

## BLACKHEATH STONE

If you walk regularly on the common you will recognise the small dark brown/grey pieces of stone which are scattered all over the sandy paths. This is a hard iron bearing stone called carstone or more commonly ironstone.

Ironstone occurs in irregular bands within the lower greensand which is a geological structure formed millions of years ago in southeast England, particularly forming the Surrey Hills. This hard ironstone predominantly exists in thin often convoluted layers (photos 1 & 1a), which accounts for the small thin fragments you see on the footpaths. The ironstone in this area is particularly dense and dark coloured compared to some other parts of the country.



1. Typical thin layers of ironstone in a holloway at Blackheath



1a. Slightly thicker more convoluted layers at St Catherine's Hill, Guildford

Over the millennia the sand erodes and the ironstone layers near the surface break up resulting in the small pieces scattered everywhere, typically 1-2 cm thick. (Photo 2)

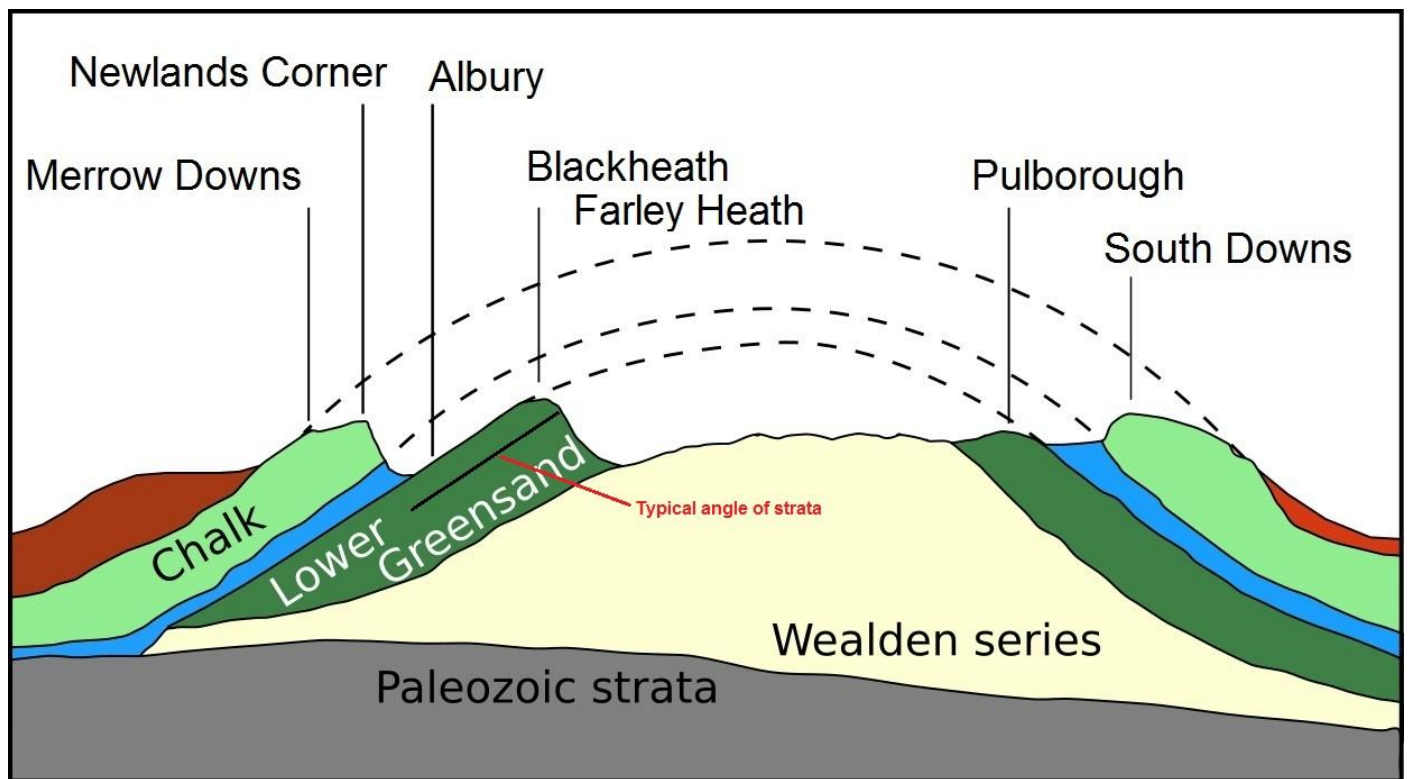


2. Small pieces of ironstone on a path on Blackheath

The Lower Greensand was deposited as sandy sediment at the bottom of a shallow sea with later deposits of clay and chalk above it. Within the Greensand, iron bearing mineral sediments were deposited in layers at different times, eventually transforming chemically to become the hard ironstone we see now.



Later seismic activity in the earth's crust pushed this up as you see in this diagram (3), followed by erosion of the top to leave the Downs and Surrey Hills we know today. Within the Greensand, the layers of ironstone mostly come up through the sand at an angle because of the seismic shift. However the strata undulate so that in some places the layers are horizontal and in others near vertical.



3. Formation of the Downs, the Surrey Hills and the Weald

Less frequent are thick (15-20 cm) bands of ironstone which provide bigger pieces which are suitable for use in building. Photo 4a and 4b show large lumps pulled out of the ground on Blackheath in March 2021. They were both partly exposed in an ancient boundary bank.



4a. A large piece of Blackheath Stone pulled out of the ground in March 2021



**4b.** A large piece of Blackheath Stone pulled out of the ground in March 2021

A 1931 report on excavations at Hascombe Iron Age Hillfort by the archaeologist S.E. Winbolt mentions big pieces of ironstone which he suggested had come from Hydon's Ball, and which he describes as "locally called **Blackheath Stone**". It seems likely therefore that in those days this was a well-known description for ironstone in this area and this is why I am using this term. Also interesting is his linking Hydon's Ball and Blackheath in this way which I refer to in this article.

Important finds of Middle Stone Age artefacts on Blackheath were reported in the 19<sup>th</sup> century. Finds made by Lt Col H.H. Godwin-Austen in 1881 and later, which are now in various collections, were described as being **found on land below the surface of Blackheath in ironstone trenches**. Another report describes them as being found within **land disturbed by ironstone working**. This suggests that "ironstone working" was a common activity on Blackheath in the 19<sup>th</sup> century. ([https://www.exploringsurreypast.org.uk/collections/getrecord/SHHER\\_2233](https://www.exploringsurreypast.org.uk/collections/getrecord/SHHER_2233))

This ironstone is unsuitable for iron smelting as the proportion of silica in the rock is too high, so ironstone workings on Blackheath must refer to something else.

Walking on Blackheath you may also have noticed areas with parallel trenches and ridges in the ground. Photos 5, 6, 7 & 8 show some of these areas which occur in different places on the common, some covering quite a large area and some smaller, some quite deep and others now relatively shallow.

There is another small area north-east of the house called Rosemary Hill near the cross-roads (photo 24). These are in the same compass bearing as the area shown below in photo 6 which is near the main car park.





5.



6.



7.





8.

There is also a large area of these trenches and ridges at Hydon's Ball in the woods south of the National Trust car park (photo 9) and others have been identified on Shere Heath above Albury Park, on St Martha's Hill and on Ockham common near Wisley.



9. Similar trenches and ridges at Hydon's Ball.

Different sandstones occur in the Greensand suitable for building purposes: Bargate Stone from the Godalming area is well known. Reigate Stone was used for parts of Westminster Abbey in Norman times. The Catholic Apostolic Church built at Albury Park by Henry Drummond around 1840 was built with Hurtwood Stone from Pitch Hill as well as local ironstone. Hurtwood stone was also used for restoration work on Westminster Abbey in the 1950's (as explained to us on a school visit to the quarry in about 1956 when I was 10). None of these three types of sandstone are quarried now.

**Blackheath stone** ironstone is not suitable for conventional quarrying because of the way it occurs in random layers as described above. However in the 19<sup>th</sup> century very large quantities amounting to many thousands of tonnes were used in and around Albury so a plentiful supply was coming from somewhere.

I know of only three buildings in Blackheath village built with Blackheath Stone: the mid-19<sup>th</sup> century cottage in photo 12 as well as the vestry building of the church and another small building, both of which are probably the remains of typical small single-story dwellings (10 & 11).





10. Small building in the village, now part of a larger house.



11. The vestry of St Martin's Church



12. Mid-19<sup>th</sup> century cottage in Blackheath village.



Albury Park was altered in the early 19<sup>th</sup> century with elevations constructed with Blackheath Stone and sandstone (probably Hurtwood stone) with brick dressings. The tower and battlements on top were added by Augustus Pugin more or less entirely in Blackheath Stone, after the house was acquired by the banker Henry Drummond in 1819. (Photo 13).



**13.** Albury Park's new frontage from the early 19<sup>th</sup> century.

In 1842 Drummond moved the entire village of Albury, apart from the church, from close to his mansion in Albury Park to its present position and you can see numerous buildings and walls in the village built with Blackheath Stone. At the same time a lot of Estate cottages were built with Blackheath Stone as well as other buildings scattered around the area. (Photos 14, 15, 16 & 17 are just a small selection). Old photos show that both the old schools of Chilworth and Albury were built with Blackheath Stone.

In his 1850 book, A Topographical History of Surrey, EW Brayley describes the old church within Albury park as being constructed of sandstone and ironstone (the produce of the neighbourhood).



**13a.** Albury Park Lodge (ironstone and Hurtwood Stone)





14. Cottages in Weston Yard, Albury Estate



15. Postford Farm Cottages



16. "Aston Villa" opposite Chilworth station. The boundary wall is also ironstone.





**17.** Cottages on Wonersh Common built around 1860-65 according to one of the owners.

The Saxon church at Albury Park was built with Blackheath Stone (photo 18) and the 13<sup>th</sup> century tower of Wonersh Church was built largely with Blackheath Stone (photo 19) so the availability of this stone was known about for a long time even if it was difficult to exploit it for general use.



**18.** Albury Park Saxon church  
This stone probably came from the Albury Park/Shere Heath area.





**19.** The 13<sup>th</sup> century tower of Womersley Church was built largely with Blackheath Stone rubble stone.

It seems that on Blackheath and some other nearby places, at or just below the surface, were areas with thick ironstone accessible for digging out to get the larger chunks suitable to use in building.

My theory to explain the parallel trenches and ridges is as follows:

Millions of years ago during the build-up of the Lower Greensand at the bottom of a shallow sea, currents in the water sometimes created parallel undulations on the surface of the sand, rather like the ripples you see on the beach caused by the waves of a receding tide, but on a much larger scale. These undulations enabled a deeper layer of the iron bearing sediment to build up in the bottom resulting in parallel lines of thick ironstone.

When erosion over the millennia caused these lines of ironstone to appear near the surface, they could be “quarried” by simply digging out the stone and piling up the sand and earth at the side creating the ridges we see now.

Other random diggings have been noted on Blackheath and these may be where unsuccessful exploratory digs were made looking for further seams of this stone whilst some may of course result from the Canadian military camp on the common in WW2.

Evidently in the 19<sup>th</sup> century the laborious extraction of Blackheath Stone was done by Drummond’s estate for construction in and around Albury as well as by the Duke of Northumberland who already owned land and property in the area before he acquired Albury Park through marriage in 1890. Perhaps easily accessible deposits of the stone were becoming harder to find and this may explain the connection with Hydon’s Ball and why in 1931 Mr Winbolt described stone from Hydon’s Ball as “locally called Blackheath Stone”. I have not seen any buildings around Hydon’s Ball with Blackheath Stone; rather they are all in Bargate Stone which



was readily available by conventional quarrying from Godalming, so the extraction of Blackheath Stone at Hydon's Ball may have been to provide stone to complete building works around Albury.

Photo no.20 is some lumps of Blackheath Stone found by the southern end of the trenches on Hydon's Ball.



**20.** Large lumps of “Blackheath Stone” at Hydon’s Ball, about 20 cm across.

This 2012 aerial photo of Blackheath shows some areas where the heather appears to have been mown to promote new growth and this seems to show the remains of trenches and ridges over fairly large areas which are highlighted on the second copy of the photo, (photos 21 & 22). In fact some of the other areas of trenches and ridges on Blackheath seem to continue well past the obvious trenches and ridges in these photos. The heather has now grown considerably but if you walk across, the trenches and ridges are quite evident.



**21.** 2012 aerial photo showing lines of trenches and ridges.





**22.** Some of the trenches and ridges highlighted



**23.** There is another large area of ridges and trenches here which follow a similar compass bearing (approx.  $126^\circ$ ) as those in the photo above.





**24.** This is the area of ridges on the common behind the house called Rosemary Hill mentioned on page 3. They also follow a similar compass bearing as the other areas nearby.

There are also a couple of areas on the north side of Blackheath with deeper trenches which are in a similar east-west orientation as the others there (photos 25 & 26 below).



**25.** Deeper trenches and ridges on the northerly side of Blackheath Common just outside the eastern boundary of Moorland House

The trenches shown here continue right through one of the ancient boundary banks which looks like it was then put back but less substantially than the adjacent undisturbed part, which you can see in the photo below. This medieval, or possibly 18<sup>th</sup> century Enclosure Act bank, is the boundary between Albury and St Martha's parishes.





**26.** Looking back towards the boundary bank which has not been rebuilt as substantially as the original.

The other deep furrow starts next to another old boundary bank and there are large pieces of ironstone visibly eroding out of the bank. Indeed the two pieces I show in photos 4a and 4b at the beginning of this paper were pulled out of that bank by me. This bank is the boundary between two parcels of private land near to Postford Farm and has not been breached, unlike the Parish boundary above. This suggests that maybe stone exposed while creating a section of the boundary bank in earlier times indicated that here was a band of stone worth excavating. These two areas appear to be in a lower stratum than those on the main expanse of the common. They are 300 m apart but each have a similar compass bearing of around 158°.

Some old walls at Postford Farm, shown below, on the edge of Blackheath are shown on 18<sup>th</sup> century maps suggesting occasional use of Blackheath Stone between its medieval use in church buildings and the large-scale use in the 19<sup>th</sup> century. Postford Farm has two farmyards on either side of the Lawbrook stream and is very close to the deep trenches mentioned above:



This section obviously repointed, or rebuilt more recently, with an older part to the left.



Apart from the Saxon and 13<sup>th</sup> century church buildings mentioned above and the 18<sup>th</sup> century walls at Postford Farm, the dozens, perhaps hundreds of buildings built in the 19<sup>th</sup> century with ironstone in and around Albury when Drummond relocated the whole village, including the new façade of Albury Park and the old schools of Chilworth and Albury as well as St Martha's chapel and numerous houses and Northumberland estate cottages dotted around, point towards an abundant and ready supply of thousands of tonnes of this stone around Blackheath and Albury.

The new 19<sup>th</sup> century Mayorhouse Farm building at Farley Heath was originally part of the Albury Estate and was built with ironstone rubble which may have come from Blackheath although I think there are signs of similar extraction of Blackheath Stone in that area too. The very big house Lockner Holt designed by Henry Woodyer, was built on the north side of Blackheath for the Duke of Northumberland in 1860 (and extended in 1890) using Bargate stone as well as brick dressings and sandstone ashlar, possibly Hurtwood stone, but the small Arts and Crafts lodge house was built with Blackheath Stone in 1891. Maybe in building Lockner Holt they recognised the difficulty of locating such a huge amount of Blackheath Stone and opted for another choice.



Mayorhouse Farmhouse, Farley Heath  
(Sold by the Albury Estate in 1922 for £1750)



Lockner Holt lodge built 1891



Opposite the entrance to Albury Park, dated 1908.  
Possibly one of the last local houses to use Blackheath stone.  
Some nearby estate cottages dated 1911 are in brick.



## Further investigations

As I have said already, what led me to be convinced of the idea of ironstone extraction on Blackheath was firstly the comment by Godwin-Austen in the 1880s describing his finds on Blackheath as being found in **land below the surface of Blackheath in ironstone trenches** and secondly the comment by Winbolt in 1931. He may have jumped to a conclusion that the piece of stone found at Hascombe had come from Hydon's Ball but linking Hydon's Ball to Blackheath in this way and referring to the stone as "**locally called Blackheath Stone**" seems to have an important significance. Godwin-Austen was from a local land-owning family (he had inherited Shalford House) and would have been familiar with the workings on Blackheath and probably took that opportunity to look for artefacts.

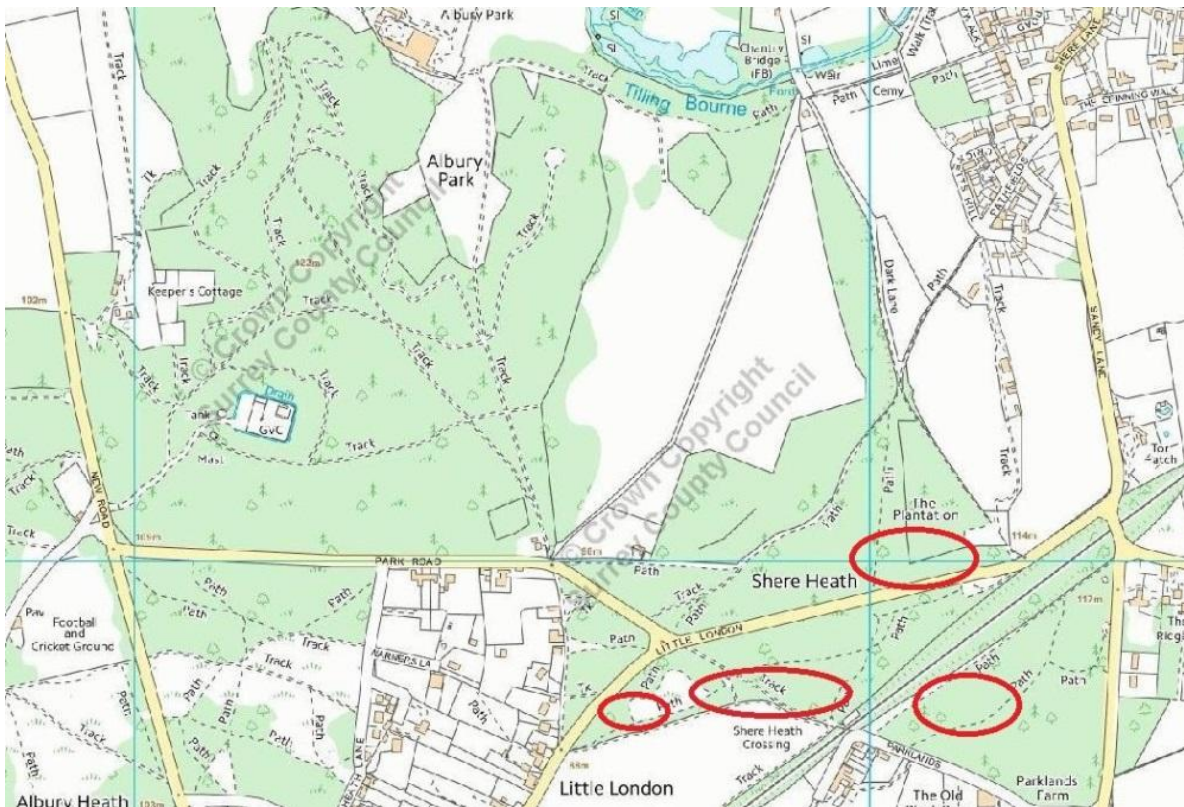
I already mentioned the older part of the Saxon Church at Albury Park built with ironstone:

At the top of the hill above Albury Park, both within the Park and on Shere Heath (which may be Albury Estate or Shere Manor land) you can see remains of the same type of furrow and ridge as on Blackheath and walking down through the Park you see large pieces of ironstone and there are also some old boundary walls built with it on the east and south sides of the park. It therefore seems likely that the stone for the church came from this area.



Trenches and ridges on Shere Heath. This shows a fairly prominent bit but mostly they are less obvious and quite overgrown with brambles and bracken.





Areas on Shere Heath where I have seen signs of trenches and ridges.

These are in a similar east-west orientation to the ones on Blackheath. Some of them are on the other side of the railway cutting so may pre-date the cutting which was dug around 1850. St Martha's church was rebuilt in 1848–50 using ironstone for the church and also for the wall surrounding the churchyard and possibly Hurtwood Stone ashlar for the window surrounds etc. In *A Topographical History of Surrey*, although published in 1850, EW Brayley describes the church when it was still a ruin: "The material used in the construction is the dark-coloured ironstone with which the hill abounds." He also describes the hill as containing thick subordinate layers of ironstone.

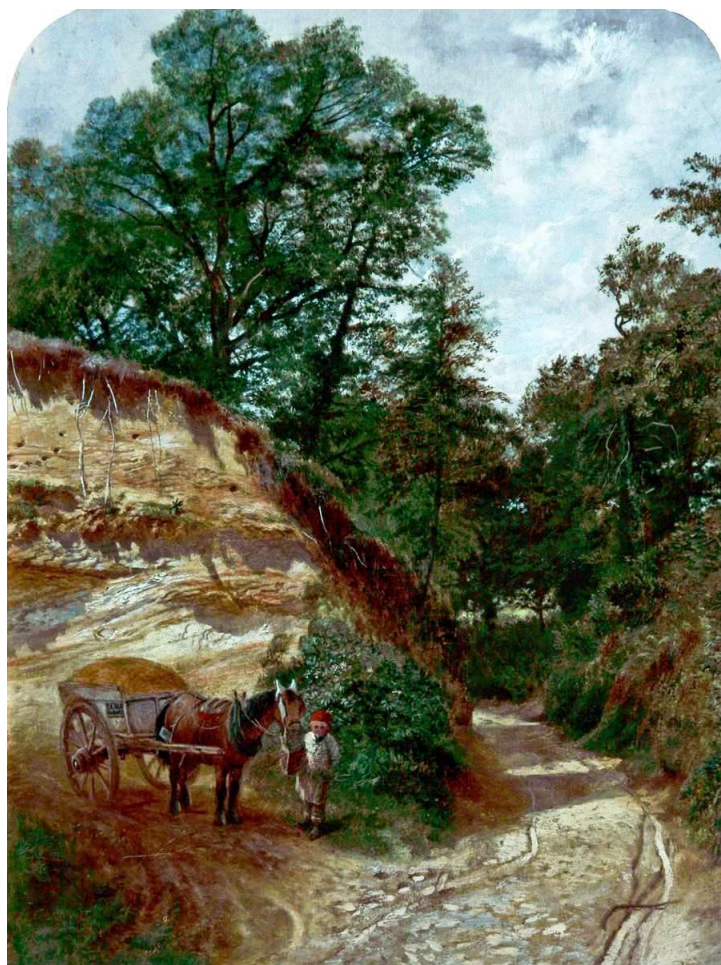


1820 engraving from a drawing by H Gastineau of the ruined rubblestone church

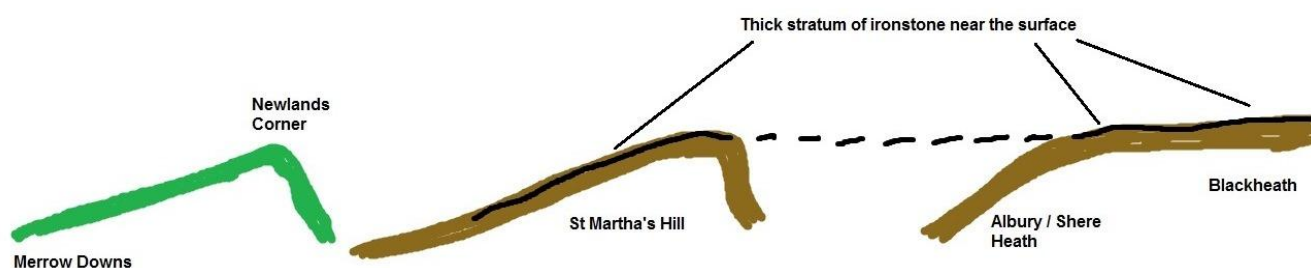
So on the evidence of these old churches, for a long time, people knew that ironstone suitable for building was available nearby but it was maybe only extreme religious zeal in early times or extreme wealth in the 19th Century that provided the drive to sustain the labour of extracting it. (Henry Drummond was said to be "the richest commoner in England").



The Albury sandpit at Weston Wood has been suggested as the source of stone for the rebuilding of St. Martha's Chapel in 1848-50 but in the mid-19<sup>th</sup> century the sandpit was a small affair from looking at old maps and it wasn't until the latter 20<sup>th</sup> century that it became a major industrial undertaking. This 19<sup>th</sup> century painting of the sandpit by George Vicat Cole (1833-1893) gives an idea of the small scale of the sandpit. As the artist was only 15 when the chapel was rebuilt this painting is likely to have been some years later



I had a good tramp round on the north side of St Martha's Hill, working on a theory that the way the Greensand Hills were pushed up, any thick layer of ironstone near the surface would be on that side and then continue on the plateau of the Shere Heath/Blackheath area. This rough cross section drawing illustrates my thinking:



The north face of the hill has been seriously disturbed by mountain bikers over the past few years (I hadn't realised how badly as I usually keep to the paths) but there does seem to be signs of a lot of old fairly shallow diggings which are more than the general undulations in the ground which you would expect. On the lower slope of the north side near some of these disturbed areas you can see large pieces of ironstone eroding out of the ground all over the place:





Including some really huge lumps:



In a few places towards the escarpment of St Martha's hill, where the main path goes up from the east and also in a couple of areas on the north side, are trenches and ridges as seen in the other locations and in a similar east-west orientation, as you can see in the following photos:

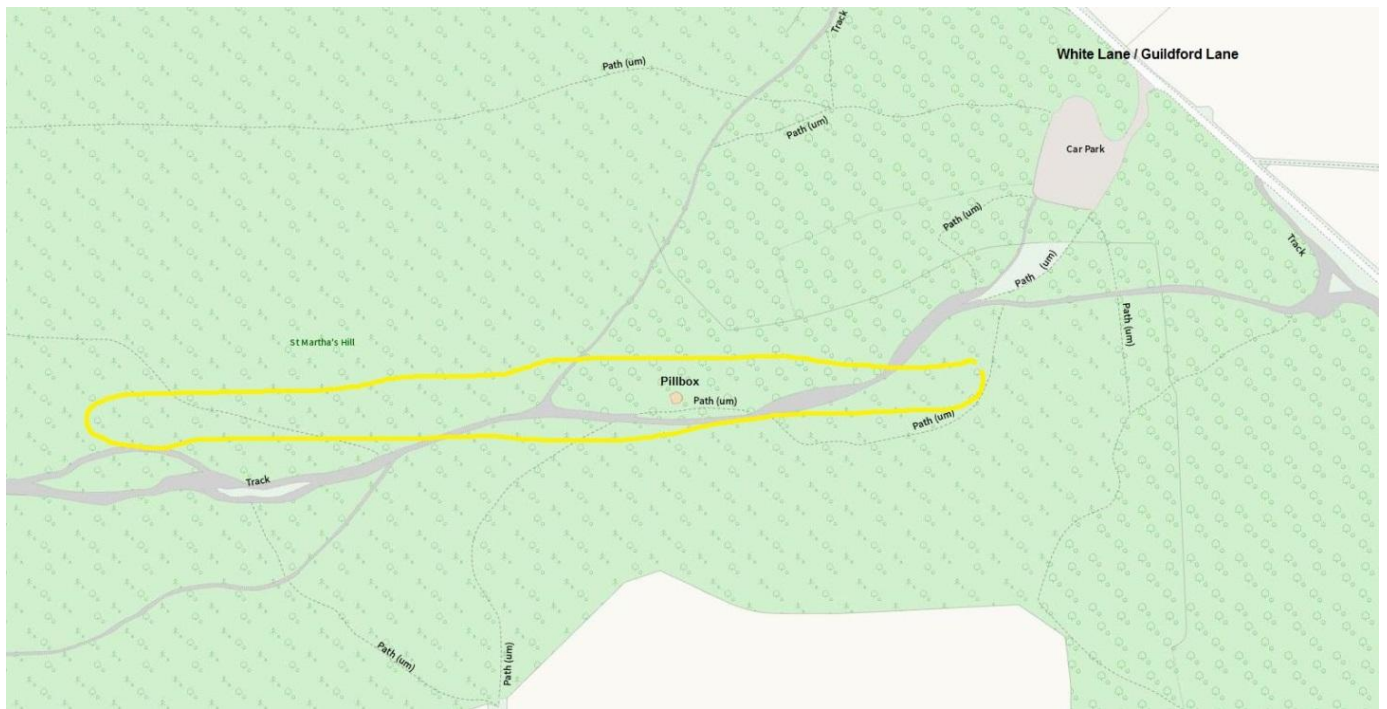




(I have indicated with arrows as it was difficult to photograph them with the bracken)

It certainly looks to me like a lot of suitable building stone was readily available near the surface for building the church and surrounding wall without too much effort and without any "pits" or "quarries" being required as has been suggested by others.





Map showing the general area where these photos were taken

Recent erosion of some of the paths towards the top of the east side have exposed some of the lines of thick ironstone deposits as pictured here. I measured the compass bearing of these and they are all more or less identical to the ridges and trenches a little further down the hill at around  $100^\circ$





I would suggest that the scattered shallow diggings indicate where workers fairly easily found good stone at or just below the surface, whereas the trenches and ridges represent the more orderly method of following the seams of thicker stone described already. St Martha's Hill is owned by the Albury Estate and the Duke of Northumberland was the main financier of the church's reconstruction so it is not unreasonable to suggest that his builders brought this knowledge of acquiring the stone to this site.

I think it is generally accepted that the sedimentary layers which formed ironstone were originally laid down in layers of varying thickness on the seabed before disturbances caused it to have the small ripples and bends that you commonly see (first two photos of this article) but it has also been suggested that thicker deposits of ironstone are due to sedimentary formations deposited in troughs in the undersea sand caused by currents in the sea as I already mentioned on page 10.

I haven't found any seabed images to support this but assuming that wind and water moving over sand could have similar effects, these pictures of sand dunes show how large parallel grooves can be formed:



Ripples in the foreground are similar to ripples in the sand on a beach caused by the receding tide but the much bigger grooves on the hillside are gouged out by wind currents suggesting that water currents could have the same effect but on a horizontal plane. They also show the gradually changing compass bearing of some of the grooves.



I have tilted this sand dune photo to illustrate the point further.



## Wisley and Ockham

I visited Wisley church (my father is buried in the churchyard) which is said to be built of ironstone although all the walls are cement rendered. On one side at the bottom of the wall it is possible to see the ironstone, with some flints, where the render doesn't quite go down to ground level.



Base of a wall at Wisley church

This seems to be an ironstone conglomerate known as ferricrete.

Ockham Common is in the Bagshot Formation and this type of stone has been noted elsewhere in the Bagshot Formation, or Bagshot Sands, in Surrey. It is the same geological formation as found in parts of Kent where the church of Sturry, shown here, north east of Canterbury is described as being built of ferricrete:





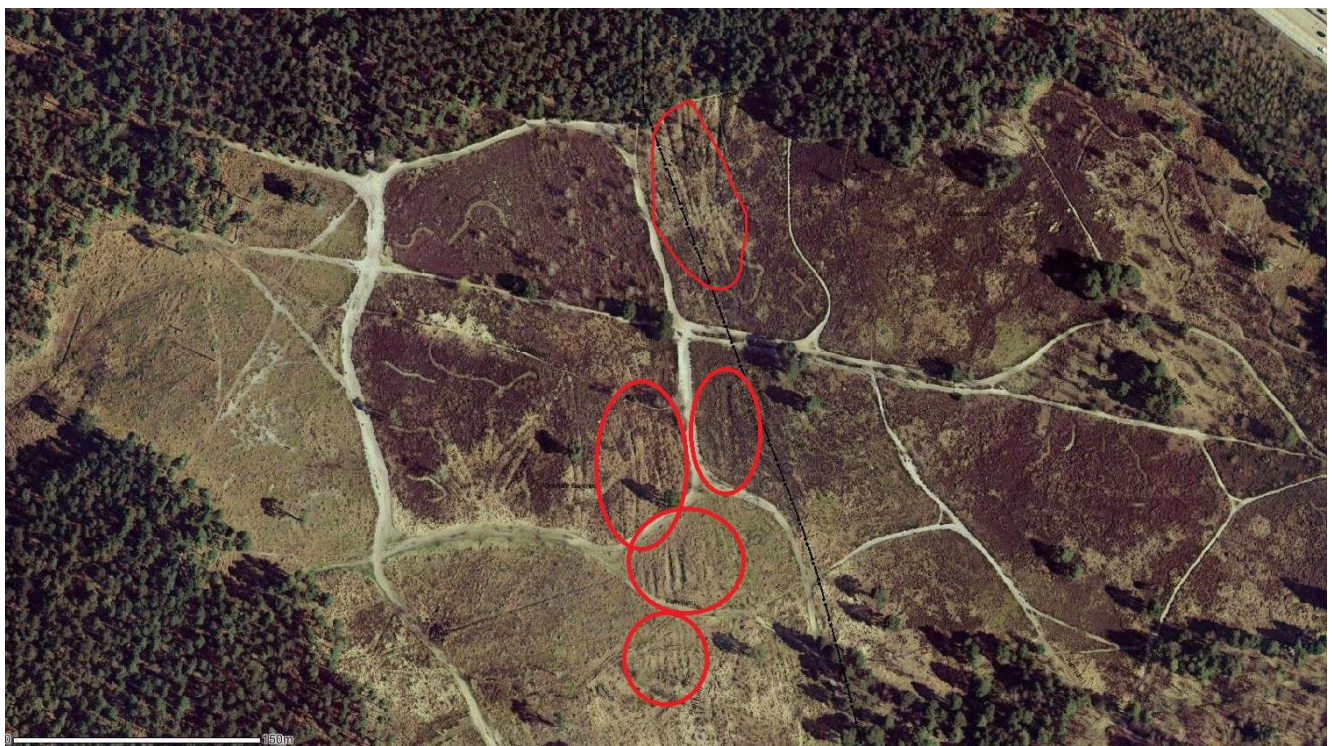
So the ironstone at Wisley/Ockham is not the same as at Blackheath but nevertheless may have been deposited in the same way as I have suggested - in thick layers lying at the bottom of undulations in the sand formation at the bottom of the sea at the time.

Some years ago there had been a similar theory about trenches and ridges on Ockham Common, near Wisley, being the result of ironstone extraction. A dig was carried out in 1981 by the Surrey Archaeological Society under David Bird, but as they didn't find any ironstone, they concluded that this wasn't the case.

I couldn't locate with certainty the ridges and trenches on Ockham Common excavated in 1981 and I wasn't quite sure where to look. I suspect the landscape has changed somewhat with forestry and heathland conservation work. However I did find these much bigger trenches which are shown on the 1890's OS map:



Interestingly they are in the same orientation as a lot of other ridges and trenches which show up clearly on the 2012 aerial photo below but which are now covered with vegetation.



Ockham Common 2012 aerial showing sequences of parallel ridges.



I would suggest that they are all to do with extracting the ferricrete ironstone formed in parallel undulations in the sea bed and I believe this was the suggestion which led to the 1981 excavation.

If the thick layers of ironstone had formed from sediment deposited as bands in undulations on the seabed, you maybe wouldn't expect to find any at the sides of the trenches once the stone had been extracted, as was the finding of David Bird's team on Ockham Common shown here, although they concluded that there was no evidence that these workings were to do with ironstone extraction because they didn't find any ! In fact if you were collecting this stone for building you would collect all the smaller pieces as well as the big bits because in building with rubble stone you need a lot of small pieces for infill, so you could equally conclude that the workings were for ironstone extraction and that they extracted it all !



David Bird's 1981 photo but with my own caption.

On Blackheath, whereas most of the paths are sprinkled with small pieces of stone as shown in photo 2, I have noted on numerous walks on the common that the wide sandy path cutting through the trenches indicated in photo 22 and the path parallel to the trenches which crosses that wide path (which I suspect was originally one of the trenches) have almost no pieces at all, suggesting that all the stone was collected.



## CONCLUSIONS

I emphasise Godwin-Austen's reference to ironstone trenches and Winbolt's comment "locally known as Blackheath Stone" as well as Brayley's 1850 observations about St Martha's that the church was constructed with "ironstone with which the hill abounds" and that the hill contains thick subordinate layers of ironstone.

It has been suggested that the Albury sandpit could have been the source for all this ironstone but there is no evidence for this and my findings make it seem very unlikely except maybe for some small-scale extraction as the old painting on page 18 certainly suggests some veins of ironstone.

I visited the Surrey History Centre in Woking to examine an agreement dated 1<sup>st</sup> December 1886 between the Duke of Northumberland and Lord Grantley confirming the boundary between the manors of Albury and East Bramley on Blackheath, in case it referred to minerals but it didn't, although this still could have been the reason for confirming their boundaries.\*

I had discussions with Ben Bray whose family have owned the Shere Manor Estate for generations. They own the Hurtwood Stone quarries at Pitch Hill but don't have any buildings on their estate built with ironstone (but see next page about Shere Church).

The local agent of the Northumberland Estate in Albury does not know of any historical evidence for use of the ironstone. It is possible to research, or commission research, of the Northumberland and Drummond archives at Alnwick Castle but this would be hugely expensive and like looking for a needle in a haystack. Whilst they claim to have one of the largest private archives in the world, their estate archives refer largely to tenancy agreements etc. so it seems unlikely that they would have the sort of information I would need to confirm my theory unless there was a casual mention in a document, such as a letter from an architect, for example.

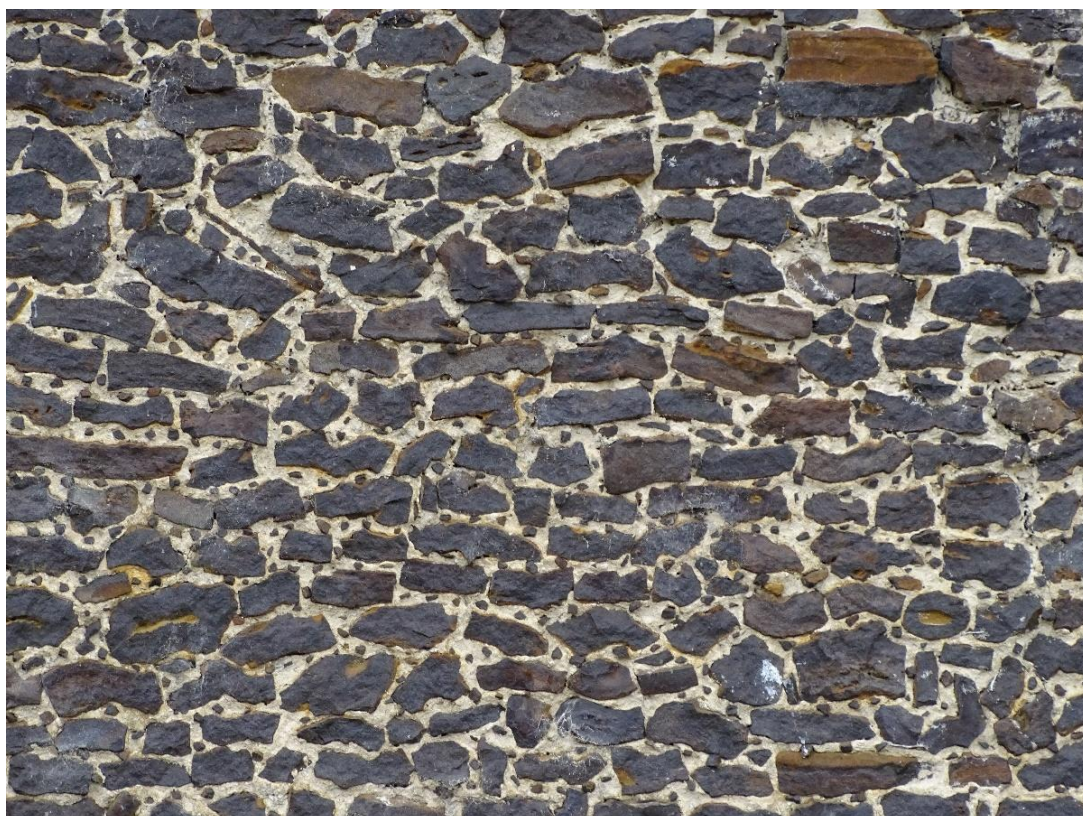
So I have no documentary evidence but for me, one of the most compelling pieces of evidence was my observation of the existing thick ridges of ironstone exposed on a couple of paths on St Martha's and the fact that they are exactly parallel with the trenches and ridges noticed before, a little bit further down the hill. See pages 20 & 21.

\*There is a series of moulded concrete boundary stones marking this boundary between the Northumberland estate and **East Bramley Manor**:





**St James Church Shere** was built around 1190 with later additions. The older parts are built largely of ironstone and sandstone rubble with sandstone dressings. The sandstone used is variously reported as Bargate stone, local sandstone and even Caen stone from Normandy but I suspect mostly it is Hurtwood stone from nearby.



A fine example of a Blackheath Stone wall with galleting on a cottage in Weston Yard, Albury.

*It is also possible that the name of Blackheath (Blachetfeld in the Domesday Book, meaning Black Field) refers to the abundant black ironstone on and in the ground. This is just my speculation of course, as are all other people's ideas of the origin of the name.*

John Dawson 2022