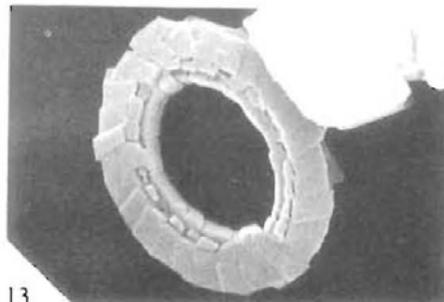


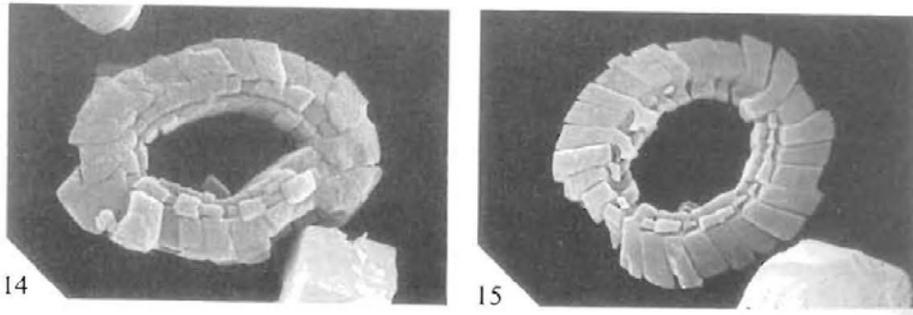
144. *Lotharingius imprimus* Bown (1987)



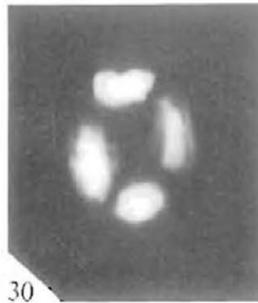
TEXT-FIG. 16. A, *Lotharingius primigenius*, B, *L. imprimus*, and C, *L. sigillatus*.

Text-fig. 16





Pl. 9, figs 13-15



Pl. 14, fig. 30



Pl. 15, fig. 1

Diagnosis. A normally elliptical coccolith with a large central area, recognizable as a watznaueriacean but possessing only a partially developed distal inner cycle.

Description. In distal view three concentric cycles are visible. At either end of the major axis of the coccolith the inner cycle is incomplete and the inner wall is undifferentiated from the outer cycle elements. The distal shield outer cycle is formed from twenty-two to twenty-eight elements showing strong counter-clockwise inclination but no observable imbrication. The outer cycle displays an inner lowered ledge or shelf on which the inner cycle of small rectangular elements lies. A number of the elements are still closely associated with the outer cycle elements and joined to them at their corners. At either end of the major axis of the coccolith the inner cycle is undeveloped and the outer cycle elements extend through to the central area forming the vertical inner edge. These elements display sharp sutural kinking and pinching out of the inner portions. The remaining edges of the central area also appear to be formed from the vertical inner

edges of the outer cycle elements but the points of contact are hidden by the inner cycle. The central area is large and empty.

Dimensions. L: 4.5-5.6 (5.0) μm , W: 3.6-4.3 (3.6) μm ; Central area L: 2.5-2.8 (2.8) μm , W: 1.3-1.8 (1.6) μm .

Remarks. *L. imprimus* appears to represent an evolutionary stage between the completely undifferentiated, unicyclic shield of *L. primigenius* and the fully developed bicyclic shield of typical species of *Lotharingius*. The partially developed nature of the shield reveals the processes by which rim differentiation takes place and this is discussed below. In *L. imprimus* both the distal inner cycle and inner wall are created by structural fragmentation of the distal shield elements, brought about by complex crystal intergrowth which leads to element isolation.

As for *L. primigenius*, it is conceivable that *L. imprimus* represents a preservational freak.

However, numerous specimens have been observed all displaying identical features and showing the partially developed inner cycle in exactly the same way.

Derivation of name. From Latin *imprimus*, among the first.

Holotype. UCL-2190-23 (Pl. 9, fig. 13).

Isotype. UCL-2190-27.

Type locality. DSDP Site 547-10-4, 75-77cm, north-west Moroccan continental edge.

Type level. Lower Toarcian.

Occurrence. Lower Toarcian (10-4 to 10-1).

Bown, P.R., 1987. Taxonomy, evolution, and biostratigraphy of late Triassic-early Jurassic calcareous nannofossils. *Special Papers in Palaeontology*, **38**: 1-118.