

IN PRAISE OF FLUORITE

John Proctor

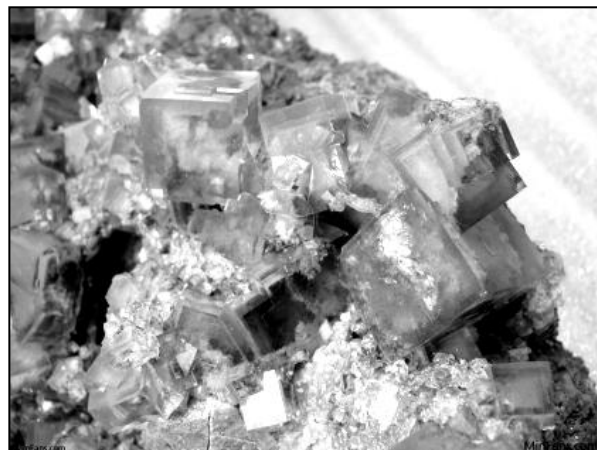
As a keen amateur mineralogist I hold dear the whole mineral kingdom and I can be equally entranced by rows of different sparkling minerals: blindingly bright pyrites, perfectly formed yellow-orange spessartine garnets or their emerald Russian counterpart, the exquisite uvarovite or ugrandite garnet, tourmalines of many hues, the diamond-like topaz, green or blue beryl from Pakistan – the list is endless and all part of Mother Nature's rich tapestry!

Yet I always return to my favourite crystals, the wondrous fluorite, one of the most ubiquitous minerals on the Earth's crust. Fluorite is simply calcium fluoride (CaF_2) with a hardness of 4 on Moh's scale, perfect octahedral cleavage and a white streak with vitreous lustre. Its name is derived from the Latin *fluere*, "to flow", which alludes to the ease with which it flows as a flux in metal smelting.

It can occur alone in mineral veins or in association with many minerals such as galena, sphalerite, topaz, barite, Celestine, dolomite or cassiterite. However its relative softness precludes its being faceted for jewellery or ornaments; one notable exception being Blue-John which has been used for cups, vases etc. The crystals of fluorite are truly amazing and attain many morphological forms from truly massive through granular to truly compact. It is all there.

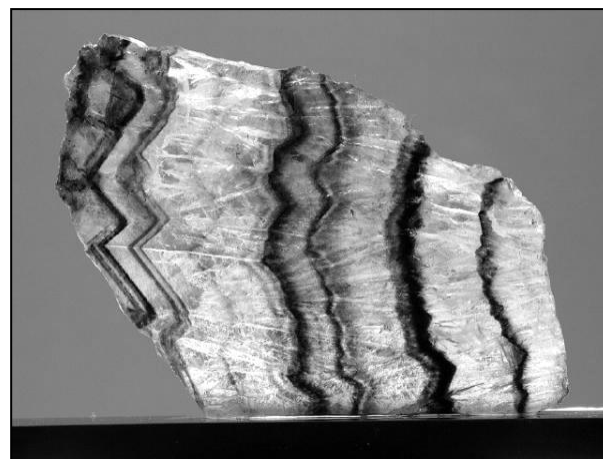
Yet it is in its colour range that it excels, for fluorite can be found in almost every colour known. In fact it has the distinction of having the widest of all colour ranges and even single

crystals can be multi-coloured or colour-banded. In my own collection I have specimens in green, various shades of purple, yellow-grey, brown, black, and a rare colourless form which denotes freedom from impurities. (Phantom is not infrequently encountered in purple forms.)



Crystals of phantom fluorite

My examples hail from China, Russia, Morocco, Mexico, Namibia and best of all, from Cumbria, Durham and Derbyshire in the UK. In fact the Odin mine, Castleton, Derbyshire is located in the hillside of Treak Cliff and has been worked since Roman times. This is the source of the exquisite Blue-John which is violet-blue with white and yellow banding. To the uninitiated it can almost resemble a starred or shattered car windscreen. It is truly spectacular.

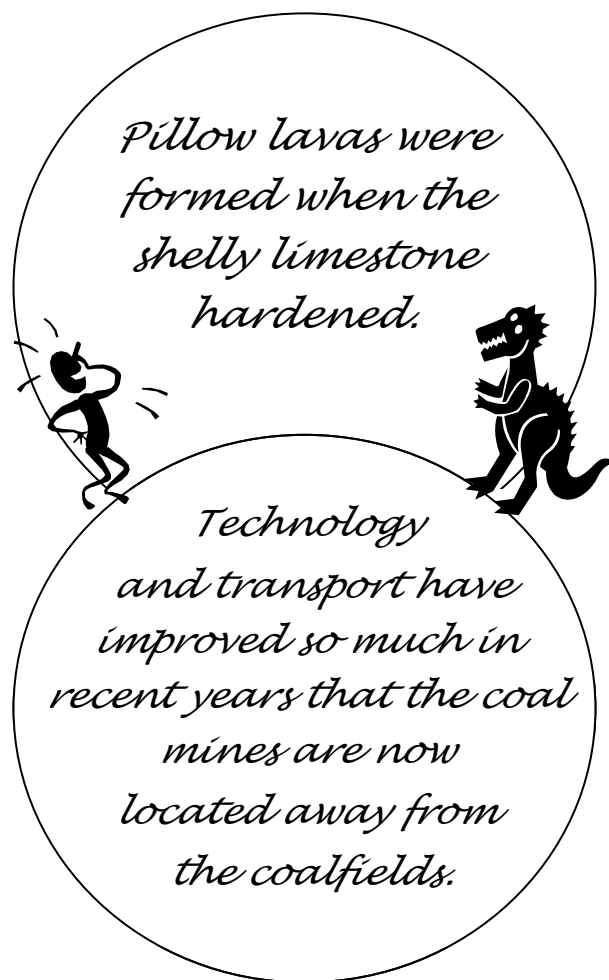


An example of Blue John

Other countries where fluorite may be found include Italy Switzerland, Norway, the USA, Canada and Eastern Europe. It is a veritably international mineral.

Fluorite exhibits the phenomenon of fluorescence – the flow of visible light – on exposure to ultraviolet light, but relatively weakly. It also has a number of important uses in industry, notably bauxite treatment, glass production, foundry work and the production of hydrofluoric acid (used for etching glass).

Fluorite is a most rewarding subject for collecting as it is readily available, and comes in a huge variety of forms. Most mineral dealers carry large stocks. Rare and choice specimens can fetch hundreds or even thousands of pounds, but most are reasonably priced placing this fascinating, beguiling mineral easily within the reach of most of us.



OVER ONE HUNDRED VOLCANIC VENTS: FIFE and LOTHIAN, SCOTLAND

Elizabeth Devon

This four-day field trip was expertly led by Dr. Nicholas Chidlaw in March of this year.

All the black dots you can see on the map are discrete volcanic centres of Early and Late Carboniferous and Early Permian in age. We investigated all the sites numbered 1 to 7 on the map. This article would be very long indeed if I wrote about everything we saw, so I have restricted it to a bit of background and

some sites of special interest that show the various stages of the development of tuff-rings. It was hard to decide which to include as the whole trip was fantastic and extremely interesting, made particularly good by Nick's excellent hand-outs, meticulous planning and attention to detail and inexhaustible enthusiasm and patience.

In Early Carboniferous times 359 - 318 Ma (million years ago), crustal stretching began to affect southern Scotland and a developing NE-SW trending fault system released pressure in the Earth's interior, causing numerous eruptions of mafic magma along this line. This was the beginning of volcanism and associated intrusions that continued in Scotland for the next 100 million years,