

The Geology of Anchor Church

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What is the geology of Anchor Church?

Until recently, it was believed that the Anchor Church hermitage was a natural cave made by the River Trent, that was then expanded during the 18th century. We now know that this is wrong: the Anchor Church caves are entirely artificial. They were carved out by hand in the 8th century AD and were expanded over the centuries that followed.

The Anchor Church caves were carved into a river cliff which in turn was shaped by the melting of a glacier towards the end of the last glacial period (around 16,000 years ago) in a process known as *fluvio-glacial melt*. These cliffs comprise of conglomerate rock with bands of sandstone throughout. The caves contain four chambers and are carved into a band of sandstone which is located between two conglomerate rock bands which appear in the floor and ceiling of the caves.

Both conglomerate rock and sandstone are types of sedimentary rocks. Conglomerate rock is formed of sand and pebbles that have been worn by fast flowing water until they are smooth and rounded, usually held together by silica, calcite or iron oxide. Sandstone is formed when grains of sand are pressed together over thousands or millions of years. Both of these rocks that make up the cliff would have been formed during the Triassic period, around 250-247.1 million years ago.

How were the caves made?

Sandstone is soft and porous but can be very durable, which makes it ideal for the carving of artificial caves. During the Medieval period, there were two main methods of which caves were carved. The first was digging into the side of the rock and carving out rooms horizontally. The second method was to dig vertically down into the stone and carve out rooms and spaces to the sides. Both of these techniques would have been done using hand tools such as chisels and mallets. For small dwellings such as Anchor Church, it would have been possible for just one person to carve out the cave in a relatively short time period.

Other Medieval sandstone caves

Anchor Church wasn't the only cave to be carved out of sandstone during the medieval period.

City of Caves, Nottingham

In Nottinghamshire, there is the so-called 'City of Caves'. This is a cave system on a much larger scale than the caves at Anchor Church, with over 500 caves dating to the medieval period underneath the city of Nottingham. While there are no hermitages, some of the caves have been used for other religious purposes such as monastic chapels. This hasn't been the only purpose of the caves. They were also used for storage for local pubs, malt-kilns, tanneries, metal works, wagon works, butchers, cisterns, wine vaults and grocers' cold stores. Like Anchor Church, these caves would have also been carved out with hand tools, although it would likely have taken a lot longer because of the high number of rooms.

Saberebi Monastery, Georgia

Another cave complex in the Kakheti region of Georgia also contains medieval caves carved out of sandstone. They were created during the 9th century AD and contain a refectory and 11 churches, some of which have domed ceilings. It is thought that only a small number of monks lived there, possibly 10 with a father superior, and it is unknown why so few monks would need so many

churches. The caves were eventually abandoned and two theories could illuminate what happened: either they were abandoned after the Seljuk invasions of Georgia in the 1060s AD or after the Mongol devastation of the area in 1265. Unfortunately, the sandstone at this particular site is exceptionally soft and many of the caves are unstable or have collapsed.

Conclusion

While caves in the medieval period had many uses, often there were some elements of religious activities enacted within. Even though some sites were small, like Anchor Church and its four chambers, others were larger, like Nottingham and its 500 rooms. The geological conditions as well as particular hand tools and methods contributed to the creation of artificial caves such as those at Anchor Church.

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