Mystery object found on Bath GS trip to Manor Farm

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The object above was found at **Borrow Pit, Manor Farm, Aust** - a Triassic mystery. An expert's opinion is as follows:-

"My interpretation of this is that it lacks the symmetry and detail to be a fossil animal in its own right, though algal activity may have played a part in producing the lumps on the surface. It has a slightly laminated appearance and I believe it to be a sedimentary accretion. Whether it has a nucleus of any kind could only be resolved by sectioning and polishing it, but I did notice the tell-tale signs of pyrite decay products around the edge of the central lamina.

Pyrite is widespread in the Westbury Formation. It exists as individual cubes, clusters (framboids) and granules, and is largely responsible for the bluish black colour of the sediment. It arose as a result of the reaction between iron hydroxide gels (these are excreted by algal blooms) and sulphur liberated by sulphur-reducing bacteria sourced from organic matter such as coprolites or decaying plant material. The effect of one of these FeS clusters (they only need to be a few microns in diameter) at the sediment/water interface is to create a patch wherein the pH of the pore seawater is considerably reduced in relation to its surroundings; an acid bubble, if you like. Trapped within the sediment, this can have the effect of attracting, dissolving and then precipitating any calcareous material suspended in the seawater.

Bear in mind that the **environment** at this time was in the process of changing from the brackish marine conditions of the first Upper Triassic incursion, to the fluvial channel conditions of the much more calcareous Cotham Member, and ultimately culminated in the lagoonal, nodular calcareous mudstone strings of the pre "White Lias" After the desert conditions of the Keuper, things became more and more propitious for shelled marine life, so it sort of fed off itself and there would have been more and more calcareous material present in the water, starting from small beginnings. Rhythmic precipitation of this sort, discussed by Tony Hallam in about 1966 I think, responds to seasonal and even diurnal temperature and salinity changes and proceeds from small pea-sized "nummular" nodules to gradually bigger ones and finally coalescing into continuous beds.

Hope this helps."