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Two Recent *Triforis* from the Eastern Atlantic

(Gastropoda: Cerithiopsoidea).

By

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With 1 text-figure and plates 18-19.

Although the first known *Triforis* were described from the Eocene of the Paris basin and the Miocene of France and Italy, living representatives of the genus are presently known only from Japan, South Australia and New Zealand. The purpose of this paper is to describe two new species of *Triforis* from the Great Meteor Bank, in the Eastern Atlantic.

A review of the species and subgeneric concepts has been presented by MARSHALL (1977a) and additional species are recorded by GOUGEROT & LE RENARD (1980). Most recently, MARSHALL (1980) has described the radula of *Triforis blacki* MARSHALL and this proved to be taenioglossate; he in consequence transferred *Triforis* from the rhinioglossate Triphoridae to the taenioglossate mesogastropod superfamily Cerithiopsoidea.

The radula of *T. superstes* as described below is very different from any known radula of sinistral (KOSUGE 1966, BOUCHET & GUILLEMOT 1978) or dextral (MARSHALL 1977b) Triphoridae, and is also different from the radula of *blacki*. Future research might prove in dextral *Triforis* s. l. a variety of radular types as great as in the family Triphoridae s. s.

Triforis superstes n. sp.

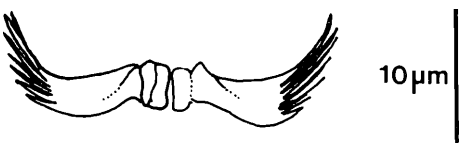
Type material holotype and 2 paratypes in the Zoologische Staatssammlung München; one paratype in MNHN, Paris.

Type locality Great Meteor Bank, METEOR Cruise 9 C, st 172 (29°48 N, 28°23 W), 300-310 m.

Description of the holotype: Shell solid, slender, white, consisting of 11 whorls that very slowly increase in diameter. Suture very shallow. Three protoconch whorls sculptured with axial costae. Teleoconch of eight whorls, sculpture predominantly axial; axial costae opisthocline, nodular in a suprasutural and a subsutural zone, interspace concave. A very fine but strongly defined spiral sculpture is present between the axial ribs. Basal disc smooth, encircled by a thread. The aperture is tritubular, with the anterior and posterior siphonal canals completely enclosed and projecting as tubes of similar length. Within the aperture, the opening of the siphonal canal is wide.

Dimensions height 5·3 mm, breadth 1·4 mm.

The radula of a juvenile 4·5 mm long is ca. 250 µm long and has a formula 1.0.1 (Text-fig. 1).



Text-fig. 1. Radular row of *Triforis superstes* n. sp.

Triforis anelpistos n. sp.

Type material holotype in the Zoologische Staatssammlung München.

Type locality Great Meteor Bank, METEOR Cruise 9 C, st 172 (29°48 N, 28°23 W), 300-310 m.

Description: Shell solid, slender, white, consisting of 10·5 whorls that very slowly increase in diameter. Suture very shallow. There are about 2·5 protoconch whorls (but there is an even transition between protoconch and teleoconch) sculptured by slightly opisthocline axial ribs. The eight teleoconch whorls are sculpured with distant, opisthocline axial ribs; these ribs are weak subsuturally, become stronger abapically and are nodular in a suprasutural spiral zone. There is an extremely faint and ill-defined spiral sculpture in the adapical half of each whorl. Basal disc smooth and encircled by a poorly defined thread. The aperture is basically as in *superstes* but with shorter canals. Within the aperture, the siphonal canal is narrow and constricted.

Dimensions height 4·65 mm, breadth 1·28 mm.

Discussion.

Compared with all the other described *Triforis*, the two new species are closest to the Eocene and Miocene fossils of Europe. The Recent and fossil species from Japan and New Zealand fall within *Paramendax* POWELL and *Granulotriforis* KOSUGE, which are characterised by a different teleoconch sculpture (MARSHALL 1977a: 102). We have examined material of the following species: *bitubulatus* BAUDON, *dominici* GOUGEROT, *dujardini* MAYER, *fenestratus*

COSSMANN, *plicatus* DESHAYES and *raulini* COSSMANN & PEYROT. *Triforis dominici* and *fenestratus* probably deserve a new subgenus of their own, but all other species are more closely related. They all have the base of the siphonal canal constricted and *dujardini* is apparently the closest possible ancestor to *anelpistos*.

All of the 4 known specimens of *superstes* exhibit a nonconstricted opening of the siphonal canal within in the aperture, and this is considered to be a specific character that is not linked with age. None of the fossils examined present a similar condition.

Both *superstes* and *anelpistos* have protoconchs indicating a lecithotrophic type of development. This may explain their apparently restricted distribution since no *Triforis* has been found in the well investigated fauna from off the nearby Azores Is. In the fossil material, protoconchs indicative of planktotrophic development have been observed on *bitubulatus* and *dominici*; they are of lecithotrophic type in *bitubulatus liancurtensis* GOUGEROT & LE RENARD; they are poorly preserved or broken in the rest of the material.

Geographical notes.

The Great Meteor Bank is the southernmost and one of the largest of a group of seamounts in the N. E. Atlantic. It is situated 450 miles south of the Azores and 800 miles west of the African coast from which it is separated by the Canaries basin. It is cone shaped and rises from a depth of more than 4000 m up to a large (ca. 1132 km²) elliptic, nearly flat plateau, 270-350 m below sea level. With inclinations of about 13° to maximum of 50° the slope is rather steep.

As to the structure and origin of this seamount there are contradictory results of geological and geophysical studies. According to HINZ (1969), SCHOTT (1969) and PRATT (1963) it is a volcanic cone with relations to the Mid-Atlantic ridge (ULRICH 1971), consisting of basaltic rocks, overlayed by an almost complete cover of sediments. Deviating from this FLEISCHER et al. (1970) and ARIÇ et al. (1970) consider the Great Meteor Bank to consist of consolidated sediments which are interpreted as elements of the continental shelf that drifted away.

The development of the bank is supposed to have started at the beginning of the Cenozoic and was completed by the middle Oligocene, about 35 MY ago (HINZ 1969).

The uppermost bottom layer in the plateau region, from where the sample was obtained, is composed of medium to coarse grained biogenic sand with forams, corals, shell fragments and poriferous biogenic limestones.

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Summary *Triforis superstes* and *anelpistos n. sp.* are described from the Great Meteor Bank. They are the first Recent *Triforis* known in the Atlantic and are compared to their Eocene and Miocene ancestors.

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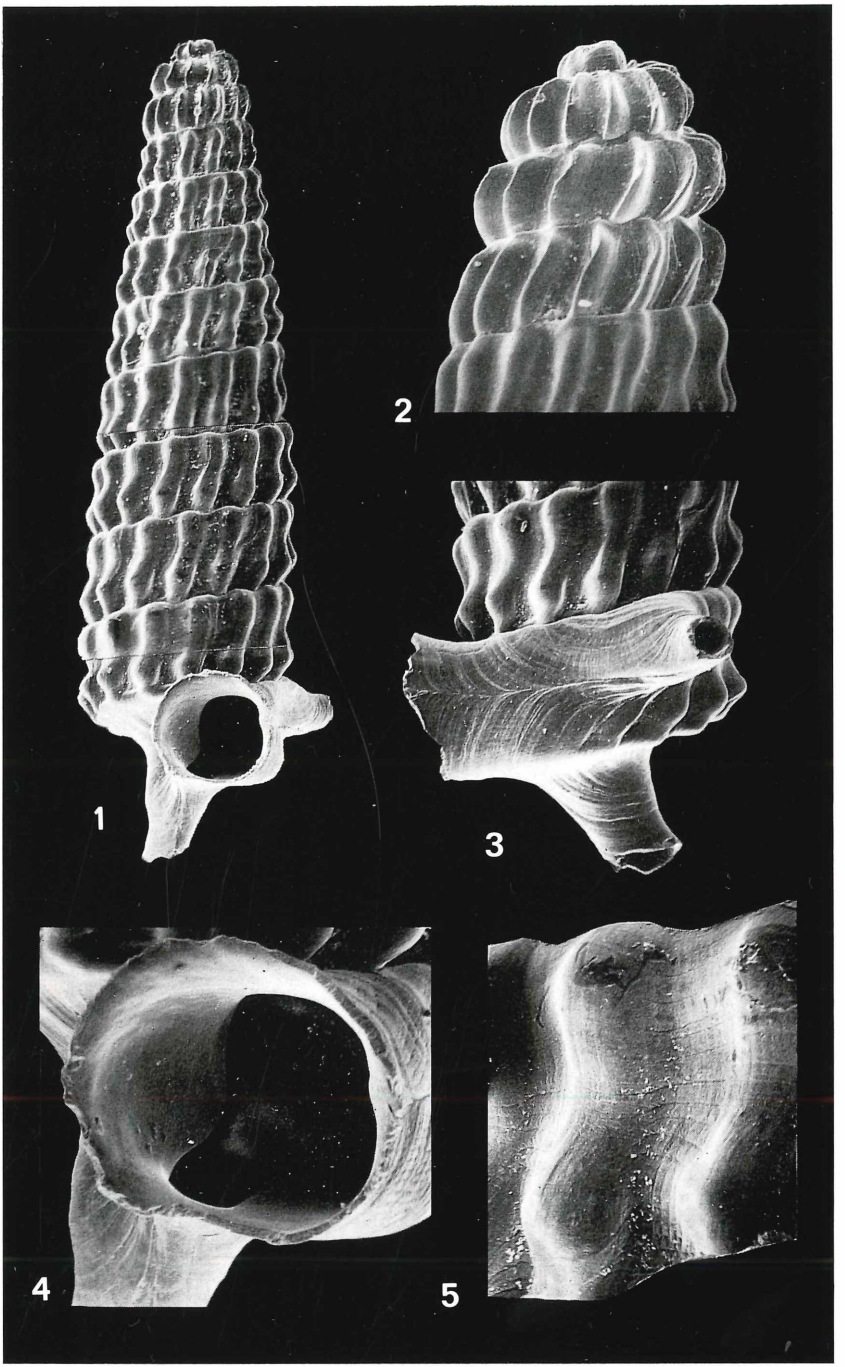
Explanation of plate 18.

(SEM photos by Centre de Microscopie du CNRS, Bd. Raspail.)

Triforis superstes n. sp.

Fig. 1) holotype, × 20·5.
Fig. 2) protoconch of a juvenile paratype, × 80.
Fig. 3) holotype, side view, × 45.
Fig. 4) holotype, close up view at the base of the siphonal canal, × 80.
Fig. 5) holotype, detail of the spiral sculpture, × 125.



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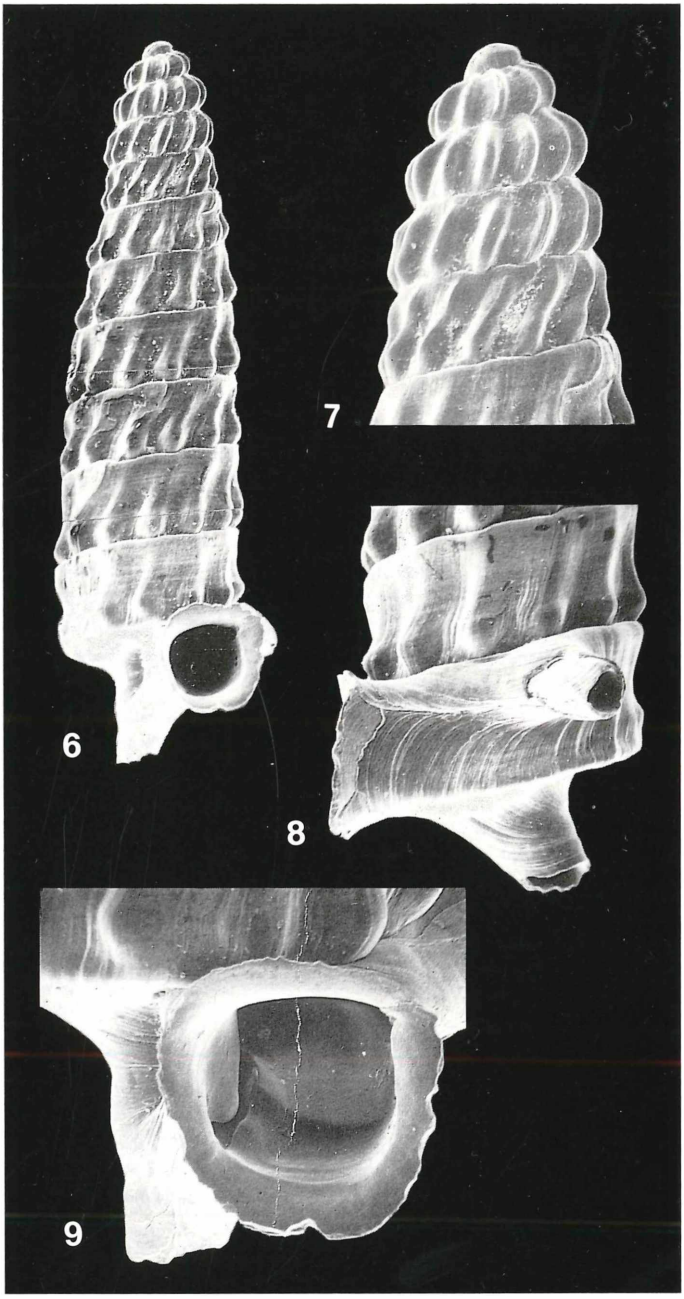
Explanation of plate 19.

(SEM photos by Centre de Microscopie du CNRS, Bd. Raspail.)

Triforis anelpistos n. sp.

Fig. 6) holotype, × 20·4.
Fig. 7) protoconch of the holotype, × 60.
Fig. 8) holotype, side view, × 45.
Fig. 9) holotype, close up view at the base of the siphonal canal, × 80.



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