

# THE HAUTERIVIAN AMMONITE GENUS *LYTIOCERAS* HYATT, 1900 AND ITS SYNONYM *ENDEMO CERAS* THIERMANN, 1963

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ABSTRACT. Thiermann's (1963) arguments for establishing *Endemoceras* as a distinct genus are rejected and it is considered a junior synonym of *Lyticoceras* Hyatt.

*LYTIOCERAS* was established by Hyatt (1900, p. 586) with *Ammonites cryptoceras* d'Orbigny (1840, p. 24) as type species by original designation. Hyatt figured as representative '*Lyticoceras Noricum* Sowb. sp. = *Hoplites amblygonius*, Neum.'. He can, therefore, be presumed to have regarded both *noricum*, generally attributed to Schlotheim or to Roemer, and *amblygonium* (Neumayr and Uhlig), if different from *noricum*, as congeneric with *cryptoceras* (d'Orbigny).

Hyatt's genus came into general use for the widespread group of species from the boreal Neocomian that includes *amblygonium* (Neumayr and Uhlig) and *regale* (Pavlow). Spath's important work on the ammonites of the Speeton Clay (1924) gave this usage wide currency, particularly as several species of the genus were made zonal or subzonal indices. He writes (p. 88) '*Lyticoceras*, here adopted for the group of *A. noricus* Schlotheim, to which d'Orbigny's *A. cryptoceras*, Hyatt's genotype, probably belongs, . . .'. This usage continued without serious question until the mid sixties, although Kilian had in 1910 (pp. 198, 220) stated that *cryptoceras* was a *Leopoldia*, a view that entailed an eccentric notion of that genus, and Roman in 1938 (p. 334) had treated *Lyticoceras* as a synonym of *Neocomites*.

In 1963, however, Thiermann, in a published version of a dissertation at the University of Hamburg, established a new genus *Endemoceras*, with type species by original designation *Hoplites amblygonius* Neumayr and Uhlig (1881, p. 168), for the group of northern European species long included in *Lyticoceras*. This new name has begun to appear in the literature. For example, Busnardo (1966, pp. 233-235) treats *Lyticoceras* and *Endemoceras* as distinct genera; Rawson (1971a, p. 71) in a paper on *Simbirskites* from the Speeton Clay uses *Endemoceras* without comment, while Kullmann and Wiedmann in a survey of ammonite sutures and phylogeny (1970, pp. 18, 25) accept Schindewolf's family Endemoceratidae (1966, p. 375). The name is used generally in 'The Boreal Lower Cretaceous' (Casey and Rawson 1973) and in current stratigraphical papers (e.g. Kemper 1971; Rawson 1971b).

In view of the wide usage of *Lyticoceras* and the stratigraphical importance of the species included in it the proposed new name needs careful examination before it is accepted.

Thiermann's argument was that *Ammonites cryptoceras* was stated by its author d'Orbigny to come from the 'Lower Neocomian' of Lagne, near Castellane, Basses Alpes and that according to Rutsch and Bertschy (1955) d'Orbigny meant by the

term 'Lower Neocomian' what is now regarded as Infravalanginian (Berriasian) and Valanginian. Consequently Thiermann maintained (1963, p. 348) that *cryptoceras* was not a Hauterivian species, although d'Orbigny used exactly the same words for the horizon of his *Ammonites radiatus*, the type species of *Acanthodiscus*, universally regarded as lower Hauterivian; moreover, Lagne is a well-known locality for lower Hauterivian ammonites (cf. Kilian 1910, p. 204). Thiermann quoted Kilian in support of his view that *Lyticoceras* was a synonym of *Leopoldia* Mayer-Eymar, on the strength of the suture of *cryptoceras*, but he did not discuss further the morphology of *Lyticoceras*.

Busnardo (1966, p. 233) regarded *Lyticoceras* as a valid genus of lower Hauterivian date and, on the basis of study of d'Orbigny's larger figured specimen, mistakenly referred to as the holotype, he diagnosed *Lyticoceras* as follows [translated]: '... evolute, umbilicus wide with sharp edge, whorl section high, tending to be rectangular; primary ribs generally with a slight umbilical tubercle, secondaries intercalated or branching, but all ribs equal on the outer part of the sides where they bend sharply forward, partly covering a smooth siphonal band on the flat or arched venter but with no chevrons; occasional small ventrolateral tubercles may be present, particularly on the bodychamber; suture with asymmetrical lobes like those of *Leopoldia*.' He reports that *Endemoceras* is distinct, though closely related, but mentions only the more frequent and sometimes regular ventro-lateral tubercles and the tendency of the ribs to form chevrons on the venter.

I owe to the kindness of J. Sornay a plaster cast of d'Orbigny's larger figured specimen of *cryptoceras* (Mus. Hist. Nat. de Paris, no. 1884). This specimen is hereby designated lectotype; the cast is figured in Plate 71, fig. 1a-d. D'Orbigny's figure, though restored as usual, is shown to be fairly accurate; the only really misleading aspect of it is the impression of a smooth keel in the side view (fig. 1); however, his figs. 2 and 4 show that the venter is flat. Certainly the species is not a *Leopoldia*.

In interpreting d'Orbigny's specimen it should be noted that the apparently uncrushed outer whorl is in fact slightly distorted obliquely, that the test is missing entirely over some areas and only its inner layers are preserved elsewhere and that the specimen is somewhat worn.

Study of the abundant northern material of the *amblygonium* group shows that in the macromorph species/specimens which compare in size with the lectotype of

#### EXPLANATION OF PLATE 71

All figures half natural size.

Fig. 1a-d. *Lyticoceras cryptoceras* (d'Orbigny), lectotype, 'Lower Neocomian', Lagne, France. (Musée d'Histoire Naturelle, Paris, no. 1884.) Plaster cast, of slightly distorted specimen with inner whorls crushed and most of test missing.

Fig. 2. *Lyticoceras amblygonium* (Neumayr & Uhlig), lectotype, *amblygonium* Zone, Kirchweren, Germany. (Bayerische Staatssammlung für historische Geologie, München.) Copy of Thiermann 1963, pl. 20, fig. 1; a plaster cast of an internal mould with some test preserved between ribs.

Fig. 3. *Lyticoceras amblygonium* (Neumayr & Uhlig), Claxby Ironstone, Nettleton Top Mine, Caistor, Lincs. (C. W. and E. V. Wright Collection no. 22906.) Test largely preserved.

Fig. 4a, b. *Lyticoceras amblygonium* (Neumayr & Uhlig), densicostate form, Claxby Ironstone, Nettleton Top Mine, Caistor, Lincs. (C. W. and E. V. Wright Collection no. 24816.) Test preserved.



*cryptoceras* the ventro-lateral tubercles and ventral chevrons are distinct only if the outer layers of the test are preserved; the siphonal area of internal moulds of such well-chevroned species as *amblygonium* or *regale* is almost or entirely smooth.

For comparison Thiermann's figure (1963, pl. 20, fig. 1) of the lectotype of *amblygonium* is reproduced here (Pl. 71, fig. 2) and two well-preserved Claxby Ironstone specimens are figured. These show that *cryptoceras* and *amblygonium* are indeed closely related; the whorl section, degree of evolution, and the general pattern of ribbing and tuberculation are the same; the two forms share the characteristic sharp twisted bullate umbilical tubercles. The only noticeable differences lie in the ribbing; in *cryptoceras* the primary ribs are only slightly biconcave and tend on the last preserved whorl to become falcoid and sparser, while in *amblygonium* they are more distinctly biconcave and remain dense to a slightly later stage. The lectotype of *cryptoceras* has about 25 umbilical tubercles and 97 ventro-lateral ribs on the last preserved whorl compared with 28 and 71 in the lectotype of *amblygonium* and 22 and 74 (estimated) in another *amblygonium* figured by Thiermann (pl. 21, fig. 3). The Claxby Ironstone specimen of *amblygonium* in Plate 71, fig. 3 has 15 and 48 in a half whorl; the primary ribs become distantly spaced at about the same stage as in *cryptoceras*. The specimen in Plate 71, fig. 4a, b has 41 umbilical tubercles and 89 ventro-lateral ribs.

The suture of *cryptoceras* is not well figured by d'Orbigny and is only poorly visible on the lectotype. However, it can be seen that the second lateral saddle and lobe are not as drawn by d'Orbigny's artist but are much as in the northern group of species; they bear little resemblance to the markedly short and wide elements in *Leopoldia*.

*Lyticoceras cryptoceras* is in fact of lower Hauterivian date and is closely related to *Hoplites amblygonium* Neumayr and Uhlig; the only differences between the two are due to preservation or are of no more than specific significance. *Endemoceras* is, therefore, a synonym of *Lyticoceras*.

Certain other nominal taxa have recently been established in this group. *Eleniceras* Breskowi, 1967 (p. 47) from the lower Hauterivian of Germany, Bulgaria, and the Crimea was distinguished from *Lyticoceras* only by having constrictions and associated trituberculate ribs from a rather earlier stage of growth than in the *amblygonium* group. Most, if not all, macromorph *Lyticoceras* develop similar ornament on the outer whorls and it is very doubtful if *Eleniceras* is justified even as a subgenus. The Madagascan *Besaireiceras* Collignon, 1962 (p. 58), said to be from the upper Valanginian, comprises a group of species that differ only slightly from European *Lyticoceras* by their elongated umbilical tubercles projecting into the umbilicus. It is again very doubtful if even subgeneric separation is needed.

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