

## The Ammonites and other Fossils from Aveline's Hole (Burrington Combe, Somerset)

By

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The discovery of seven ammonites and a Jurassic fossil gastropod in the Upper Palæolithic layers at Aveline's Hole was briefly reported by Davies (1924, p. 10; 1925, p. 108, *Plate 7, Fig. 1*). Part of a Carboniferous fossil gastropod which has never been published has recently been found in the Society's collection. The present note results from a re-examination of these fossils.

One of the ammonites (the centre one of the top row in Davies' figure) was lost when the Society's museum was burnt down in an air raid in November, 1940. The other six together with the Jurassic gastropod were recovered from the ruins, and the Carboniferous gastropod was in store. The ammonites have been re-catalogued as M1.9/1-6. The numbers 1-6 will be used in referring to them here. All the ammonites are represented by parts of the internal moulds of living-chambers, the inner, chambered portion of the shell being missing in every case. They are all roughly semicircular and in the following table the angle subtended by each specimen has been estimated, and the extreme length along the chord measured:

<i>Cat. No.</i>	<i>M1.9/Identification</i>	<i>Angle subtended</i>	<i>Chord (mm.)</i>
1.	<i>Arnioceras bodleyi</i> (J. Buckman)	187°	51.5
2.	indeterminate	170°	43.0
3.	<i>Arnioceras bodleyi</i> (J. Buckman)	203°	31.0
4.	<i>Vermiceras scylla stoweyense</i> Donovan	c. 170°	45.5
5.	<i>Arnioceras bodleyi</i> (J. Buckman)	175°	30.0
6.	<i>Arnioceras bodleyi</i> (J. Buckman)	168°	36.5
	(lost) <i>Arnioceras</i> sp.	c. 180°	c. 44.0
	Carboniferous gastropod	155°	45.0

The Jurassic gastropod was identified by the late Mr. J. W. Tutchter as *Pseudomelania heddingtonensis* J. Sowerby. It is an internal mould of about three whorls of this helicoidal shell. The Carboniferous gastropod (*Plate*

36, Fig. 7) has been kindly examined by Mr. Murray Mitchell of the Institute of Geological Sciences who reports that it is "probably a euomphalid—but it is too poorly preserved to say whether it is *Straparollus* (s.s.) or *Euomphalus*. It is almost certainly from the Lower Carboniferous and, if local, the oolitic nature of the matrix would suggest the Burrington Oolite as a possible source although oolites also occur in the Clifton Down Limestone."

*Provenance of the fossils.* All the ammonites are from the Lower Liassic rocks and are now believed to be of Lower Sinemurian age; the reference of one of them by Mr. Tatcher to the earlier genus *Caloceras* (Davies, *loc. cit.*) being now regarded as a misidentification. Revision of some of the Lower Liassic ammonites of the area (Donovan 1952) has shown that the *Arnioceras* could have come from a number of places, the nearest being the north flanks of Dundry Hill (about 9 m. north-east of Burrington), and the outcrops between Keynsham and Radstock (about 7 to 12 m. east). *Vermiceras* is of more restricted occurrence and beds which yield this fossil in an uncrushed state seem to occur only in the area from Bishop Sutton (about 7 m. east of Burrington) to Keynsham.

The Jurassic gastropod *Pseudomelania heddingtonensis* comes from the Corallian Beds the outcrop of which extends from the Weymouth area discontinuously northwards past Trowbridge, Swindon and beyond. The nearest outcrops to Burrington, are near Trowbridge (Wilts.) and Wincanton (Som.), each about 25 m. distant.

The Carboniferous gastropod could have come from Burrington Combe and indeed Aveline's Hole lies in the Burrington Oolite which is one of the likely source rocks. Other localities in north Somerset are possible.

*Evidence of human workmanship.* No sign of human workmanship can be seen on the two gastropods. With regard to the ammonites Davies (1925) wrote "No evidence of human work can be observed . . ." but the present writer disagrees with this. A summary of the evidence follows.

Taking the ammonites as a whole, the likelihood is remote that a random collection of seven fragments would produce a series so similar in size and shape as those from Aveline's Hole. It is, therefore, likely that the fragments were selected, or more probably that they were broken from more complete specimens.

Ammonite 1. (*Plate 36, Figs. 1, 8-10*). This is the most interesting of the fragments. Both ends are very smoothly rounded and this is because they have been coated with some substance. This substance has reacted differently from the fossil itself in the museum fire and has turned black

and cracked while the ammonite is grey. There is also a difference of texture, the coating being smoother than the surface of the natural fossil. When the junction is examined under a binocular microscope it can be seen that the coating has been applied to irregularly broken ends of the fossil. An attempt has been made to fashion a keel at the larger end, in imitation of that naturally occurring on the outer curve of the ammonite, and at both ends the groove on the inner side of the curve, which is the impression of the keel on the (missing) preceding whorl, has been continued onto the coating (*Plate 36, Figs. 9, 10*).

The composition of the coating has not been determined. Miss Joyce Plesters of the National Gallery Laboratory has identified the surface layer as ferric sulphide, but it seems unlikely that the whole coating is made up of this. The only inorganic plastic material likely to have been available to the inhabitants of Aveline's Hole is clay, and I believe that this must have been the material used. Whether it was baked or merely allowed to dry cannot be determined since the specimen has been in the museum fire.

No coating has been detected on any of the other ammonites.

Ammonite 2. (*Plate 36, Figs. 2, 13*). Smooth and much worn all over.

Ammonite 3. (*Plate 36, Fig. 3*). Fairly fresh but shows a slight polish on projecting parts, especially the ribs and keel.

Ammonite 4. (*Plate 36, Figs. 4, 11*). Much worn, especially the smaller end where the complex form of the last septum has become blurred and polished on its projecting parts (*Plate 36, Fig. 11*). The larger end was broken in the museum fire.

Ammonite 5. (*Plate 36, Fig. 5*). Fairly fresh except for the ends, which are smooth and worn.

Ammonite 6. (*Plate 36, Figs. 6, 12*). Much damaged, partly by the museum fire. The end show signs of wear. The smaller end appears to have been chipped to its present shape (*Plate 36, Fig. 12*).

Lost ammonite. The reduced illustration does not show details, but the larger end seems to have been terminated by a sharp break. The smaller end may have coincided with the last septum of the ammonite.

Unless the fossils were collected from river gravels or the sea shore, their worn state must be due to other than natural causes. This is made likely by the small probability that seven natural fragments so alike in size and shape could have been collected. The fact that the ends of No. 1 were rounded off by applying a coating suggests that the others were rounded by abrasion after they had been broken to the desired form, and that eventually the alternative way of finishing the ends was hit upon. It is possible that others had coatings which did not survive burial in the cave-earth.

*Positions of the finds in the cave.* The original records of the excavation did not survive the destruction of the museum. The *Pseudomelania* was found at a depth of between two and three feet, between 30 and 35 feet from datum (i.e. from the mouth of the cave) (Davies 1924, pp. 9, 10). It was associated with some "unimportant flint flakes" and "a few small bones".

The Carboniferous gastropod was not recorded in the *Proceedings* when it was found. Dr. E. K. Tratman believes that it came from the entrance area, from a depth of about two feet.

The ammonites were all found together ("a nest of seven Ammonite body cases"—Davies 1925, p. 108) near the western end of a burial of two bodies between 60 and 65 feet from datum, near some fragments of skull and jaw. The level is not recorded but the burial penetrated down through the cave earth to the conglomerate beneath. Also associated with the burial were:

Eighteen incisor teeth of red deer, including one drilled and two notched (Davies 1925, *Plate 7, Fig. 6*, lower row). All "scorched by fire".

Worked upper canine teeth of pig (op. cit. *Plate 7, Fig. 6*, upper row).

Drilled engraved incisor tooth of horse (op. cit. *Fig. 1, No. 7*).

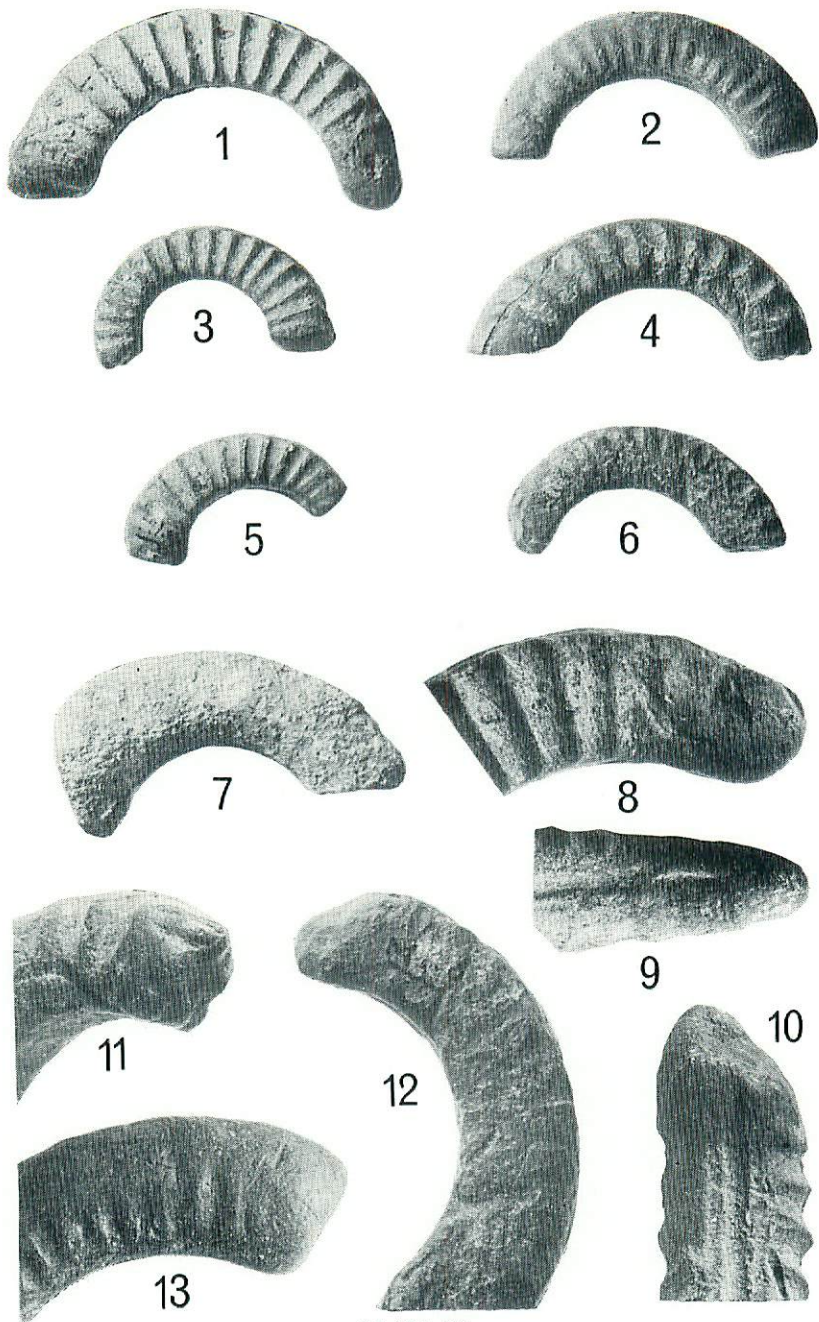
Part of deer tibia with knife marks (op. cit. *Plate 7, Fig. 5*).

Flint tools including "pygmies" (op. cit. *Fig. 1, Nos. 3, 5, 6; Plate 7, Fig. 1, top row?*).

*Cultural stage.* The main series of finds from the cave earth of Aveline's Hole belong to the local Creswellian industry, distinguished as Cheddarian by Bohmers (1956). The ammonites were associated with a burial believed to have been made in a pit dug through the cave earth, but which yielded flints similar to the main series. It presumably belongs to the later part of the Cheddarian occupation.

*Comparison with other sites.* Fossils have been recorded from many Upper Palæolithic sites. Oakley (1965) assembled records of many kinds of molluscs, brachiopods, corals, echinoids, and sharks' teeth from deposits of this age in Europe, Asia Minor and the Ukraine. Many of these had been perforated and were apparently strung together along with recent shells and teeth to make personal ornaments.

Ammonites have been found in Upper Palæolithic layers at a number of caves including Fourneau Diable (Bourdeilles, France); (Solutrean III); the Grotte du Mas d'Azil (Ariège, France; Magdalenian; Pequart & Pequart, 1962, *Plate 15, Fig. 17*); Kesserloch (Canton Schaffhausen,



**PLATE 36**

Ammonites and Carboniferous gastropod (*Fig. 7*) from Aveline's Hole, Burrington.  
*Figs. 1-7* natural size. *Figs. 8-13* enlarged  $\times 2$ .

(*Photographs: P. J. Elgar and E. W. Seavill*)

Switzerland; Magdalenian; Bandi 1947, p. 115); and La Grotte de l'Ammonite, near La Rochefoucauld (Charente, France; latest Magdalenian; Ragourt, 1934). These were all complete ammonites which had been perforated through the centre of the umbilicus (the thinnest part) for suspension, and the one from La Grotte de l'Ammonite had had an irregular spiral row of small pits made on each side. What appears to be a fragment of about one-third of a whorl of an ammonite was also figured from Mas d'Azil by Pequart and Pequart (1962, *Fig.* 137, No. 5) but there is no comment on it in their text. Apart from this possible fragment, therefore, it appears likely that all the other recorded ammonites were used as ornaments.

*Significance of the finds.* The Aveline's Hole fossils show no unequivocal signs from which their purpose may be inferred. The *Pseudomelania* comes from rocks which outcrop close to the Chalk and which could, in fact, have been traversed by prehistoric man going from Burrington along Mendip top to get fresh flint east of Trowbridge. The most likely explanation of its presence in the cave is that it was picked up as a curiosity on such a trip.

The seven ammonites from Aveline's Hole differ from others recorded from Upper Palæolithic sites in being approximately semicircular segments of whorls and not whole ammonites. Their use or significance may be discussed under the following headings:—

1. *As tools.* The worn state of the fossils, especially of the ends of several of them, makes one wonder whether they were used as tools in some rubbing or burnishing operation, but the fact that the ends of No. 1 were rounded by applying a coating seems to rule out this possibility, at least if the same explanation is to apply to all of them.

2. *For magic or religion.* There is an extensive folklore of ammonites, summarised by Skeat (1912). Much of this is concerned with explaining the form of the ammonite, usually as a petrified snake, but there are also examples of ammonites being regarded as having magical properties from several different parts of the world. In modern times groups of closely similar objects are used for divination and this could be an interpretation of the Aveline's Hole ammonites. If they had been carried about in a bag for this purpose their worn state might be explained.

3. *As ornaments.* The matching and grading of the seven ammonites also accords with the hypothesis that they were part of a personal ornament. One recalls the use for this purpose of wild boar tusks which are not very different in size or shape. There are no signs of perforations or

grooves which often characterise objects used in this way, but the ammonite segments could perhaps have been incorporated in knotted or woven work in string or hair.

No single convincing interpretation can be reached. It is not necessary to assume that the fossils were collected and used for a single purpose: both divination and suspension as ornaments are attractive hypotheses but the ammonites could not have been used for both purposes simultaneously.

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