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**E. SCHWEIZERBART'SCHE VERLAGSBUCHHANDLUNG**  
(NÄGELE u. OBERMILLER)

- SCHÄFLE, L.: Über Lias- und Doggeraustern. — Geol. Paläont. Abh., N.F., 17, Jena 1929.
- SHARPE, H.: On the Secondary District of Portugal which lies on the North of the Tagus. — Quart. J. geol. Soc., 6, London 1850.
- STENZEL, H. E.: Nomenclatural synopsis of supraspecific groups of the family Ostreidae (Pelecypoda, Mollusca). — J. Paleontol., 21, Menasha 1947.
- STEPIENSON, L. W.: Cretaceous deposits of the Eastern Gulf Region and species of *Exogyra* from the Eastern Gulf region and the Carolines. — US. Geol. Surv. Profess. pap., 81, Washington 1914.
- VIALOV, O. S.: Sur la classification des huitres. — Acad. Sci. URSS. C. R., n. sér. 4, Nr. 1, Moskau 1936.
- WHITE, CH. A.: A review of fossil Ostreidae of North America and a comparison of the fossil with the living forms. — 4. Ann. Rep. U.S. geol. Surv., 1882/83, Washington 1884.
- WOODS, H.: A monograph of the Cretaceous Lamellibranchia of England, vol. II, pt. 9. — Monogr. Paleont. Soc. London, 66, London 1913.
- ZEUNER, F.: Die Lebensweise der Gryphäen. — Paläobiologica, 5, Wien u. Leipzig 1933.

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## On the existence of heteromorph ammonoids in the Lias

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With 1 Figure in Text

**Abstract:** Consequent on a re-examination of the type and only specimen of *Arcuceras marthae* POTONIE, it is concluded that this fossil is not an ammonoid. There is, therefore, no reason to suppose that heteromorph ammonoids existed in Liassic times. The derivation of the heteromorph family Spiroceratidae from Parkinsoniidae is accepted, and consequent changes in classification are discussed.

### Introduction

In the recently-published section 'Mollusca 4: Cephalopoda, Ammonoidea' of the Treatise on Invertebrate Paleontology (1957) the existence of a family of heteromorph or 'uncoiled' ammonites in the Lias (Pliensbachian) is accepted without question, and its existence affects the derivation postulated for the well-known Middle Jurassic heteromorphs. This family, the Arcuceratidae, is founded on a single

specimen, and in view of the phylogenetic role which has been attached to the family in the Treatise it seemed to us desirable that the specimen should be investigated.

F. A. QUENSTEDT figured an indifferently preserved fossil, which he took to be a heteromorph ammonoid ('*Hamites*'), in 1886 (p. 590, pl. 70, fig. 45). It was stated to be from the Lias  $\delta$  of the Breitenbach near Reutlingen, Swabia. QUENSTEDT pointed out in the text that he only had this single, imperfect fragment (. . . der einzige undeutliche Bogen . . .), the significance of which could only be assessed when more material had been found. In 1929 POTONIÉ proposed a new genus and species for this specimen, *Arcuceras marthae* POTONIÉ (1929, p. 226), but did not describe any additional material. To the best of our knowledge, no further discoveries of Liassic heteromorphs have been reported since. In a review of Jurassic ammonoid classification ARKELL set up a new family, Arcuceratidae, to accommodate the genus (1950, p. 359), placing it in a new superfamily Spirocerataceae which included also the family Spiroceratidae HYATT 1900.

### Description of the type of *Arcuceras marthae*

We have examined the original of QUENSTEDT's plate 70, figure 45<sup>1</sup>, and have reached the conclusion that it is not an ammonoid. It is a curved; tapering structure, compressed in the plane of the bedding surface on which it lies. The apical part of the specimen shows no features at all. Under a low-power binocular microscope the remainder can be clearly seen to consist of segments about 1 mm long. In several places the segments are seen to be separated by thin calcareous partitions, whose edges, the 'septal sutures', are straight. There are remains of a calcareous external wall, largely removed by weathering. A transverse section has been cut near the larger end but shows no special features.

It is clear from the above description that the fossil is not an ammonoid. Its true nature is uncertain, but it appears not to be a cephalopod of any kind. Conceivably it is part of the stem or arm of a crinoid.

### The origin of the Spiroceratidae

ARKELL in the Treatise stated (1957, p. 206) that 'The presence of *Arcuceras* in the Lias makes it unlikely that Spiroceratidae are derived from Parkinsoniidae, despite strong resemblance to *Strenoceras*. The hypothesis adopted here is that Spirocerataceae are derivatives of Lytoceratina, perhaps of Ectocentritidae, analogous with the many Cretaceous uncoiled forms generally agreed (since HYATT, 1900) to have arisen from Lytoceratina.'

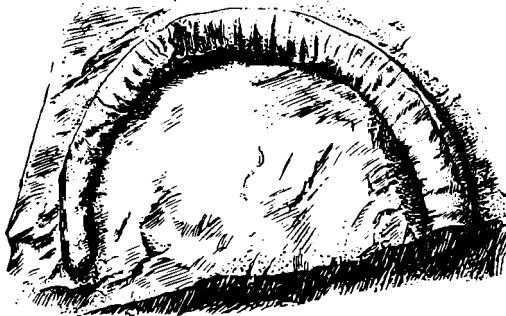
<sup>1</sup> Preserved in the Geol.-Paläont. Institut und Museum der Universität Tübingen; Typenkatalog Ce 5/70/45.

SCHINDEWOLF (1953, p. 123) has already refused, on account of the suture-line, to place *Strenoceras* and *Spiroceras* in the Lytoceratina. This author also rejected the derivation of both these genera from the Parkinsoniidae, for the reason that *Strenoceras* shows "ortho-chron" disposition of the umbilical lobes ( $U_I$  appears first), whereas *Parkinsonia* shows "heterochron" disposition ( $U_I$  later than  $U_{III}$ ). Since, however, WESTERMANN (1956, pp. 246, 270, 273) has shown that orthochron genera can occur in groups of ammonites most of which are heterochron, this objection does not hold, and the close relationship between *Strenoceras* and Parkinsonids may be admitted.

Since Arcuceratidae are non-existent as an ammonoid family, ARKELL's objection to the obvious derivation of the Spiroceratidae, from *Strenoceras*, now appears to be definitively removed. The exact correspondence between the ornament of *Strenoceras* and *Spiroceras*, coupled with the fact that both are of the same age (Upper Bajocian) would seem to render their close relationship beyond doubt. The peculiar form of the *Spiroceras* suture-line (SCHINDEWOLF, 1951, p. 30;  $U_{II}$  the largest lobe on the whorl-side) has been declared by WESTERMANN to be a consequence of the heteromorph shell-form. We believe, also, therefore, that either Spiroceratidae were derived from *Strenoceras*, or that they have an immediate ancestor in common.

### Classification

Consequent on the conclusion reached in the last section, the Spiroceratidae must be transferred from the Suborder Lytoceratina, in which they are placed in the Treatise, to the Suborder Ammonitina. It is doubtful whether, in view of the close similarity (except in shell-form) to certain Parkinsoniidae, the separate Superfamily Spirocera-taceae needs to be maintained; if not, it becomes a junior synonym of Perisphinctaceae STEINMANN, 1890, of which Spiroceratidae becomes a family.



„*Arcuceras marthae* POTONIÉ“, Orig. of QUENSTEDT, 1886, pl. 70, fig. 45.  $\times 2$ .

### References to Literature

- ARHELL, W. J.: A classification of the Jurassic Ammonites. — J. Paleont., **24**, 354—364, 2 Abb., Tulsa, Okla., 1950.
- Entries in: Part L: Mollusca 4: Cephalopoda, Ammonoidea, of Treatise on Invertebrate Paleontology. — Geol. Soc. Amer. & Univ. of Kansas Press 1957.
- POTONIÉ, R.: Die ammonitischen Nebenformen des Dogger (*Apsorroceras*, *Spiroceras*, *Parapatoceras*). — Jb. preuß. geol. Landesanst., **50**, 216 bis 261, Taf. 17—19, Berlin 1929.
- QUENSTEDT, F. A.: Die Ammoniten des Schwäbischen Jura. **2**, Der Braune Jura. Tübingen 1886.
- SCHINDEWOLF, O. H.: Zur Morphogenie und Terminologie der Ammoneen-Lobenlinie. — Paläont. Z., **25**, 11—34, 19 Abb., 1 Taf., Stuttgart 1951.
- Über *Strenoceras* und andere Dogger-Ammoniten. — N. Jb. Geol. Paläont., Mh., 119—130, 10 Abb., Stuttgart 1953.
- WESTERMANN, G.: Phylogenie der Stephanocerataceae und Perisphinctaceae des Dogger. — N. Jb. Geol. Paläont., Abh., **103**, 233—279, 9 Abb., 3 Beil., Stuttgart 1956.

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## Kies-Tillite, ein pleistozänes Festgestein glazialer Entstehung

Von A. Schüller, Berlin

Mit 3 Abbildungen im Text

Die Sedimente der pleistozänen Vereisung sind durchweg Lockergesteine. Vom petrographischen wie vom geologischen Standpunkt ist daher bemerkenswert, daß in den oberen Lagen der deutschen Mittelgebirge betonharte, schichtige Kieselablagerungen vorkommen, die von PRIEHÄUSSER (1930, 1937, 1951) als Firneisgrundschutt gedeutet wurden, während sie vorher als rezenter Verwitterungsschutt wenig Beachtung fanden. Verf. (SCHÜLLER 1954, vgl. Ref. M. SCHWARZBACH 1956) hat erstmalig (und übrigens unabhängig von PRIEHÄUSSER) auch im Thüringer Wald diese Gesteine als eiszeitliche Bildung beschrieben. Durch Schürfe der Forstlichen Standortkartierung in Jena (zuerst durch Prof. Dr. EHWALD und anschließend durch Revierförster W. SCHILLING und Forstmeister H. JÄGER) sowie der Staatlichen Geologischen Kommission in Jena (Dipl.-Geograph Dr. UNGER) und Freiberg/Sa. (Dr. BLÜHER und Dipl.-Forstwirt WÜNSCHE) sind