300 to 290 million years ago

Carboniferous and Permian

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1-4 - Dartmoor granite

Granite consists mainly of the minerals orthoclase and plagioclase feldspar, quartz and biotite mica with some muscovite. Quartz and feldspar appear as light-coloured minerals, whilst the biotite mica has a very dark colour. In some parts it contains feldspar crystals, or megacrysts, up to 15 cm (6 inches) long. These help give some Dartmoor granite a decorative appearance. But Dartmoor granite is variable, and the uniform-textured rock, without megacrysts, was preferred for building and monumental work.

5 - Aplite in granite

One of the last events in the formation of the South West's granites was the intrusion of small bodies and veins of aplite into the solidified early granite. Aplite, a light-coloured variety of granite, contrasts with the earlier coarse granite into which it intruded.

6-9 - Orthoclase feldspar crystals (sodium potassium silicate)

Crystals from the megacrystic varieties of Dartmoor granite.

10 - Quartz (silicon dioxide)

Glassy crystals with the typical hexagonal prismatic shape (rock crystal) make up at least 20% of the volume of granite.

11-12 - Mica schist

South Hams

These rocks, from between Start Point and Bolt Tail, have been subjected to regional metamorphism – the process by which rocks are changed by extreme heat and pressure in the Earth's crust. The original minerals of sedimentary rocks have been recrystallised, and given a layered structure which has then been folded.

13 - Haematite (iron oxide)

Sharkham Point, Brixham

This form of haematite is described as 'botryoidal', from the Greek botrus, due to its resemblance to a bunch of grapes.

14 - Haematite (iron oxide)

Lancashire

15 - Native copper (the free metal)

Probably from Cornwall

Native copper usually occurs in the weathering zone of copper lodes. The flat filigree form, which extends along joint fissures in the surrounding rock, is common.

16 - Native copper

Devon Great Consols Mine

17 - Native copper

The Lizard, Cornwall

18 - Malachite (copper carbonate)

Devon or Cornwall

Copper occurs as green malachite in this specimen. This copper mineral has been used to make cosmetics, paint pigments and jewellery for centuries.

19 - Malachite and azurite (copper carbonates)

Devon or Cornwall

Copper occurs as green malachite and blue azurite in this specimen. Both minerals form through weathering of other copper ores, such as chalcopyrite, a copper iron sulphide.

20 - Chalcopyrite (copper iron sulphide)

Buckfastleigh

21 - Chalcopyrite, pyrite and sphalerite

Ramsley Mine, South Zeal, Devon

The sulphides of copper, iron and zinc often occur together.

22 - Azurite

Devon or Cornwall

While not a major source of copper, this mineral is a good surface marker for prospecting work because of the bright colour.

23 - Hornfelsed slate

Meldon Quarry, near Okehampton

Slate baked by the heat from the Dartmoor granite magma. The specimen shows light and dark banding from the layering of sedimentary rock. This shows that the original sedimentary rock was folded and changed into slate before the Dartmoor granite was formed.

24 - Cassiterite (tin oxide)

Charleston United Mine, St Austell, Cornwall

This massive form of cassiterite would have been very rich in tin. In the more recent working of the Cornish tin mines, ores containing less than 1% tin were extracted.

25 - Manganese ore

'Black Pit', Pierces Farm, Upton Pyne

Manganese was mined at Upton Pyne near Exeter between 1770 and 1815. It was used for making bleaching powder and also in glass-making, possibly at the glass works at Glasshouse Lane, Exeter.

26-27 - Specular haematite (iron oxide)

This variety of haematite is called 'specular haematite' – from the Latin specularis, meaning 'like a mirror' – because of its brilliantly reflecting crystals. It is associated with crystals of quartz in these specimens.

28 - Wolframite (iron tungstate)

Hemerdon, near Plympton

Wolframite contains the element tungsten. As tungsten carbide, it is an essential component of many cutting tools, as it toughens steel. It is also used for x-ray tubes, jewellery and watches.

29 - Stibnite (antimony sulphide)

This is the main ore of antimony, which is used in flame retardants for fabrics. Small amounts of antimony have been mined in West Devon, usually associated with lead and zinc. But the main area of production was around Port Isaac in Cornwall.

30-31 - Pyrite (iron sulphide)

Great Rock Mine, Hennock

32 - Chalcopyrite and pyrite with quartz and siderite

Cuba

33 - Pyrite (iron sulphide) 'Lady's slipper'

Virtuous Lady Mine, Buckland Monachorum

A coating of pyrite was deposited over a crystal of barite, or possibly gypsum, which was later dissolved. It left this distinctive shape. This rare form is so named due to its similarity to a slipper.

34 - Pyrite (iron sulphide)

Near Redruth, Cornwall

35 - Pyrite nodules (iron sulphide)

36 - Arsenopyrite (iron arsenic sulphide)

Devon United Mine

In the later part of the 19th century Devon was the biggest arsenic producer in the world. The arsenopyrite was processed by roasting to produce white arsenic (arsenic trioxide), much of which was exported to America where it was used in insecticides.

37-38 - Processed tin

Smelting tin is a relatively easy process as it melts at 2320°C. At first charcoal was used but this was later replaced by coal.

39 - Native gold

South-west England

In Victorian times beautiful, feather-like gold crystals were discovered on the cliffs near Torbay. Mining was never viable as the gold was formed in very narrow calcite-filled fissures which were not very extensive.

40 - Native silver

Guanajuato Mining District, north-east Mexico

41 - Native silver

Naturally occurring metallic silver.

42 - Native silver

Willsworthy Mine, near Mary Tavy

43 - Native silver

This metallic form was probably how silver was first discovered and mined. Today most silver is recovered as traces during the processing and refining of other metals.

44-46 - Galena (lead sulphide)

Galena is the most important source of lead worldwide. It can contain significant amounts of silver – making it a particularly valuable ore. An important area of production for silver-lead ore in Devon was around the village of Combe Martin, where mining started in the medieval period and ended in the late 19th century.

47 - Anglesite (lead sulphate)

Anglesite is formed by the decomposition and oxidisation of the lead sulphide, galena, in the weathering zone of lodes.

48 - Tin ingot

Chyandour, near Penzance, Cornwall

Once smelted, pure tin was poured into moulds, forming ingots. Each company had its own mark stamped on their ingots. In Cornwall the lamb and flag was a symbol representing purity.

49 - Tin mining tools

Picks, shovels, hammers and chisels were the working tools of the miners.