An Exploratory Walk led by John Baker

Stonesfield Slate - Geological Importance

Composed of a thin-bedded, fine-grained, sandy limestone with some ooliths, the Stonesfield slate is found in at least six discontinuous, wedge-shaped deposits varying in thickness between 0 and 2 metres, as is seen in Fig 2 below.

Fig 2

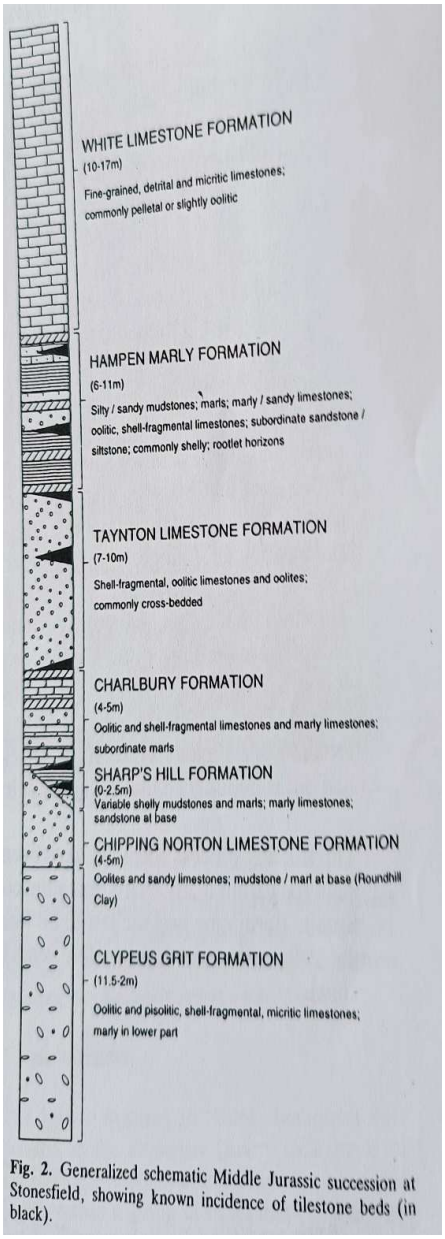
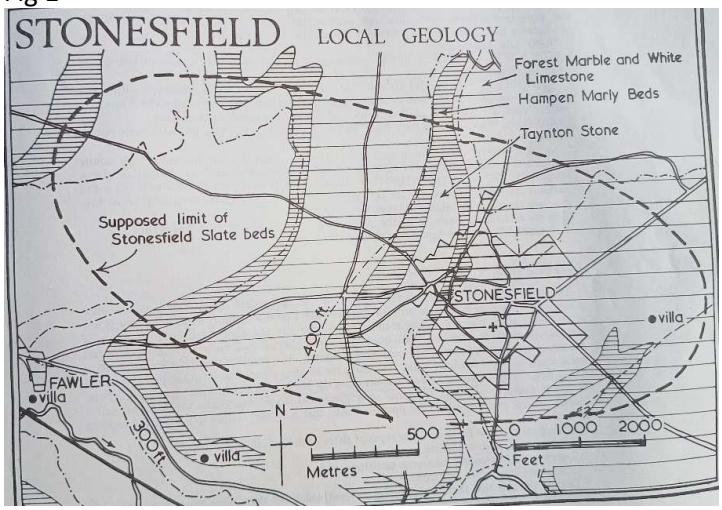


Fig. 2. Generalized schematic Middle Jurassic succession at Stonesfield, showing known incidence of tilestone beds (in black).

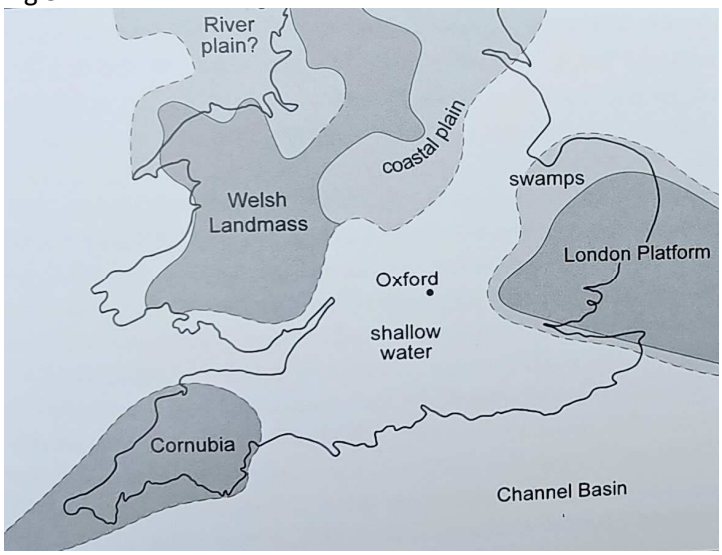
It is located in a small oval area 1.5 kilometres wide centred on the village, as seen in Fig 1 below.

Fig 1



It was formed in a high-energy environment at the edges of a fluctuating shallow, tropical sea, maybe even along a strand line. It was formed in the middle Jurassic, 150 million years ago.

Fig 3



The Stonesfield slate gained worldwide fame because of its unusual fossil content which is of marine and terrestrial origin.

The marine fauna includes sharks, numerous fish, bi-valves (especially the tough-shelled Trigonia), gastropods, turtles, ichthyosaurs and some scarce ammonites.

The terrestrial fauna comprises beetles, dragon flies, pterosaurs, four different shrew-like mammals and several dinosaurs. The most notable dinosaur was the Megalosaurus bucklandii, which was the first dinosaur in the world to be recognised and identified as such by William Buckland in 1824.

The terrestrial flora includes ferns, cycads and a ginkgo. Much of the collection is on display in the Oxford Natural History Museum.

Stonesfield Slate - Economic Importance

The term "slate" is a misnomer since the only resemblance it bears to grey Welsh slate, for example, is that it can be split into thin slabs. It is more correctly called a tile stone and provides a roofing material, which beautifully complements the stone used in the actual buildings.

Slate mining dates back to Roman times and was at its height in the 18th and 19th centuries. There were many full-time miners as the Parish Register (Fig 8) shows, although most men were involved in agriculture as well. The earliest adits and mines were in Stocky Bottom. Typically, mine shafts were sunk with galleries off. For example, at Spratts Barn, the mine shaft is 7.8 metres deep with a semicircular gallery stretching well over 100 metres (Fig 4). The galleries were no more than two metres high (Fig 5) and the only light was from candles. Fig 6 shows at least twenty known mine shafts. The last mine closed in 1909. The photograph (Fig 7) was taken in 1905.

Once mined, the stone was brought to the surface and laid out in fields, covered in turf to keep it moist. When frost was expected, a bell was rung in the street to summon villagers to come and clear the turf so that frost shattering could split the stone. Miners had their own names for different sizes of stone, for example, short cock, middle cock and large cock. Waste stone built up into large banks of chippings.

Many fossils were found as the stones were split and were often sold on to enthusiastic Victorian collectors.

Fig 7

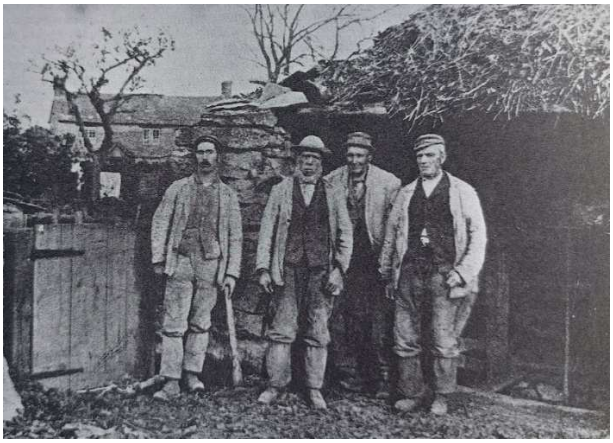


Fig 8

Fig. 8 Stonesfield Parish Registers 1771-1795 Burials and Baptisms; Mentions of W the Slate Industry (Powell 1972)

1771 & 1784	William Hounslow is termed "slate-digger"
1775 & 1782	Edward Hounslow is "slateman" but in
1791	he is slate digger
1777	George Hounslow is "slater"
1781	John Oliver is "slate-digger" and John Fowler is "slate worker"
1781	Joseph Griffin is "slate man" but in
1790 & 1795	he is "slate-digger"
1782	James Laughton is "slate digger"
1783	Robert Laughton is farmer and "slate man"
1784	James Hounslow is "slate digger"
1786	James Oliver is termed "pitman"
1787	Samuel Hounslow is termed "pitman" and then "slate digger"
1790	James Griffin is "slate digger"
1795	John Howes is "slate digger"

Fig 4

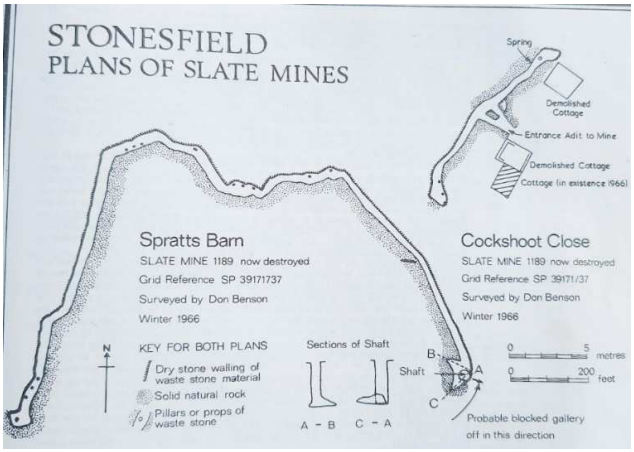
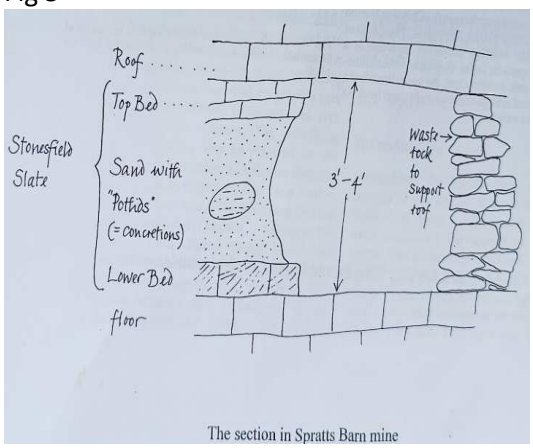
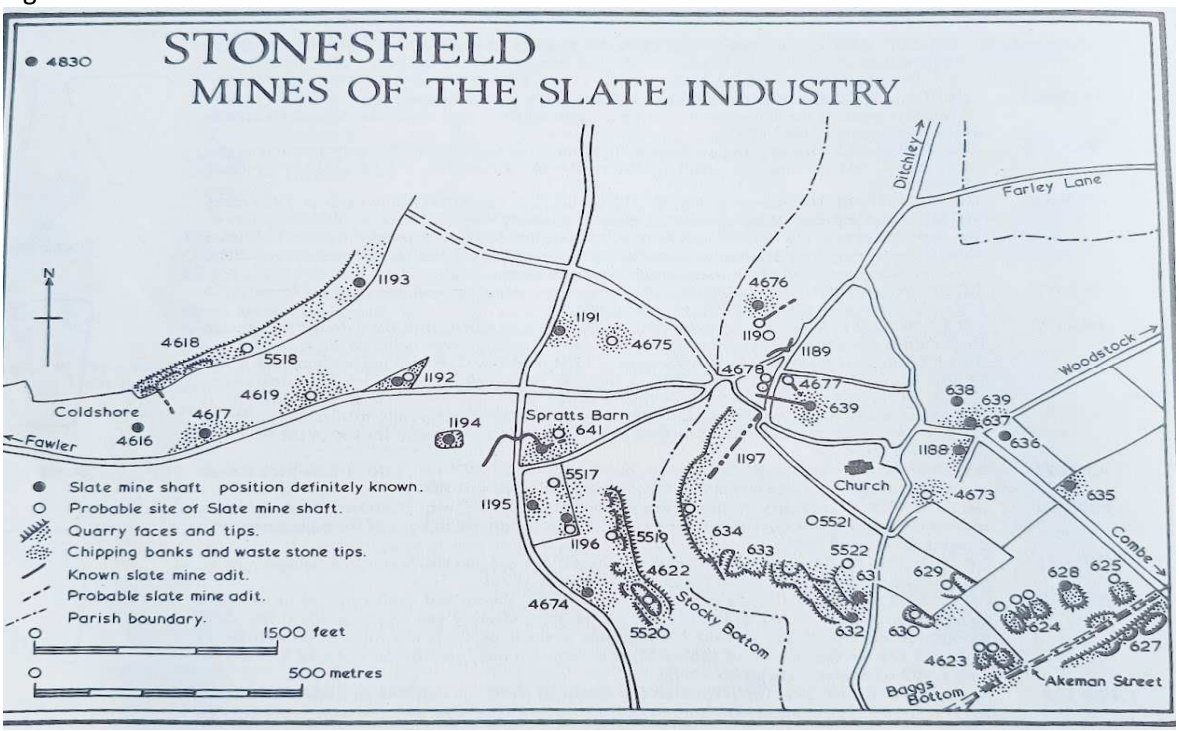


Fig 5



The section in Spratts Barn mine

Fig 6


STONESFIELD
MINES OF THE SLATE INDUSTRY
4830
N
Ditchley
Farley Lane
Woodstock
Combe
Coldshore
Fawler
Spratts Barn
Church
Stocky Bottom
Baggs Bottom
Akeman Street
1193
4618
5518
4619
4617
4616
1192
1194
641
1191
4675
4676
1190
1189
4678
4677
639
638
637
636
635
1188
4673
1197
1195
5517
1196
5519
4622
4674
5520
634
633
5522
631
632
629
630
628
625
624
627
623
O5521
Slate mine shaft position definitely known.
Probable site of Slate mine shaft.
Quarry faces and tips.
Chipping banks and waste stone tips.
Known slate mine adit.
Probable slate mine adit.
Parish boundary.
1500 feet
500 metres

The Evenlode Gorge

During the last Ice Age, along with most of southern England, the Stonesfield area experienced periglacial conditions. Ice sheets never reached this far south.

As Fig 9 shows, there were several major glacial and inter-glacial periods starting about 800,000 years ago. During interglacial periods substantial melt water rivers flowed over the frozen land cutting down to sea levels as much as 150 metres below present day. The maximum ice advance was the Anglian glaciation period (400,000 million years ago) when a vast melt water river created a gorge with river cliffs on the outside bends of giant meanders. Today these remain a significant feature along the valley.

Tributary valleys flowed into the meltwater river and remain today in the shape of the landscape. Most have no streams at all and are thus known as “dry valleys” even though they may contain springs when the water table is high.

When the ice finally retreated, a much smaller river occupied the floor of the valley which in turn cut down through previously deposited sediments leaving gravel deposits on river terraces. The Evenlode is now a tiny stream randomly meandering across the former valley floor and as such is known as a misfit stream.

Fig 9