

Discovery of Clusters of Diademid Echinoids from the Upper Kimmeridge Clay

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Paul Wignall in his Paleontological Association special papers in *Paleontology* No 43, published in 1990, noted from the Upper Kimmeridge Clay the occurrence of unnamed diademid echinoids. In the past, collecting has yielded specimens that are normally isolated, with spines detached and often with no association with each other. The specimens found have a maximum size of 8 mm and are as yet not named, possibly due to their poor preservation or wear during exposure by the sea.

The collection here at Kimmeridge has on display a beautifully preserved fish skull and flank (K1839), with two diademid echinoids in close association with it from the same levels. Shown here on the right.



Very recently we have found and collected slabs of shale with 40 plus specimens in very close association. The first finds were slightly waterworn but still showed good detail with a lot of the echinoids having a set of intact spines. They show in contrast to the dark shale, as the test and spines are white and calcitic. An example is shown here on the left (K25418).

Very soon after this initial find, at the same level and due to the low height level, we observed two specimens lying underneath a very thin layer of calcite. Two separate slabs were removed and taken back to the workshop, stabilised and dried. The next

job was to try and remove the calcite layer. This was initially done using a scalpel with an offset blade to slide under and lift off the layer. Unfortunately, this tended to just slightly graze the surface lying underneath.

The final solution was to use an air abrasive, using aluminium oxide and a very small orifice nozzle and use the handset with the direction of flow or air/abrasive powder parallel to the surface of the slab. This very quickly lifted the calcite layer without abrading the surface underneath. A second air abrasive unit charged with sodium bicarbonate and again having a very small diameter orifice nozzle with the air pressure set to approximately 12 psi and the feed rate of the power flow set to just under one on the dial – that has a range of up to ten.

The result of numerous hours of abrading has yielded 42 specimens of diademid echinoid (shown in the image on the right), the majority of which have articulated spines. The spines have a very thin coating of iron pyrites. These finds should, with the quality of preservation, now be identifiable and may prove to be new to science. For me that is not as important as to why we have so many clustered together and for what reason, but it would take another poster to discuss the whys and wherefores.

