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HYDROCARBONS IN SULPHIDE ORE DEPOSITS

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Since Hollis (1987) discussed Uranium in association with hydrocarbons in the Isle of Man, several more instances of the association of hydrocarbons with sulphide ore deposits have been reported. Parnell (1988) found that uranium bearing fluids give up the metal when passing through hydrocarbon rich areas by reduction of the uranium by sulphides present either in the hydrocarbons or in mineral sulphide veins. The occurrence of uranium at Laxey is discussed in detail, and compared to that at Halkyn and Great Ormes Head (North Wales) Southwick (South West Scotland) and several lesser enriched deposits such as Matlock in Derbyshire. Ferguson (1984) notes several Pennine locations, in which there is a strong association between heat flow from underlying granites, mineral veins, and an anomalously high content of hydrocarbons in some of the limestones.

The origin of much of the hydrocarbon is likely to be organic, as pointed out by Ferguson (1984), and because of the presence of coal and other organic remains in sedimentary rocks through which the metal ore veins pass. An example of such remains is given by the Derbyshire "Stinkstones", a bituminous deposit seen at Windy Knoll (map reference SK13-83-) near Castleton, and also close to the Blue John mine. The close association of such hydrocarbons with the veins may be coincidental in many cases. However, Parnell's discovery of the control of uranium mineralisation by hydrocarbons, and other such examples as the calcite-bitumen mixture west of Windy Knoll, and near mines at Ecton, Matlock and Ashover in Derbyshire would suggest that the minerals are deposited at low enough temperatures for the hydrocarbons to survive, and also that the hydrocarbons exert considerable control on the oxygen and sulphur fugacities required for deposition of the metal sulphides.

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