UGBOROUGH PARISH HERITAGE APPRAISAL

Second Edition

Contents

* *Note that pages of the Database and the Maps are not numbered*

Published 2016 by Ugborough Local History Group

Printed by South Hams District Council

In loving memory of Wendy Perrin

I. INTRODUCTION

The First Edition* of this Parish Appraisal was prepared by Exeter Archaeology**, in association with the Ugborough Local History Group, as a component of 'Life into Landscape', an important project of South Hams District Council in assessing its local heritage by intensive studies of twelve representative parishes. Ugborough was one of the twelve but, because half of the Parish actually lies outside South Hams District in the Dartmoor National Park, that area was excluded from the original study. This omission unfortunately ignored an historically significant part of the Parish. In 2009 the History Group therefore invited Dr. Robert Perrin, one of their members, fully to revise the existing Appraisal and extend it to cover the whole Parish, comprising both the 'Moorland' and the 'Lowland' Zones. Together, these areas proved to contain about twice as many historic sites as in the original publication.

The present Second Edition is closely based on the First and incorporates the earlier chapters on History and Archaeology, and the Database up to the entry for UG 327; all higher numbers are new. All entries in the revised tables were plotted on a new series of base maps provided by South Hams District Council. A chapter on the 'Geology and Natural Resources' of the Parish and an Index to the Database were also added to the text, and correlations were made with the History Group's large collection of archive photographs.

Most of the new data were obtained from HERs supplied by the Devon Heritage Environment Record and the Dartmoor National Park Authority. They were supplemented by fresh studies of historic air photographs, modern satellite images, the Tithe Map/Tithe Apportionment and reliable sources of place names. Further information from field checking and and the study of historic records was provided by Alan Yates, George Fletcher and John Trentham. The latter also undertook the major task of digitally numbering the new maps. Merryl Docker added to the Database and Index references to all relevant photographs of sites from the Group's photo-archive curated by Dot Southwood. Tom Holway acted as Treasurer to the project. Dr. Richard Porter of Britannia Royal Naval College kindly made useful comments on the chapter 'Geology and Natural Resources'.

Thanks are also due to Keith Rennells and other officers of South Hams District Council, for advising on publication and for printing the text; and to Alex Richards of DNAP and Marrina Neophytou of Devon Historic Records for help in updating HERs.

Ugborough Local History Group
August 2016

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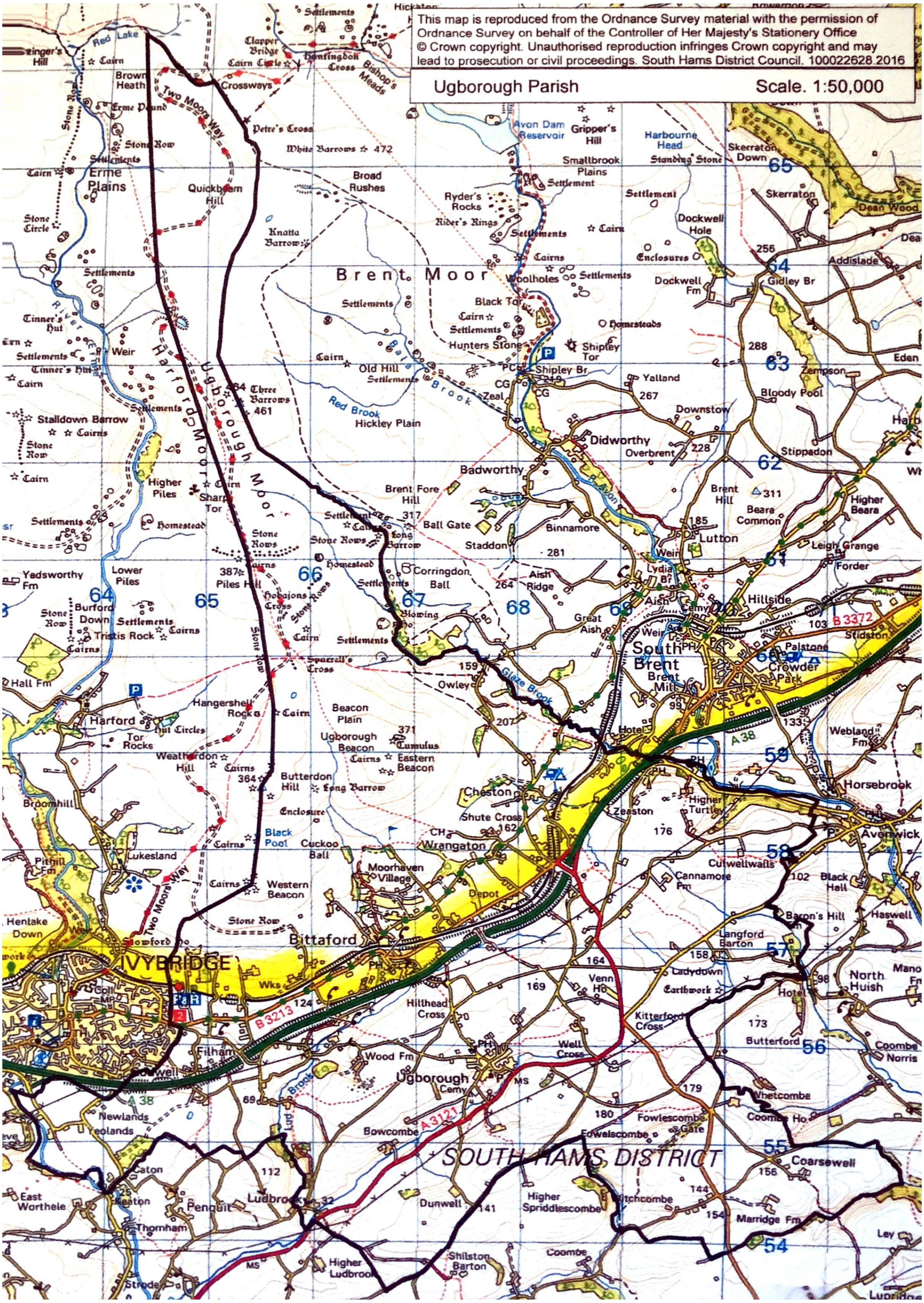
* *'Ugborough Parish Heritage Appraisal'. South Hams District Council 2006.*

** *'Exeter Archaeology' was a unit of Exeter City Council, founded in 1971 and disbanded in 2011.*



Ugborough Parish Scale. 1:50,000

II. GEOLOGY AND NATURAL RESOURCES

The history of any political unit (e.g. parish, county, region) is the record of human co-operation and competition in exploiting its natural resources i.e ***Soils (with the associated plant and animal populations), Water Supplies, Building Materials and Economically Valuable Minerals*** that, together with its climate, are all ultimately determined by its ***Geological History***. It is hoped that the intimate connections between geology and the resources historically available to the Parish will be made clear by the following account.

Of the 12 Parishes taking part in the SHDC Heritage Appraisal, Ugborough is unique in extending onto the Dartmoor granite[+]. It is therefore conveniently divisible into a southern 'Lowland' Zone, with geology and physiography broadly similar to those of the other 'Heritage Parishes', and a northern 'Moorland' Zone based on the granite. For practical purposes the zones are separated by the moor wall (sometimes known as a 'cornditch') commonly at about 230-250m (750- 820 ft) OD and roughly following the southern edge of the granite outcrop, although the administrative Dartmoor National Park[*] takes in a narrow strip of Lowland around Bittaford, Wrangaton and Cheston. It should be noted that although there is now this clear distinction between enclosed agricultural lowlands and open moorland, in Mesolithic and early Neolithic times almost the whole landscape of the present South Hams would have been covered with a continuum of mixed oak forest, densest in the lowlands and thinning, and perhaps petering out, at the highest levels on the granite hills. If human intereference were now to cease, essentially the same vegetational pattern would eventually return.

The existence of what we now define as the Moorland Zone has profoundly influenced the economic history of Ugborough with a number of features which are absent from the other Heritage Parishes. These comprise:

(i) the supply of *granite*, firstly as '*moorstone*' or *'clitter*[+]*',* which was basic to Neolithic and Bronze Age cultures and of continuing importance for construction and many industrial and domestic applications, even after the advent of quarrying in C18. The latter then provided large amounts of dressed stone (used most spectacularly in the railway viaducts). The *aureole*[+] round the granite (see p.10) has also been the source of a *metamorphic limestone*[+] traditionally known as (*calcflinta*[+]) and formerly much used as a local roadstone.

(ii) *upland grazing* with varying degrees of occupation and transhumance,

(iii) *peat digging* for fuel (and industrial production of naphtha in South Brent Parish)

(iv) streaming and smelting of *tin*, and

(v) open-cast digging and processing of *china clay*[+]

Historically, it is only on the Moor that we can trace the very early development of society and agriculture, and their environmental effects: on the one hand from stone monuments and artefacts, and on the other from records of pollen, microfossils and radiocarbon dates from peat bogs. Such evidence is largely lacking in the Lowland although

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[*] *Area to N of* yellow *boundary on 1:50000 OS map on opposite page*

[+] *Items marked thus are defined in the* **Glossary** recent work using air photography coupled with geophysical methods, field-walking and exploitation of temporary sections on, for example, new pipelines has greatly increased the number of known prehistoric sites but dating many of them remains very difficult.

Finally, the granite massif of Western Beacon deflects southwards the direct line of communication between Plymouth and Exeter so that, successively, the old road from Ivybridge to South Brent and Ashburton via Bittaford and Wrangaton (shown on Donn's map of 1765), the Plymouth Eastern Turnpike, the South Devon Railway, and the modern A38 have always kept the Parish on a main traffic artery. Even today, it still shares with Ivybridge the only main line station in the South Hams apart from Totnes.

1. TOPOGRAPHY

The Parish is of a particularly unusual shape rather like a frying pan with a broad quadrangular southern section 8.6km wide (the 'pan'), stretching from the Erme to the Avon, and a long narrow corridor (the 'handle'). The latter terminates at the boundary of the Royal Forest of Dartmoor at Redlake, 12.9 km N of the southernmost point of the Parish near Shilston Gate, but it is only 300m wide at its narrowest point. Although other Dartmoor parishes have long corridors leading up into the Forest for summer grazing (e.g. Harford, Dean Prior etc.), Ugborough is unique in the extreme contrast between the widths of the Moorland and Lowland parts of the Parish. Relative also to the other Heritage Parishes, Ugborough has a much greater range in altitude, from 20m (65 ft) OD at Caton in the Erme Valley to 464m (1532 ft) at Three Barrows, with a corresponding wider range of microclimates (roughly, by as much as 2^{0}C in mean annual temperature and 625 mm (25 in.) of rainfall).

The Moorland Zone

This zone lies wholly on the south eastern outcrop of the Dartmoor granite and its aureole which everywhere form the surface except at the highest elevations (roughly above 450m, 1500 ft), where it is peat-covered. The Parish is located on a long granite spur from the boundary of the Forest near White Barrows down to the Western and Ugborough Beacons, the southernmost major tors on Dartmoor. The watershed between the catchments of the Erme and Avon passes along the ridge of this spur through Ugborough Beacon and continues downslope to Wrangaton, where it crosses a low col at the source of the Forder Brook and resumes along the main ridge of the Lowland Zone plateau as described below. The western flank of the spur slopes steeply down to the Erme in Harford Parish with three very small tributary streams: Left Lake, Dry Lake and Hook Lake. On the eastern side there is a more gentle overall slope to the Western and Eastern Glaze Brooks. The Eastern, and below Glazemeet the main, Glaze Brooks define the boundary with South Brent Parish as far as the confluence with the Avon at Turtley Mill. The Scad Brook is a minor tributary rising on the north end of Beacon Plain and joining the Glaze Brook about 400m below Owley Bridge.

At the south end of the granite spur, in a shallow valley between Butterdon Hill and Ugborough Beacon, the Lud Brook rises from a spring at Main Head, passes through a small gorge and enters the Lowland Zone above Bittaford, whence it flows south-westwards to join the Erme at Ermington.

The Lowland Zone

This zone essentially consists of the remains of a highly dissected plateau with summits ranging around 180m (590 ft) OD, and deep combes, resting on Middle Devonian *slates*+ and *volcanics*+. The central ridge of the plateau, which runs SSE from Sign of the Owl Cross to near Marridge, is the watershed between the Erme and Avon catchments. This ridge is more or less followed by the modern Kingsbridge road, which is based on the Kingsbridge & Dartmouth Turnpike extension from Sorley to Venn Cross, perhaps itself following an older ridge road.

From the central ridge two major spurs trend WSW along the strike ('grain') of the local geological formations (see **Geological Map**). The ridge of the *northern* spur, underlain by slates, passes via Hillhead Cross and Toby Cross to near Quarry Farm. Here it has been cut through by the Lud Brook, but it then resumes down to Strode in Ermington Parish. Its NW flank declines westwards, passing into the alluvium of the Erme valley at Caton. The *southern* spur is based mainly on tuffs with minor areas of slates, the ridge passing midway between Higher Well and Fowlescombe, by Dunwell, on past Higher Ludbrook just out of the Parish, and ending near Sequers Bridge in Modbury Parish. Both spurs carry ancient ridge roads.

The strike valley between the northern spur and Dartmoor is drained by the Forder Brook which joins the Lowland section of the Lud Brook just below Bittaford; that between the two spurs by the Lutterburn; and the valley to the south of the southern spur by the Shilston Brook. All of these streams are in the Erme catchment, the river itself forming the Parish boundary with Ermington for about 1.5 km below Ivybridge. In contrast to the ancient ridgeways, the more modern Plymouth Eastern and Modbury Extension Turnpikes (now B3213 and A3121) made use of the valleys of the Lud and Forder Brooks, and the Lutterburn respectively.

On the NE side of the watershed, a shallow valley continues the alignment of the Forder Brook with a minor stream down to the Glaze Brook at Glazebrook Lodge. Between Turtley and Marridge several spurs, much shorter than those in the Erme catchment, trend NE to E, with small un-named streams running in steep-sided combes to the Avon.

There is relatively little level land in the Parish, this being mostly confined to a triangular area, sides about 1.5km, on alluvium and *Head*+ adjacent to the Erme S of Ivybridge.

Ugborough's topography, its natural resources and its place in the World through half a billion years*, can now be explained in terms of its **Geological History**. For readers unfamiliar with geology, a short account of the processes involved called '***The Workings of the Earth***' may make this history more intelligible and interesting. It can be consulted online at <*ugborough.com*> and a printed version is also available.

** Conventionally, 500 million years are written as '500 Ma' ('ka' denotes thousands of years).*

2. GEOLOGICAL HISTORY

The main divisions of geological time are shown in the key to the **Geological Map.**

It is generally accepted that the Earth was formed some 4,600 Ma ago and that the first 2,100 Ma were lifeless, an age known as the **Archaean**. In the succeeding **Proterozoic** (2,500 – 545 Ma)**,** life in the oceans evolved from single cells to numerous species of soft-bodied plants and animals. But these early times have little relevance to our own Geological History, which effectively commences with the **Palaeozoic.**

PALAEOZOIC

Cambrian 545 – 490 Ma

[Characterised by the ‘explosion’ in number and variety of new life-forms, many now with hard body parts yielding fossils].

Around 550 Ma, a huge plate named ‘Gondwana’, carrying crust that millions of years later broke up to form the modern continents of South America, Africa, India, Australia and Antarctica, lay across the South Pole and extended up to about 60^{0}S. Centred on the Equator there was another large plate named ‘Laurentia’ (modern North America and Greenland) while to the E lay two other smaller plates, ‘Baltica’ and ‘Siberia’, named after the regions they finally became. On the NW side of Gondwana, and probably originally derived from it, there was a small terrane called ‘Avalonia’*, lying at about 60^{o}S and carrying on its southern flank the first recognisable fragment of the lithosphere that eventually came to underlie Southern England. To the SE of Avalonia there was a another small group of microplates, with intervening shelf seas, called ‘Armorica’ (the Roman name for modern Brittany which lies on this plate).

** ‘Avalon’ is the E part of present-day Newfoundland that was severed from Eurasia and joined (sutured) to the Proto-North America when the Atlantic opened in the Cretaceous Period (see p. 12).*

Ordovician 490 – 445 Ma

[Trilobites, jawless fishes, corals]

Avalonia drifted northwards, followed by Armorica until, about 440 Ma, it first collided with Baltica.

Silurian 445 – 415 Ma

[Jawed fishes, vascular plants, early land animals]

Laurentia, Baltica, Siberia and Avalonia finally joined to form one great continent called ‘Laurussia’, ranging from about 40^{0}N to 30^{0}S, with the former Avalonia on a SW edge at about 20^{o}S.

Devonian 415 – 360 Ma

[Ancient fishes, amphibians, large land plants]

The Devonian Laurussia is often referred to as the ‘Old Red Sandstone Continent’ as, under a tropical arid climate and an absence of vegetation and soils, most of the interior consisted of Red Beds, the typical sediments of hot arid areas with periodic torrential downpours. These stretched right across the continent northwards from ‘North Devon’ but south of this, from about 400 Ma, there were subsiding marine basins due to crustal warping with the approach of the plate bearing Armorica. These were rapidly filling with sediments: in our area mostly *muds*$^+$, but with volcanic eruptions, sporadic in time and place, giving rise to submarine lava flows and *tuffs*$^+$ (in modern S. Devon officially named the ‘Ashprington Volcanic Series’). These became variably intercalated with the *mudstones*$^+$ and *shales*$^+$. Locally there were small subsurface intrusions of basic rocks such as *dolerite*$^+$.

At times in clearer waters in some basins massive reef complexes of limestone developed, sometimes showing signs of having been curtailed by poisonous volcanic emanations. There are still large outcrops of these round Plymouth and Torbay but only a few small ones in Ugborough Parish (See **Geological Map**). However, the occurrence of metamorphic limestones on the south edge of the Moor shows that calcareous sediments were once dominant in that area.

Carboniferous 360 – 300 Ma

[Swamp forests of ferns, lycopods etc., large winged insects proliferated]

As Armorica approached the southern flank of the former Avalonia there was increasing crustal warping , with subduction of oceanic crust beneath Armorica. Further drifting brought the continental crusts of the two terranes into contact, with major thrusting and wrenching in a generally northerly direction. Complex folds with, in the 'Ugborough' area, mainly NNE to SSW axes (*strikes*), and metamorphism^{+} of the shales, volcanics (i.e. tuffs and lavas) and limestones took place in the interior of a major mountain chain. These metamorphic rocks underlie the whole of our present Lowland Zone (see **Geological Map**).

The mountain chain was comparable to the modern Himalayas (although there is disagreement as to whether it was so high) and it stretched from present-day Canada* through Ireland, southern England and Brittany and across Northern France into Germany in the Hartz Mountains. Armorica thus became what are now Central and W. Europe. This episode is called the *Variscan (or Armorican) Orogeny***. Overall it lasted about 100 Ma and was largely complete by 300 Ma.

* '*Canada' was of course the eastern end of the former Laurentia*
** *From the Variscii, Celtic inhabitants of the Vogtland of Germany*

During the Carboniferous, and into the Permian, Gondwana followed Avalonia and Armorica in moving northwards, and colliding with Laurussia to start forming the super-continent *Pangaea* embracing almost all of the continental crust on the planet, potentially allowing land animals to migrate from Pole to Pole. 'Britain' now lay far from any plate margins at about 20^{0}N in a climate becoming increasingly hot and arid.

PALAEOZOIC – MESOZOIC

The Permian and Triassic, although of biologically different Eras, are both characterised by the dominance of Red Beds and are usually treated together as the ***'New Red Sandstone'*** (originally so-named to distinguish it from the similar beds of the 'Old Red Sandstone' of the Devonian (p.8)).

Permian 300 – 250 Ma

[Reptiles evolve rapidly, with mammal-like forms at end. Abundant life in the oceans but in 'British' region of Pangaea biota very restricted by aridity]

Around 280-290 Ma, a large magma chamber (*batholith*) of granite, some 200 km long and 40 km broad, was intruded into the slates and volcanics in the roots of the Variscan mountains. The modern surface outcrops of Dartmoor, Bodmin Moor, St.Austell, Land's End and the Isles of Scilly are remnants of domes in the roof of the intrusion. The magma crystallised very slowly from about 850^0C, allowing large crystals to grow in the formation of granite, and as it did so it baked (*thermally metamorphosed*$^+$) the surrounding slates ('*killas*'$^+$), in an aureole around 1 km wide, to hard *hornfels*$^+$ or, in the case of calcareous rocks, to tough flinty metamorphic limestones ('calcflintas'), e.g UG 375.

As the granite was cooling superheated aqueous fluids circulated round and through the solidifying rock, with a variety of metals in solution. These penetrated joints and faults developing in the granite and the surrounding slates and eventually crystallised out as mineral-bearing *lodes*, with different metals separating at characteristic temperatures and depths : tin and copper at the greatest depths between 500 and 300^0 C, lead, silver and zinc between 300 and 200^0C and iron between 200 and 50^0C. There are few easily mined tin lodes in the Ugborough area but erosion of outcrops along watercourses has produced tin-rich gravels which have been exploited by streaming since the Bronze Age, and particularly in Mediaeval times. The main concentration of lodes of other metals is in the Tamar Valley; in Ugborough Parish only one small silver/lead lode and two minor occurrences of iron ore have been exploited (p. 31).

In some areas of 'SW Dartmoor', particularly around 'Lee Moor' but also to a lesser extent in 'Ugborough', relatively dilute superheated waters hydrolysed feldspars in the outer layers of the granite to kaolinite; mixed with unaltered crystals of quartz and mica, this constituted *china clay*$^+$.

Even as the granite was being intruded, the overlying slates and tuffs of the Variscan mountains were being rapidly eroded in a hot arid to semi-arid climate with, in our area, the development of major valley systems directed towards the south and east to low desert planation surfaces. Intriguingly, the general disposition of these valleys is still recognisable today in the drainage patterns of the South Hams and Torbay. The erosional basins filled with typical Red Bed deposits of breccias, fluvial and aeolian sands, and silty mudstones. The granites of Devon and Corwall were little affected and remained as a stable upstanding massif surrounded by a belt of remaining metamorphic rocks, often called 'Cornubia', which in essence has survived through 250 Ma to the present day. The Permian Red Beds deposits were themselves later eroded from our area but, because of a slow regional subsidence of the crust to the east (i.e. S and SE England) they were partially preserved and can be well seen in coastal outcrops from Torbay to near Budleigh Salterton. In the South Hams, only minor remnants have survived at Slapton and Thurlestone.

At the end of the Permian there was a catastrophic extinction of life (97%) all over the world, probably due to emanations from enormous lava flows in Siberia, which ended the Palaeozoic Era.

Triassic 250 – 205 Ma

[Corals, ammonites, reptiles, first dinosaurs]

After the end-Permian mass extinction, greatly different new (*Mesozoic*) floras and faunas were developing in the World; although in our region arid Red Bed deposition continued with very restricted biota. The consequent lack of fossils often makes it difficult to identify a clear boundary between the Permian and the Triassic. In Devon it is usually ascribed to a formation named the 'Budleigh Salterton Pebble Beds'.

In the late Triassic, Pangaea was starting to break up, with a new ocean named 'Tethys'developing between Laurussia and the remaining parts of Gondwana that in the future would split further giving rise to Africa and South America. 'Britain' remained in the interior of Laurussia at about 20^0S, remote from active plate margins, although the continental crust underwent a slow subsidence towards the E and sporadic local warping.

There was a further global extinction of life, though less severe than that of the end-Permian.

MESOZOIC

Jurassic 205 – 145 Ma

[Reptiles, modern fishes, ammonites and 'plankton gardens']

At the end of the Triassic there commenced a worldwide rise in sea levels which was to continue, with occasional interruptions and reversals, all through the Jurassic and Cretaceous. The low Triassic surfaces of the whole of 'NW Europe' were progressively engulfed by shelf seas which advanced, retreated and re-advanced as global sea-level changes interacted with local buckling of the continental crust to form a pattern of marine basins or troughs, and 'swells' of low-lying lands. The New Red Sandstone deposits were mostly eroded away from the swells but in the basins, they were covered by the new shallow-water sediments, predominantly of mudstones and limestones (visible today in the great succession of Jurassic outcrops from Lyme Regis to the Cotswolds and the North York Moors (most of the stages being represented along the Dorset 'Jurassic Coast').

Throughout the Jurassic, Cornubia, based on the granite batholith, formed one of the swells and was probably never fully submerged although the sea periodically lapped round its margins. There would have been brief periods of marine sedimentation during these incursions but any such deposits would soon have been re-eroded. 'Ugborough', very much as now, was part of a worn down surface of slates and volcanics, from which all Red Beds had been stripped, and adjacent to the batholith from which Dartmoor finally evolved.

By the end of the Jurassic, deeper troughs had developed between Cornubia and the landmasses of 'South Wales' and 'Brittany', representing early precursors of the Bristol Channel and the Western Approaches/English Channel respectively and thus roughing out the form of the future SW Peninsula.

During the Jurassic also, Laurussia had been joined by a new large plate from the East, comprising modern China and South East Asia, forming what is usually known as 'Laurasia'.

Cretaceous 145 – 65 Ma

[Dinosaurs dominant, flowering plants developing, calcareous algae filled the seas]

In the early Cretaceous, shelf sea deposition of muds, sands and occasional limestones continued in the troughs but Cornubia still survived as a low-lying landmass. Later, global temperatures continued to rise, and seas to perhaps their highest levels since the Cambrian, and Cornubia seems to have been finally submerged. In the seas there was a huge blooming of calcareous algae, unique in the geological column, the debris of which produced calcareous muds that eventually solidified as *chalk*. It is likely that this was eventually deposited over the surface of Cornubia but, as sea levels fell away from the maximum, it was rapidly eroded

In the Cretaceous, a plate approximating to the old Laurentia but now becoming a proto-North America, was separating from 'Eurasia' as sea-floor spreading caused a new

Atlantic Ocean to open between them; this spreading continues to the present day at a rate of about 3-5cm per annum The Eurasian continental margin now lies about 400 km W of the modern Land's End and a narrow tract of the former Avalonia was carried westwards and ended up as the eastern part of Newfoundland (cf. p.8). Meanwhile Pangaea finally broke up to form the separate plates bearing present-day South America, Africa, India and Australia/Antarctica.

The Cretaceous came to an end with a major extinction of Mesozoic life, including dinosaurs, ammonites and the calcareous algae, controversially brought about by massive volcanic activity in what is now the Deccan of India and/or a major astronomical impact.

CENOZOIC

Tertiary 65 – 2.6 Ma

[Rapid expansion of mammals, birds and flowering plants including grasses. Hominids from about 5Ma]

The first 40Ma of the Cenozoic are termed the ***Paleogene*** (65 – 25 Ma) in which the soft and shallow Cretaceous deposits were eroded and sea-levels sporadically declined, leaving a series of successively lower planation surfaces across Cornubia, which was now at about 40^0 N. These erosion surfaces, stripped of any remaining Cretaceous deposits, were exposed to hot moist climates like today's humid tropics. On the surface of the batholith, intense chemical weathering produced deep mantles of decayed granite (*growan*$^+$), especially where joints and faults were closely spaced allowing more ready penetration of water, carbon dioxide and oxygen. In localities with sparse joints the rock was more resistant and tended to survive in the mantle of growan as less weathered blocks. Some of these would have formed *inselbergs*$^+$, comparable to those in the tropics today, as weathered debris were eroded from round them and remnants of some may have partially survived as present day tors. The softer metamorphic rocks surrounding the batholith would have eroded more rapidly, with the gradual emergence of the granite massif. As noted above, still-stands in the fall of sea-level left a series of planation surfaces that were dissected by normal sub-aerial erosion in late-Tertiary times and later by violent peri-glacial processes in the Pleistocene. The Ugborough 180m plateau (p.7) with its deep combes is the much-dissected remains of one of these surfaces.

In global terms during the Paleogene around 40 Ma Africa, now separated from the former Gondwana and moving northwards, collided with Eurasia, initiating the *Alpine Orogeny*, while India drifted towards the SE end of that continent.

In the ***Neogene*** (25 – 2.6 Ma), Cornubia still remained above sea level but, in a warping of the crust associated with the distant Alpine orogeny, the latest planation surface was gently tilted towards the south. (As a consequence of this tilt all the present day Dartmoor rivers, except the Okement and the Taw in the extreme north, ultimately turn to flow southwards, and both the Exe and Tamar rise close to the *north* coast of the peninsular.) Erosion of surfaces continued but more slowly under increasingly temperate conditions. There was a huge expansion of grasslands, supporting a great variety of mammals, including many evolving into present-day species, and with the formation of soils little different from those of today.

Towards the end of the Neogene sea level had fallen to about 124m (400 ft) OD, probably the height of the prominent planation surface so obvious along the coast of the

South Hams. But for reasons not yet understood there was a sudden rise in sea level to about 210 m OD (approximately the present elevation of Blackadon, (UG 355)), below which there is now a degraded wave-cut platform clearly visible when approaching from the NE or SW). Around this time faulting and erosion in the area of the present Tamar caused the separation of what was now recognisably becoming the Dartmoor massif from the Cornish end of Cornubia.

From about 15 Ma global climate had been becoming markedly colder and an ice sheet developed over Antarctica as it separated from Australia and drifted towards the South Pole. Meanwhile India collided with Eurasia in the *Himalayan Orogeny,* a process still going on today.

Quaternary

PLEISTOCENE 2.6 Ma – 10,000 BP

(In the Quaternary dates are expressed in thousands of years before the present (BP))

[In Eurasia and N. America: in Glacials cold-tolerant mammals e.g. mammoth, woolly rhinoceros; in Interglacials temperate or tropical species e.g. elephant, hippopotomus. *Homo sapiens* evident in this area by around 40,000 BP]

After about 2.6 Ma, global temperatures fell more rapidly, and continuous ice sheets spread down from the North Pole as far as what are now the south coasts of Ireland and Wales and thence across the present Midlands and East Anglia into North Germany and Russia, and at least once close to or at the North Devon coast. There were four main advances of the ice sheets termed 'Glacials' (successively the *Cromerian*, *Anglian*, *Wolstonian* and *Devensian*) and three 'Interglacials' when the climate reverted to temperatures as high or higher than those of the present Post-Glacial times.

As noted above, at the beginning of the Pleistocene, sea level stood at about 210m OD. During successive Glacials seas fell from this level by as much as 340m as huge volumes of ocean water were locked up in ice sheets and rivers cut deep channels graded to low sea-levels. For example, the bed-rock floor of the R. Erme is some 50m below present sea-level, and alluvium has since filled the valley up to the present surface. In each Glacial, present-day Ireland, Britain, the bed of the North Sea and the Continent formed one landmass, with the Atlantic coast far out to the West. In Interglacial times the seas returned and Southern England was separated from France by the Western Approaches and Channel. Since the end of the last Glacial (the 'Devensian'), sea-level has risen by about 100m and is still rising, with serious implications for low-lying coastal areas.

The Lowland Zone

Devon was never glaciated but, because the nearness of the ice-fronts, it experienced rigorous *periglacial* conditions comparable to those in modern Alaska, Spitzbergen or Northern Siberia. In general, these consisted of intensely cold winters with the ground permanently frozen to a great depth (*permafrost*) and frost-shattering of the near-surface rock. By day in the short summers, the extreme surface layers partially melted and, because the frozen substratum was impermeable, a slurry of semi-frozen material crept off down slopes even as slight as 2^0 (*solifluction*). On re-freezing, the expanding ice caused considerable turbation and mixing of the surface layers (often clearly visible in the faces of present-day quarries) before the the next thaw . The overall effect was to remove soils and much weathered rock from hill tops, producing gently domed summits overlying shattered bedrock; rounded convex upper slopes with rock close to the surface, steep mid-slopes and concave lower surfaces on aprons of heterogeneous soliflucted material termed '*Head*'[+*].

As the climate ameliorated at the end of each Glacial, great volumes of water were liberated by the melting of snowfields and permafrost. Torrential rivers graded to very low sea levels cut down into the valley deposits of Head and then into bedrock, deepening existing combes. There has not been enough time or sufficient rainfall in the Post-Glacial for these streams to widen their valleys and deposit spreads of alluvium, so now there are only narrow valley bottoms with small brooks appropriate to the present rainfall (e.g. locally the Shilston Brook or Lutterburn).

All the above land-forms are readily recognisable in the dissected 180m plateau of our area.

* *A slightly confusing name, as this material mainly occurs at the* <u>*bottoms*</u> *of slopes. It was a West Country quarryman's name for the overburden that had to be removed before the solid rock could be worked. It is important in the present landscape and soil patterns, and is often well displayed in local coastal cliff sections e.g. at Ayrmer Cove (SX 641455). For clarity, it will be spelled with a capital H, in contrast to the standard practice for rock names.*

The Moorland Zone

The granite surfaces had already in the Tertiary been deeply weathered to growan and associated soils. These were largely stripped by solifluction, leaving relatively smoothly curved surfaces of shattered bedrock and gravelly deposits of Head while locally resistant outcrops of granite emerged as tors. In extremely cold conditions even these were subject to frost splitting along joints with the production of blocks of all sizes, which crept down semi-frozen surfaces to form the familiar spreads of 'clitter' or 'moorstone' as, for example, below Western Beacon. At the great melts at the end of each Glacial, the granite bedrock was less easily eroded than the slates of the Lowland Zone so that the drainage was channelled into a few violent torrents, such as the Erme, Lud Brook or Glaze Brook. These excavated narrow gorges as they left the Moor and locally deposited trains of boulders far too large to have been carried by any subsequent rivers (see UG180).

At the end of the last Glacial (the 'Devensian'), world temperatures had risen sufficiently by about 18,000 BP for periglacial activity to die away and surfaces to stabilise with gravelly deposits of comminuted fresh (i.e. not chemically weathered) rock or Head. Algae would have colonised damp hollows and started to add organic debris and eventually pioneer species such as mountain avens, purple saxifrage, arctic heather, and later crowberry and dwarf birch, would have developed a vegetative cover and initiated soil formation (**Sect. 4 Soils**). Warming lasted to around 11,000 BP and then there was a temporary return to colder periglacial conditions and renewed solifluction until about 10,000 BP; by then global sea levels had again risen by some 120m and Britain was separated from the Continent. This point in time is officially known as the 'Flandrian Transgression', named from the contemporary flooding of the Low Countries, and is now defined as the end of the Pleistocene; it also roughly marks the transition from Palaeolithic to Mesolithic cultures.

HOLOCENE (*Post-Glacial* or '*Flandrian'* or *'Recent'*) 10,000 BP to Present
[Present-day flora and fauna. Human influence on geology starts in Neolithic]

The Moorland Zone After 10,000 BP the climate became warmer and forest cover developed, at first dominated by birch and pine, but from about 9,000 BP, by oak and hazel with other trees, such as alder in wet situations. (Alder persisted until Mediaeval times, confirming generally wet conditions on the Moor, but it was then almost totally destroyed by tinners to make charcoal). The associated soils were mainly *brown earths,* with *gleys* and locally *basin peats* in valleys, and *peaty gleys* at the highest elevations(See **Sect. 4 Soils** for explanation).

On the highest, coolest and wettest parts of the Moor there was a ragged tree-line where the forest petered out and gave way to heather, sedges and grasses. On poorly drained sites such as local hollows in the granite surface or flushes, their debris were kept permanently wet and the exclusion of oxygen led to the accumulation of peat. In the wettest areas the peat went on growing upwards and outwards and eventually spread over the landscape as *blanket bog,* where living plants such as *sphagnum* moss and cotton grass were out of contact with mineral surfaces and had to exist on a limited supply of nutrients from rainfall. Study of the sequences of pollen types preserved in these peats has provided the primary evidence for vegetational and climatic changes; the deposits themselves have long been a source of fuel (UG 535), and were at one time even worked for the production of naphtha (UG 569, 570).

From about 8,000 BP the oak-dominated forest cover moved towards its maximum and birch and pine declined, being largely replaced by warmth-loving elm and lime with associated well-drained *brown earth* soils (p. 23) over much of the landscape except for the highest, wettest areas. The warmest conditions with temperatures notably higher than today's, the so-called 'Climatic Optimum', lasted from about 6,500 to 5,000 BP.

Since 10,000 BP *Mesolithic* hunter-gatherers had exploited the upland margins of the forest and there is evidence of local clearances by fire, perhaps to facilitate the driving of game. But from about 6,000 BP there are signs of the arrival of *Neolithic* peoples who still hunted and were semi-mobile but with slowly developing skills in animal husbandry and domestic living (pottery); and spiritual needs exemplified by ritual monuments (e.g. UG 502, 503). They made numerous small clearances in the forest, mostly temporary and unconnected, which are demonstrated by the appearance in pollen diagrams of typical 'weeds' associated with cultivation and an increase in bracken indicating the opening of tree canopy and increased illumination; and towards the end of the Neolithic (about 4,500 BP) evidence for cereals first appears. Tree clearance alters the microclimate in soils with increased exposure, lower ground temperatures, more rain impact and either leaching or water-logging according to drainage conditions, while the cycling of nutrients, via the annual fall of deciduous leaves and their decay by the soil biota, is lost. All these factors lead to soil degradation by *podzolisation* and/or *gleying* processes as described in **Sect. 4** .

These changes represent the very beginning (in this area) of man's influence on the geology of the planet, which has developed globally to present-day modifications of whole landscapes either by direct physical activities such as mining or drainage diversion or, more indirectly, through changes or destruction of vegetation; and increasingly by release of carbon dioxide from fossil fuels inducing such effects as global warming and acidification of the oceans. (For example, burning coal releases carbon removed from the atmosphere and segregated under ground from the Carboniferous some 350 Ma ago). Some geologists like to use the name '*Anthropocene*' (Gk*: anthropos*, man) for the current epoch of human-influenced geology.

In the *Bronze Age* (about 4,200 to 2,700 BP), farmers destroyed most of the original forest, created fields and elaborated a system of property and field boundaries (*reaves*), numerous remnants of which survive today (e.g. UG 340), and a wealth of hut circles and stone monuments, especially stone rows and cairns, from the clitter of shattered tors (see **Database** for all known local examples). Above the enclosed areas (from about 250m OD) upland grazing continued to the edge of the blanket bog. But from about 3,000 BP onwards, the climate was becoming much wetter, the bogs more widespread and mineral soils more impoverished by cropping and disturbance; by about 2,500 BP the Moorland Zone had become unsuitable for permanent occupation, although still in use for upland grazing.

In this less hospitable environment, *Iron Age* people, from about 2,700 BP and into the *Roman Era*, settled in valleys and on lower slopes round the edge of the Moor in locations, of which some may well be ancestral to modern holdings, while still using the slopes for grazing.

The Lowland Zone

In the lowland there is a lack of enduring peat sections or archaeologically dateable stone monuments, or soils which have not been extensively modified by long continued agriculture, so that dating of sites is generally difficult. But one may reasonably assume that for thousands of years this zone with its more equable climate, carried thick mixed oak forests with swampy lowlands, all difficult to clear even in Iron Age times. Predictably, there would have been a relatively simple pattern of *brown earths* on summits and mid-slopes, *rankers* on convex hill brows, *gleyic brown earths* on foot slopes mainly of Head, and g*ley soils* in valley bottoms on alluvium, with thin *basin peats* in local stagnant hollows (**Sect.4** below for an explanation of this soil pattern).

These events of the Pleistocene and Holocene finally defined the landscape and associated vegetation cover in which Ugborough Parish came into being. Before the development of modern mechanical transport its subsistence and wealth were nearly all provided from its own natural resources, i.e. ***Soils*, *Waters*** and ***Economic Minerals*** . These will be described and analysed in **Sects. 4, 5 and 6.**

3. THE GEOLOGICAL MAP

This map was originally prepared for a poster exhibition and in a few places has been simplified for clarity, and geological ages have generally been rounded off to the nearest 5Ma. For critical use reference should be made to the original British Geological Survey 1:50,000 Sheet 349 '*Ivybridge*'. (In the century since the lattet map was published there have been some changes in the nomenclature used in the key, e.g.'Diabase' would now be written as 'Basic intrusions' or 'Dolerite'; 'Schalsteins' is an obsolete name for metamorphosed tuffs; and 'Calcflintas' for silica-rich metamorphic limestones. For convenience of space the name 'Calcflinta' is retained on the Map Key on p.19).

The following features are of interest:

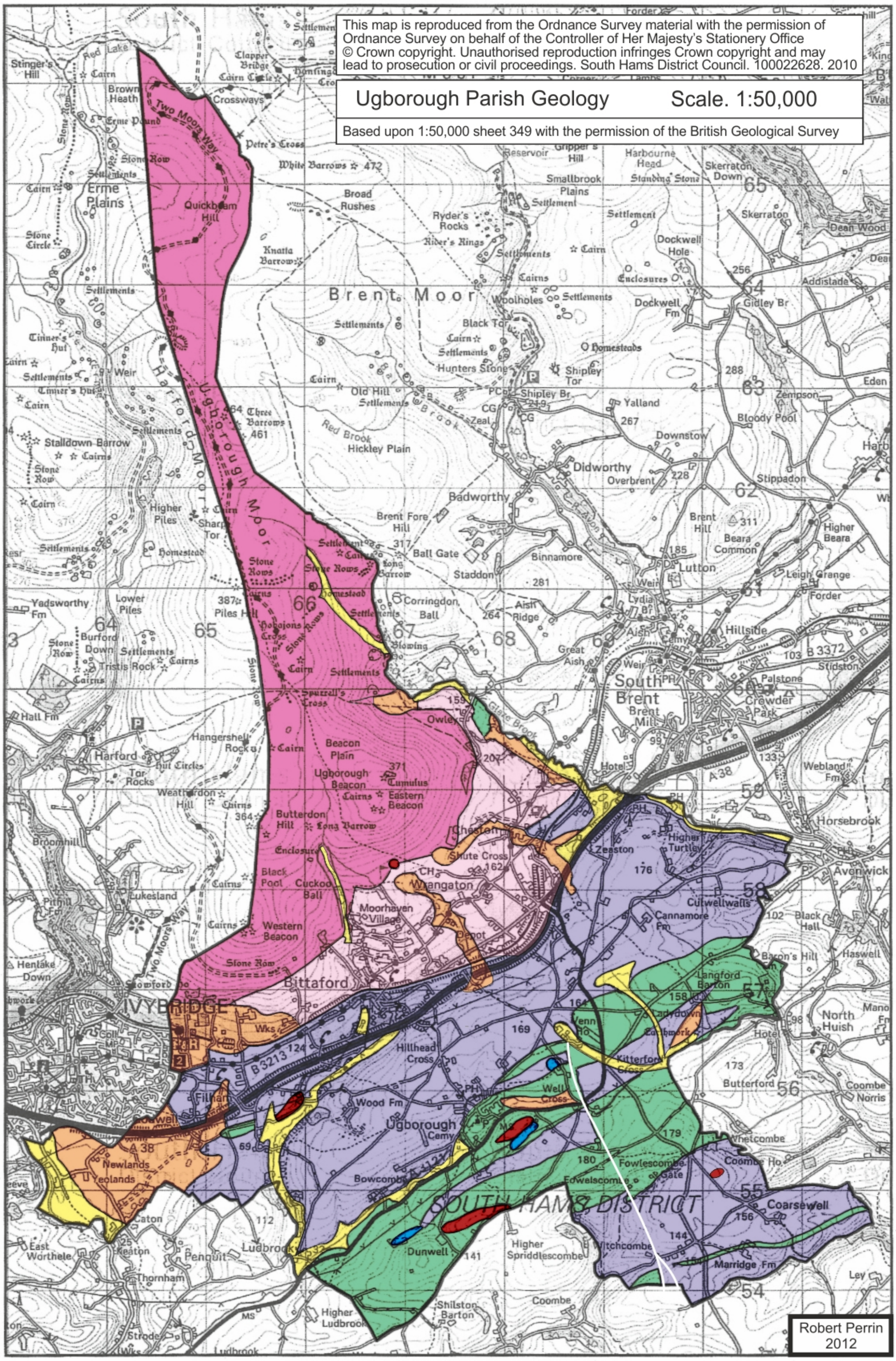
(i) Succession of alternating outcrops of slates and volcanics striking roughly ENE to WSW. These cannot be placed in stratigraphic order as much overfolding and thrusting has occurred. A major wrench fault in the SE runs roughly at right angles to the strike, clearly shown by the relative displacements of outcrops to the E of Ugborough. Lines of weakness tend to develop along strikes and in our area these have been exploited by the Forder Brook, the middle section of the Lud Brook, the Lutterburn and the Shilston Brook.

(ii) Minor outcrops of basic intrusions (dolerites), and limestones aligned with the strike.

(iii) Aureole of metamorphic limestones and hornfels round the granite. The upper edge of the aureole is roughly the boundary between the Moorland and Lowland Zones.

(iv) Deposits of Head, mostly representing periglacial downwash from the Moor but also in a few local depressions on the plateau. A major spread from periglacial erosion of the Erme valley underlies the level to gently sloping area around Newlands.

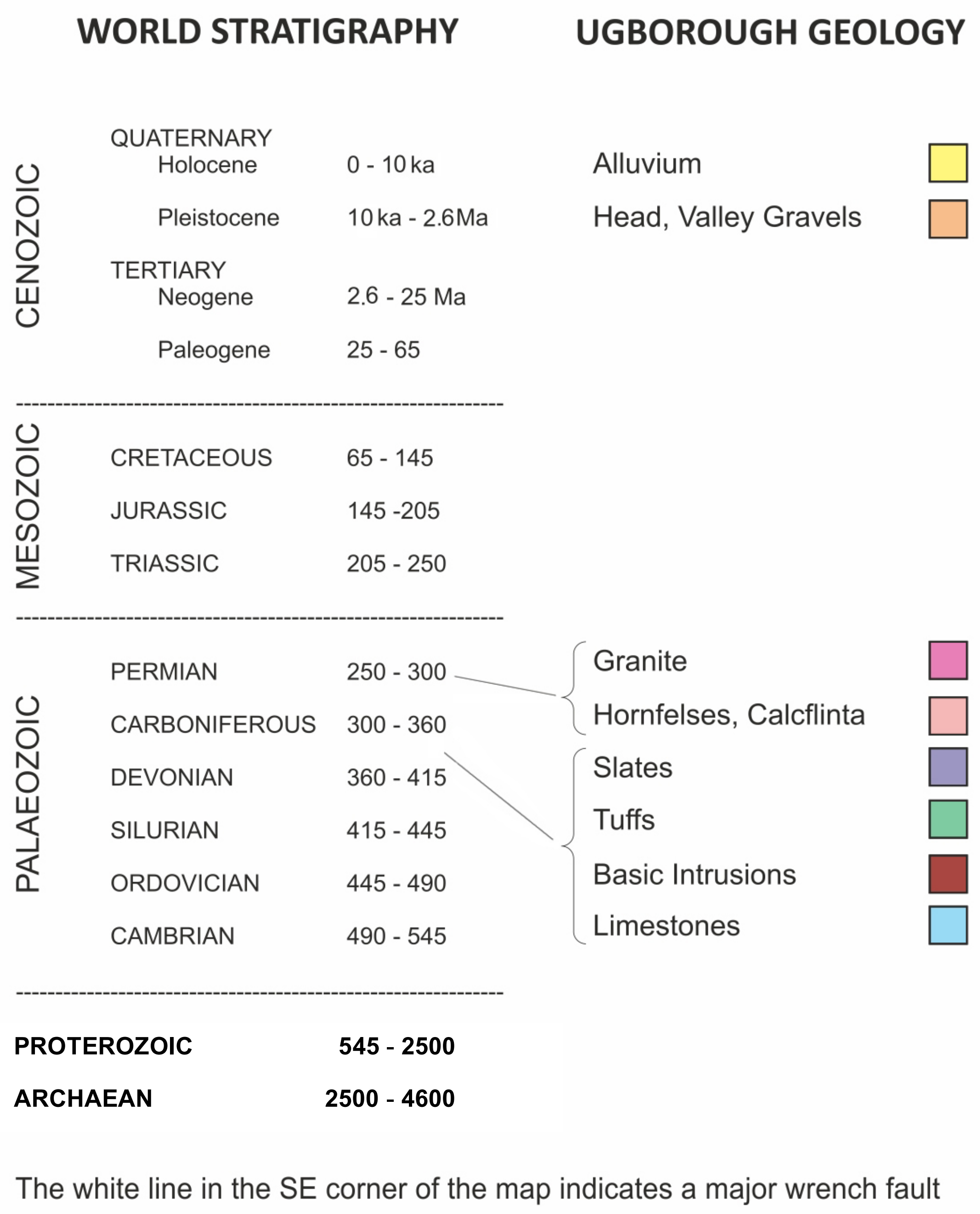
(v) Wide band of alluvium along the Erme below Ivybridge and narrower strips along the valleys of the lesser streams, although those shown in the granite area approximate more to complex mixtures of Head and local alluvium.



Ugborough Parish Geology Scale. 1:50,000

Based upon 1:50,000 sheet 349 with the permission of the British Geological Survey

Robert Perrin
2012



WORLD STRATIGRAPHY

CENOZOIC	QUATERNARY	
	Holocene	0 - 10 ka
	Pleistocene	10 ka - 2.6 Ma
	TERTIARY	
	Neogene	2.6 - 25 Ma
	Paleogene	25 - 65
MESOZOIC	CRETACEOUS	65 - 145
	JURASSIC	145 -205
	TRIASSIC	205 - 250
PALAEOZOIC	PERMIAN	250 - 300
	CARBONIFEROUS	300 - 360
	DEVONIAN	360 - 415
	SILURIAN	415 - 445
	ORDOVICIAN	445 - 490
	CAMBRIAN	490 - 545
PROTEROZOIC		**545 - 2500**
ARCHAEAN		**2500 - 4600**

UGBOROUGH GEOLOGY

Alluvium	🟨
Head, Valley Gravels	🟧
Granite	■
Hornfelses, Calcflinta	■
Slates	🟪
Tuffs	🟩
Basic Intrusions	🟥
Limestones	🟦

The white line in the SE corner of the map indicates a major wrench fault

4. SOILS

The basic wealth of a rural parish of course resides in its soils. The description and study of our own soil resources is much facilitated by the existence of an official Soil Survey of England and Wales map at 1: 25,000* covering all of the Parish, except for the Moorland Zone N of Owley and the extreme E parts of the Parish beyond a line from Langford Barton to Marridge Cross. This map and its accompanying memoir (hereinafter referred to as the 'Soil Map' and 'Memoir') cater well for practical and academic studies but as a background to Parish history, we need only discuss in general terms how soils have developed in the landscape and their potential as local resources. The following account is adapted from the Soil Map and Memoir.

** Soil Survey Record 39. Soils in Devon II. Sheet SX65. Ivybridge. 1976*

SOIL FORMATION AND CLASSIFICATION

The landscape at the end of the Pleistocene has been outlined above and soil formation was imposed on it in directions dictated primarily by parent material and climate, but locally modified by factors such as slope or drainage conditions. Compared to land surfaces never subjected to glacial or periglacial processes, no British soils are much older than 10,000 BP and it is therefore often possible to broadly predict the nature of local soil parent materials from relevant geological maps. But for practical work these will generally be on too small a scale; and shallow surface deposits, such as local wisps of gravel, thin alluvium, hill-wash or peat development, which can profoundly modify soil parent materials, are generally of little interest to geologists and are therefore omitted from their maps.

Parent Materials

The general principles of rock weathering and the production of *soil parent materials* are explained in a booklet named *'The Workings of the Earth'* (Ugborough Local History Group 2016). In our area there are three main types of rock:

Granite : consists of coarse-grained crystals of quartz, feldspars and micas and is mechanically hard but the feldspars and black mica are relatively susceptible to hydrolytic weathering, especially in hot moist conditions as prevailed in the Tertiary. It breaks down into coarse sandy deposits (*growan*) mainly of quartz, white mica and kaolinite with a small amount of iron oxides. Bases and other nutrients are initially very low and are readily leached out by rainfall through the coarse permeable substratum.

Slates: consist largely of minute flakes of mica in parallel orientation, with finely divided quartz. The rocks are much softer than granite and more susceptible to frost shattering giving stony and sandy residues which are porous and free-draining. Further hydrolytic degradation back to the clay minerals of the original mud proceeds slowly, but an appreciable amount does not degrade further than silt-size particles so that the clay content of derived soils is never high and there are few 'heavy' ones, and very silty soils lack structural stability. These rocks have already gone through at least one weathering cycle so, apart from potassium from the micas, nutrients are relatively low.

Volcanics (tuffs and lavas): these rocks are relatively soft like the slates and have similarly been deeply frost shattered. They lack hard quartz and are mainly composed of feldspars and ferromagnesian minerals, and are thus more readily weathered chemically than the slates to produce clay minerals, soluble bases and free iron oxides, the latter imparting reddish colours to derived soils. As with the slates, weathering in this climate provides more silt- than clay-sized particles. These rocks are being weathered for the first time and so their residues are inherently more fertile than those of the slates.

Soil- forming Factors

As noted in '*The Workings of the Earth'*, soil formation starts at the point when parent materials are colonised by organisms and their degradation products. Thereafter, the soil and its associated vegetation will develop with mutual interaction in a direction which depends on the following environmental factors:

Time: the period during which soil formation has proceeded

Climate: temperature, and net rainfall (i.e. rainfall less surface evaporation and transpiration)

Topography: altitude, slope, drainage characteristics and stability of the surface

Organisms: these include the vegetation and soil biota in mutual interplay with the soil body and, since Neolithic times, human modification; this latter has ranged from relatively small adjustments to productivity by ploughing, chemical fertilizers or drainage, to total destruction by accelerated erosion.

These factors will be considered below in relation to the soils of the Parish.

Soil -forming Processes

The processes occurring in any soil are readily summarised but it must be borne in mind that detailed relationships between them will often be complex and may change with time:

Weathering: the weathering processes that produced the parent material will continue in the soil, i.e. further physical comminution of residual rock material; and solution, hydrolysis and oxidation of minerals.

Gravitational movement: the leaching of soluble components, notably bases and nitrates, mechanical eluviation of fine particles (mostly clay but sometimes humus) and podzolisation (p. 25).

Gleying: the reduction of iron in anaerobic conditions to soluble forms which may then be redistributed within the soil or seep away. It is shown by grey colours replacing the rusty colours of iron oxides, but the latter often returns in the form of mottling along cracks or root channels where ingress of air allows local re-oxidation.

Development of structures: the formation of crumby, blocky or platey structures which affect the drainage, aeration, stability and mechanical properties of the soil.

The Soil Profile

Except where erosion outpaces soil formation, all soils develop *profiles* (views in cross section as seen in a quarry face or a dug pit) which are defined by visible layers or *horizons* down to bedrock or, usually for practical purposes, about a metre. Horizons are conventionally distinguished by a letter notation:

L	Little-decomposed litter layer.
O	Organic horizon over mineral soil.

A Mixed mineral-organic horizon at or close to the surface.
E Eluvial horizon depleted of clay, or iron and aluminium (often called 'sesquioxides').
B Altered horizon differing from A or E above and C below by colour, structure or illuvial concentrations or by some combination thereof.
C Parent material little altered except possibly by gleying (see above).

These master horizons can be more specifically defined by lower case suffixes such as *g* for *gleyed*, *h* for *humose, s* for *sesquioxidic (iron and aluminium enriched) , w* for *weathered, p* for *ploughed* or *otherwise cultivated etc.* Examples are *Ap ,Bw, Cg.*

Soil Classification

Soils with similar assemblages of horizons are classed together as *Major Groups;* which in the Ugborough area are: *Rankers, Brown Earths*, *Gleyic Brown Earths, Brown Podzolic Soils*, *Surface-water* (or *'Stagno-'*) *Gleys*, *Ground-water Gleys*, *Stagnopodzols* and *Organic* (*Peat*) *Soils.*

Within these groups, soils on the same or closely similar parent materials are termed *Soil Series*. These are often the fundamental units in soil surveys, determined by field mapping and are assigned names from type-localities, for example 'Ivybridge Series' soils are Gleyic Brown Earths on slates and slate-derived Head; 'Dunwell Series' are Rankers on volcanics. For our limited purposes there is no need to describe the naming, distribution or properties of individual Series which are fully covered in the Soil Map and Memoir. But the general characters of Major Groups are described below. Their distributions in the Lowland and Moorland zones are summarised in the idealised landscape diagrams on p. 28.

It is important to appreciate that in nature there are no clear boundaries between soil types, which merge into each other laterally. The optimum mapping of boundaries therefore much depends on the skill and experience of the soil surveyor. A further complication is that, within any area mapped as belonging to a dominant Series, very local factors, such as variations in slope, drainage conditions or parent material, may produce subordinate areas of other Series. The nature and occurrence of these relations in our area are described in the Soil Memoir. In modern practice therefore soils are often mapped as *Associations.* These are essentially landscape units named after the dominant Series present with defined proportions of other subordinate Series with which they are associated.

<u>THE LOWLAND ZONE</u>

Rankers (A C horizons)

Rankers are shallow (less than 30cm) soils with brown mixed mineral and organic A horizons passing directly into parent material (C horizons). They represent early stages in soil formation on well drained sites when the accumulation of organic material and chemical weathering have so far been limited by time or, as usually in our area, when continued erosion on steep sites has kept pace with soil development. On the *slates* they occur everywhere in association with shallower examples of the Brown Earths (see below) particularly on convex hill brow sites. Their properties are comparable to those of the corresponding Brown Earths but their potential is lower as their shallow profiles reduce available water capacity and nutrient reserves, and restrict rooting depth.

On the *volcanics* and on a few *basic intrusions* they have developed in similar sites to those on the slates and because of the immaturity of both soils there is relatively little difference in potential.

Brown Earths (A Bw C horizons)

In temperate humid climates under deciduous forest with free drainage, and hence good aeration, *Brown Earth* soils develop. These have dark brown A horizons of mineral matter intimately mixed with well-decomposed humus (*mull*), and a natural crumby structure which provides a stable surface with good porosity. This overlies a brighter or rusty brown Bw horizon of well weathered parent material passing down gradually into the latter in situ (C horizons). Such soils are slightly acid, well aerated and support a vigorous soil population, notably including earthworms, re-cycling and conserving nutrients via the annual leaf fall. They vary in depth according to the topography being deepest on flatter sites and shallower on hillsides, on the steepest sites passing into Rankers. In our area, they follow the outcrops of the slates and volcanics, their relationships to the landscape being shown in the idealised diagram on p.28.

After the original clearance of forest, the Brown Earths gave rise to the main mixed farming soils of the area. Under cultivation their subsoils (Bw horizons) are little changed but A horizons down to plough depth are homogenised, lose dark coloured organic content by oxidation and tend towards the colour of their subsoils (becoming Ap horizons). Cohesion of surface soils to form stable crumb structures is degraded by loss of humus, a process accentuated in our local soils by the preponderance of silt over clay particles. Management therefore must include the preservaton of humus, for example by leys, and careful judgement of moisture conditions at cultivation to avoid slaking in wet conditions or powdering the tilth in dry.

As would be anticipated from the relative contents of iron and bases in their parent materials, the soils on the volcanics develop notably redder Ap horizons than those on the slates, readily seen on freshly ploughed land, and are inherently more fertile.

Gleyic Brown Earths (A or Ap Bw Bg C horizons)

On lower slopes, particularly on slate-derived head, and occasionally in local flat areas on ridges, where ground-water seasonally comes closer to the surface and aeration is poorer, sub-soils can be gleyed (Bg horizons). This is shown by patches of paler colours and rusty mottling. With artificial drainage they are similar in their properties to normal Brown earths. They occur in narrow bands along most foot-slopes but otherwise are mainly confined to small areas between Shute and Glazebrook House, and round Caton and Newlands in association with Ground-water Gleys.

Brown Podzolic Soils (A or Ap Bs C horizons)

These are effectively more acidic Brown Earths developed in climatically wetter but still well-drained situations. Stronger downward movement of water and weathering have leached out silica and thus concentrated free iron oxides in Bs horizons which are accordingly bright brown or ochreous. There is no impoverishment of iron in A horizons so they are not true *Podzols* (see below p.25). They occur particularly on well-drained slopes of the metamorphic aureole (calcflintas and hornfelses) between the Erme Valley and Bittaford, straddling the boundary between the Lowland and Moorland Zones, and passing upwards into other Brown Podzolic Soils on the granite (p.25). They are of lower inherent fertility than the normal Brown Earths.

Surface-water or 'Stagno-' Gley Soils (Ag, Bg, Cg)

As has been noted, not many local parent materials are rich in clay particles and are thus relatively permeable. However, on some level or gently sloping sites clay-rich downwash or ancient alluvium has accumulated. This is relatively impermeable so that water stagnates all through the soil profile with consequent lack of oxygen and gleying. Apart from long periods of surface wetness, the high clay content means that on drying the surface can pass very quickly from excessive plasticity to hardness, making cultivation difficult. Although some improvement can be achieved by drainage, these soils are best suited to permanent pasture. There are only limited areas of the soils, notably along the upper Lutterburn between Well and Ugborough, around Venn and Kitterford Cross, and through Sign of the Owl Cross to Monksmoor.

Ground-water Gley Soils (Ag Bg Bg/Cg horizons)

These soils occur on gently sloping concave footslope surfaces over Head, the sites receiving drainage from higher upslope. In contrast to Surface-water Gleys, permeability is moderate so that the water-table rises and falls seasonally. All horizons show signs of gleying with rusty mottling. Variable wetness restricts the use of these soils to permanent pasture but lowering the water-table with tile drainage can improve aeration and hence earliness and better trafficking. They occur particularly in the area of Head shown on the **Geological Map** around Newlands, in the N of which there is a grid of open field drains fed from tile drains and emptying into the Erme (UG 266).

Alluvial Gley Soils (Ag Bg Bg/Cg horizons)

Alluvial gley soils are a special case of groundwater gleys, occurring in the steep-sided valleys along the minor streams of the area which are floored with narrow strips of silty alluvium mainly derived from slates. In these depressed sites with high water-tables, and occasional flooding, soils develop with greyish-brown and mottled Ag over light grey and mottled Bg and Bg/Cg, horizons, the last named often containing well weathered and softened slate fragments. They are not easily drained and the size and shape of land parcels often hinders access and confines their use to permanent pasture. They occur especially along the valleys of the Forder, Lud and Shilston Brooks and the Lutterburn.

Ranker-like Alluvial Soils (A C)

In contrast to the minor streams, the Erme and the Avon, and to a smaller extent the Glaze Brook, on leaving the higher ground form wider floodplains with low levees. These are floored with sandy alluvium from the granite in which the water-table is near river level on the levees and then rises slowly towards the floodplain backlands. Because of the frequent flooding and reworking of surfaces, soils have little chance to develop and typically have a well-drained loamy A horizon over a C of coarser raw alluvium, a sequence comparable to normal Rankers. Except in floods these soils are well drained and provide easily managed grassland, but further away from the river they grade into poorly drained and heavier-textured Alluvial Gley soils which require much more careful management.

THE MOORLAND ZONE

Soil parent materials here are confined to granite and granitic head (growan) with properties as noted above. In contrast to the Lowland Zone there are much larger gradients in altitude and therefore of temperature and rainfall.

Brown Podzolic Soils (A or Ap Bs B/C) or (L Ah Bhs Bs B/C)

On sloping and free-draining sites at relatively low altitudes round the edge of the Moor Brown Podzolic Soils not very different from those on the aureole have developed in granite and granitic head. Because of the greater rainfall and permeable gravelly substrata they are more strongly leached and with greater concentrations of iron in the subsoil (Bs horizons). At lower altitudes (up to about 250m OD) they can be utilised for ley pastures with some arable and forestry.

At higher altitudes (up to about 330m OD), and thus lower temperatures and higher rainfall, plant debris are less easily decomposed and give rise to litter layers (L horizons) with accumulation of more humus in Ah and Bhs over iron-rich Bs horizons. These differences are sufficient for the soils to be mapped as *Humic Brown Podzolic Soils* and assigned to a different Series. They occur mostly under grassy moorland much of which is bracken-infested, suitable for rough grazing but generally too steep and bouldery for any profitable improvement.

Stagnopodzols (L Oh Ah/E Eg Bf Bs B/C) ***or*** (L Oh Ah/E Bhs Bs B/C)

The basic definition of a *Podzol* is a soil with its upper mineral horizons (Ah and/or E) impoverished in iron and aluminium ('sequioxides'), shown by bleaching, and their re-precipitation in Bs horizons below, with the development of strong rusty colours. This movement is caused by humic acids from peaty surfaces forming soluble complexes with the sesquioxides which are then leached from the surface horizons and the process may be augmented by gleying in waterlogged anaerobic conditions (*stagno-podzolisation*). Favourable conditions for podzolization are base-poor parent materials and high rainfall encouraging peat development.

Stagnopodzols occur on hill slopes of much of the main moorland mass, above the Brown Podzolic Soils and with rainfall in excess of 1,500mm (60 in.) They fall into two Series which interdigitate in patterns usually too complex to be mapped separately at any reasonable scale. Their joint occurrence in the landscape is shown in the landscape diagram (p.28).

The first Series is waterlogged for long periods with a consequent Oh horizon of black amorphous peat and black mineral Ah horizon both strongly acid. The Eg horizon below is variably grey. Under this is a thin but hard rusty accumulation of iron oxide termed an *iron pan,* or Bf horizon, which effectively prevents surface drainage and augments the gleying. There follows a Bs horizon only moderately enriched with iron and gravelly and free draining, as is the B/C horizon at the base. These may be the remains of a former brown earth on which gleying and podzolisation were instigated first by forest clearance and intensifying agriculture and then climatic deterioration in Bronze and Iron Age times.

Soils of a second Series have similar strongly acid L, O and Ah/E horizons but humus has been more mobile and has accompanied iron and aluminium into a Bhs horizon, and there is no iron pan exacerbating water stagnation. As in the first Series the lowest horizons are fairly permeable.

Both series are acid and lacking in nutrients and occur under heather or grass moorland. Where gradients are gentle improvement is possible, with liming and sub-soiling to improve drainage, but rarely profitable, and many slopes are steep and boulder-strewn, of little value apart from rough grazing or amenity.

Stagnohumic Gley Soils (L Oh Ah Bg)

On flat or slightly sloping mainly hilltop sites, generally above the levels of the stagno-podzols, and with rainfall often in excess of 1,625mm (65 in), shallow peat develops over mineral soil maintaining a permanently wet (*stagno*) surface. Under an L layer, mostly a root mat, there is an Oh horizon of black amorphous peat, a black loamy Ah, and a strongly gleyed grey, more or less mottled Bg horizon. These soils are under wet grassland or heath. Improvement by drainage and heavy liming and fertilisation is possible but generally uneconomic.

'Alluvium'

The steep narrow valleys of the Lud and Glaze Brooks are shown as 'Alluvium' on the **Geological Map**. More accurately, they are floored with varying mixtures of granitic Head and local alluvium with complex un-mappable patterns of gleyed and peaty soils and locally bare sand or gravel, especially where tin streaming has taken place.

Organic (Peat) Soils (L Oh Cg)

Organic Soils are conventionally defined as ones where the development of peat in permanently wet conditions has reached a depth beyond normal agricultural significance. Such deposits start initially on flat or hollow sites where ground-water stagnates, or on flush sites around local springs, to produce *Basin Peats*. Under low rainfall, the peat stops growing at the average water level but in high rainfall it continues to grow upwards 'into the rain' as *ombrogenous peat,* in extreme cases spreading outwards as *Blanket Bog*. Most of these peat soils seem to have progressed originally from stagno-humic gley soils and commonly have an original Cg horizon.

In our area, Basin Peats occur round the source of the Lud Brook at Main Head, a few local depressions in the granite surface above the Scad Brook and on many small flush or alluvial sites. There may or may not be an L horizon over an Oh horizon consisting of black amorphous peat varying in depth from 40 to over 90 cm. Permanent wetness precludes any improvement.

Blanket Bog in our area develops at over (450m, 1500 ft approx). Typically there is a black Oh1 horizon of peat with many roots, and one or more Oh2, Oh3... horizons of amorphous peats, varying slightly in colour and degree of humification, ultimately overlying a Cg horizon at depths ranging up to well over a metre. These peats make up much of the surface in the extreme N of the Parish. They are about 1.2 m deep at the Redlake clay pit (UG 612) and were formerly excavated for naphtha production near Crossways (UG 569). Throughout history they have been cut for fuel (UG 535) or charcoal production.

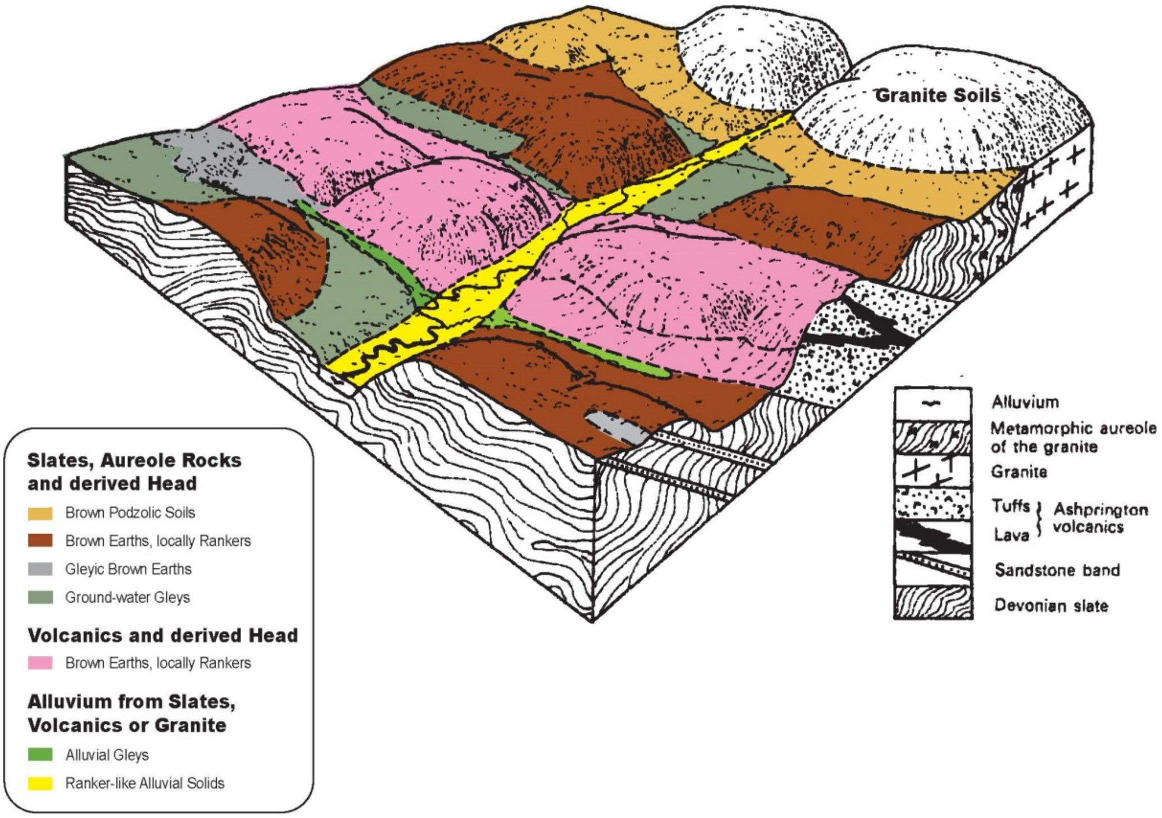
LAND-USE CAPABILITY

Soil surveys have many uses, for example in civil engineering, archaeology, land-use planning etc., but agriculture is generally the most important application. Soil maps are therefore often accompanied by *Land Use Capability* maps which seek to display the physical limitations on choice of crops and ease of cultivations. In current UK usage classes are assigned ranging from Class 1: 'Land with very minor or no physical limitations' to Class 7: 'Land with severe limitations that cannot be rectified'. Mainly due to high rainfall and/or steepness of topography no land in the Parish rates higher than Class 3: 'Land with moderate limitations restricting cropping to grass, cereals and forage', which is achieved by the main agricultural soils: Brown Earths on slates and volcanics and some Brown Podzolic Soils along the granite aureole. The Soil Memoir provides a detailed description of this system with a map at 1:25,000 showing the estimated Capabilities of the soils of the Parish.

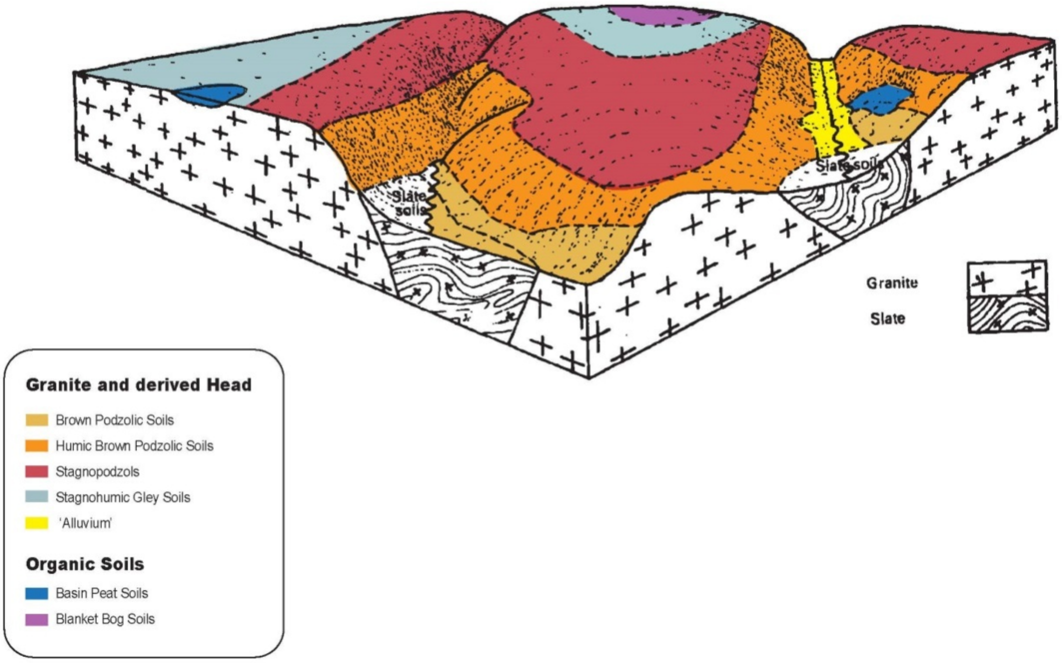
SOILS IN THE LANDSCAPE

Idealised landscape diagrams adapted from the Soil Memoir are shown on p. 28 and discussed on p.29.

Lowland Soils Landscape



Moorland Soils Landscape



SOILS IN THE LANDSCAPE

The relationships of the soil types described above to eachother and to the landscape as a whole are conveniently summarised in the idealised block diagrams*, on the page opposite, that bring out clearly the interplay of bedrock and topography in shaping the soil pattern.

In using these simplified diagrams, it is important to remember two things. Firstly that the vertical scale is greatly exaggerated. For instance, Dartmoor appears as an almost moutainous landscape with limited level or gently sloping land, whereas in reality it consists of the remains of broad erosion surfaces, locally deeply dissected by river valleys. Its essential overall 'flatness' is readily appreciated when it is viewed from a distance on the ground or in oblique air photography.

Secondly, as pointed out on p.22 , indidual soil types merge and locally form complex patterns, or associations that cannot be shown on small scale idealised diagrams.

5. WATER SUPPLIES

It is easy to forget that mains water came to the area only in the mid-1930s, so that for almost all of its history the Parish had to depend on supplies from inside itself. Historically, the community has needed water for: (i) domestic and farm use (ii) irrigation of dry fields or water meadows, (iii) transport and processing of china clay, and the dressing of minerals, and (iv) power for water mills.

In our area mean annual rainfall ranges from about 1,150 mm (45 in.) to over 1,800 mm (70 in.) and is thus usually more than sufficient but at any given point the amount and reliability of useable water will depend not only on fluctuations in weather patterns but, most importantly, on how rainfall is distributed once it has hit the ground. It is therefore necessary to understand the nature of surfaces and their substrata, especially their porosities and permeabilities.

The Moorland Zone

The granite is wholly impermeable at depth so the net rainfall has to run off, over and through thin surface layers of shattered rock and soil, and sparse joints in the granite, to emerge as springs or flushes on slopes above streams, and along the Moor edge. (On **Map 3**, note the numerous springs, issues and collects; and also a number of sinks where some of the resulting rivulets drain back into the apron of shattered rock and Head round the granite). Streams therefore rise and fall very rapidly with fluctuations in rainfall. Blanket bog, where present at high altitude, does act like a sponge, soaking up surplus rainfall and releasing water slowly and this helps to maintain the base flow of streams in dry periods. But reliable constancy of water supply for activities on the Moor away from the immediate vicinity of streams can only be provided by dams and leats which are expensive to construct and maintain.

In the past several leats have been built to collect water directly from streams to distribute to undertakings in the Parish. Two small reservoirs were formerly fed by, now dry, leats from the Lud Brook, the 'Moorhaven' (UG 432) and 'Carew' (UG 538) leats; the latter also supplied the Redlake railway and clay-works at Cantrell (UG 352) and adjacent dry fields, and possibly also Rutt Quarry (UG 412). Another leat from the Lud Brook (UG 540), still flowing across the golf course as far as Leigh Lane, supplied Leigh Farm and there was one from the Scad Brook to Owley (UG 732). A leat from springs above Knowle Plantation fed a mill-pond at Wrangaton Manor (UG 392).

Several small local leats were used by the China Clay companies for the clay workings on Brown Heath and Left Lake (UG 612, 648) and there was a large specially constructed double pipeline (UG 568) to convey the clay slurry down to the works at Cantrell.

With regard to *water quality*, due to the low content of calcium in the granite and its very slow weathering, moorland water is always very soft but it is ofen peaty especially when extra heavy rainfall causes the upland bogs to become over-saturated. In modern purification systems, organic matter is first coagulated with aluminium salts, and lime is then added to remove the toxic aluminium and adjust the acidity.

The Lowland Zone

Both the slates and the volcanics are totally impermeable at depth but, in contrast to the granite, the complex folding, faulting and fracturing of these metamorphic rocks provide some tortuous pathways to springs of unpredictable distribution. Nearer the surface, periglacial processes shattered these softer rocks much more than the granite, providing a deeper mantle of relatively porous material, particularly where Head had accumulated in valleys but, overall, groundwater capacity is limited and streams rise rapidly at times of rainfall stress. Historically, however, groundwater supplies were generally sufficient for individual farmsteads. Apart from those in the main valleys, these were mainly located in re-entrants where groundwater came close enough to the surface to give rise to a spring, or could be reached in a reasonably shallow well. Virtually all farmsteads in the SE of the Parish occupy such sites: Ennaton (UG 069), Fowlescombe (UG 031), Marridge (UG 246) and Cutwellcombe (UG 064) to name but a few.

Ugborough itself presumably originally depended on water from the three branches of the Lutterburn, augmented by local wells in the village (a few of which are still in use today). In historic times water was supplied to the conduit in the Square (UG 166) in a pipe from a spring at Whitehouse (UG 100). But, with modern intensity of water usage, the Parish is now dependent on mains supplies from the waterworks at Little Hempston and thus from the Dart catchment.

Natural water supplies from the slates are soft because of the low content of bases in the rock; as would be expected those from the volcanics are slightly harder. There are some areas locally where unexpectantly the water is much harder; this can usually be related to adjacent outcrops of limestones although there are some areas where, while nothing shows at the surface, there are probably buried calcareous deposits.

As in the Moorland, leats were historically important in water distribution for the purposes noted above and, interestingly, several are shown on the Tithe Map.

(i) D*omestic and farm use*. There were leats to Younghouse (UG 733) and Langford Barton (UG 456) from springs; Haye (UG 431) and Haredon (UG 186) from the Lutterburn; and Torpeek and Piles Peek from the Lud Brook (UG 430).

(ii) *Irrigation of fields*. At its simplest this meant diverting some of the flow of a stream into adjacent 'water meadows' as from the Lutterburn below Well (UG 237), at Haredon (UG 186) and perhaps Berry (UG 435); and below Witchcombe (UG 131) from one of the headwaters of the Shilston Brook. This practice evolved into continuing leats along valley sides so that they ended up high above the stream, letting down water on the fields below, as at Lower Bowcombe (UG 186) and The Vicarage (UG 274) from the Lutterburn; and a field between Haye and Ludbrook Mill from the Lud Brook (UG 269). It is possible that the leat (UG 430) conveying water from the Lud Brook to Piles Peek and Peek Mill was also used in this way. South-east of Fowlescombe there is an elaborate system of sub-parallel distribution channels on hillsides fed from the two branches of the upper Shilston Brook (UG 455). There are a few other areas, such as S of Langford Barton and of Coarsewell, where lines on air photos are suggestive of other systems. Traditional names for such schemes are 'catchwaters' and 'catchmeadows'.

(iii) *Mineral processing.* In the Lowland the only certain use of a leat is one from near Filham House to the silver/lead mine (UG 228).

(iv) *Water-mills.* There were four mill-leats from the Lud Brook: at Bittaford (UG 333), Peek Mill (UG 430), Earlescombe (UG 268); and Ludbrook Mill just outside the Parish (UG 269). Turtley Mill was fed by a leat from the Glaze Brook (UG 277). Although not a mill, Haye (UG 431) is recorded as having a waterwheel fed by the same leat as its water supply. Away from river valleys, a small leat from a spring fed a mill-pond at Marridge (UG 261).

6. MINERAL RESOURCES

Economic Minerals

Tin: There are a few deep pits (sometimes recorded as 'mines') for example at Pennaton (UG 542) but there is extensive evidence of past streaming works along minor streams in the valleys of the Erme, the Lud Brook and especially the two Glaze Brooks (e.g. UG 577, 699).

Silver/lead: The only mine was that at Filham (UG 014, 323).

Iron: There were former workings of haematite and ochre on either side of Leigh Lane (UG 339, 379)

China clay: The open cast workings of the China Clay Corporation (later the Ivybridge Clay Company) were at Red Lake and Left Lake (UG 567, 648). Other minor workings were at Hook Lake and near the Black Pool (UG 633, 541).

Limestone : The Parish was not particularly well supplied with limestone for burning to make quick-lime for agriculture or mortar for building. There was one modest-sized quarry and two minor ones at Ennaton (UG 117), with an adjacent kiln; and a small quarry SW of Ugborough (UG 122). An outcrop of limestone has been mapped at Dunwell Quarry (UG 146) but it does not appear to have been worked for the production of lime.

Building Stone

Granite: Clitter, used continuously from Prehistoric times, is found below all rocky outcrops but especially below Western Beacon There are about seven former quarries in granite, the most important being Rutt (UG 412), Western Beacon (UG 543, 544) and Blackadon (UG 356)

Slates: In the Lowland Zone the slates have provided most of the local building stone, having been worked in numerous small quarries although only those at Bowcombe and Wood (UG 145, 125) seem to have provided roofing slates in quantity. None of the slates are of the high quality provided by the more highly metamorphosed Cambrian slates of

Snowdonia

Volcanic rocks: The tuffs and lavas have been worked in a number of small Lowland quarries. When fresh the rocks provide rough building stone but they tend to me more variable and deeply weathered than the slates.

Roadstone and Gravel

Calcflintas from the granite aureole provided exceptionally tough roadstone formerly used on all the main roads. It was worked in two large quarries at Wrangaton (UG 375, 376) and others at Bittaford (UG 335, 343).

Gravels in any appreciable quantities were not widespread, the slates and tuffs generally being too soft although one pit is recorded at Quarry Farm (UG 518). Granitic Head is generally gravelly and there are records of two such pits on the W side of Leigh Lane (UG 380, 381).

Inventory of Mineral Workings

The dependence on local mineral resources before the advent of modern transport facilities is shown by the large number of quarries in the Parish. Many of these are very small, perhaps catering for the needs of a single farm. Owing the small scale of the **Geological Map**, and the lack of historical records for many minor workings, there is sometimes uncertainty on the nature of the rocks, especially along boundaries.

Quarries

UG	Grid Reference (SX)		Product
116	6567	5568	Basic intrusions
117	6850	5620	Limestone
	to 6858	5623	
118	6949	5667	Volcanics
119	6597	5592	Basic intrusions *or* Volcanics
120	6790	5554	Volcanics
121	6842	5571	Volcanics
122	6830	5564	Limestone
123	6904	5536	Volcanics
124	6976	5580	Volcanics
125	6628	5583	Slates
	to 6647	5547	
145	6605	5495	Slates
146	6690	5460	Basic intrusions (*and* Limestones?)
	to 6701	5452	
147	6883	5478	Volcanics *or* Slates
	and 6873	5482	
148	6607	5487	Slates
149	6927	5450	Slates
201	6780	5530	Volcanics *or* Slates
202	6723	5540	Slates
203	6691	5526	Slates
210	6913	5580	Volcanics *or* Slates

220	6747	5458	Basic intrusions
225	6910	5492	Volcanics *or* Slates
254	7047	5432	Slates
255	7158	5470	Slates
263	7103	5432	Slates
276	6700	5664	Slates
282	7010	5515	Basic intrusions
283	7056	5709	Basic intrusions *or* Volcanics
287	6676	5396	Volcanics
291	6715	5445	Volcanics
321	6525	5605	Slates
322	6525	5657	?
324	6666	5587	Slates
334	6646	5735	Granite
335	6650	5713	Calcflinta
343	6644	5721	Calcflinta
356	6650	5765	Granite
360	6576	5680	Calcflinta
375	6764	5814	Calcflinta
376	6767	5806	Calcflinta
410	6494	5690	Granite
412	6495	5690	Granite
	to 6512	5690	
413	6529	5690	Granite *or* Calcflinta
543	6529	5715	Granite
544	6541	5749	Granite
Opencast Pits			
380	6688	5787	Granite Head?
381	6705	5757	Granite Head?
458	6585	5488	Slate gravel?
633	6515	6457	China clay
648	647-	643-	China clay
649	649-	633-	China clay
653	6511	6271	?
656	6511	6528	?
706	6530	6505	China clay
Mines			
014	6467	5502	Lead/Silver
323	6464	5512	Lead/Silver
339	675-	548-	Ochre?
379	6703	5757	Haematite, ochre
542	683-	594-	Tin

7. GLOSSARY OF GEOLOGICAL TERMS

Acid rock	Rock high in silicon as quartz and feldspars, and low in ferromagnesians, hence of pale colours and low density
Aureole	Zone of metamorphism of the local rocks in contact with an intrusion of magma
Basalt	Dark fine-grained basic lava of feldspars and ferro-magnesian minerals making up oceanic crust
Bases	Most important metallic ions occurring in soils, i.e. calcium, magnesium, sodium and potassium.
Basic rock	Rock containing high proportion of ferromagnesian minerals, with feldspars but no quartz
Calcflinta	Tough flinty rock derived from calcium-rich rocks by thermal metamorphism in a contact aureole. The name is obsolescent in modern geology but it is still useful in our area as it is an important feature of the only published geological map, and appears in many historical records
Calcite	Mineral form of calcium carbonate
China clay	Kaolinite, hydrothermally derived from feldspars in granite, mixed with residual quartz and white mica
Clay	Fine-grained mineral material with particles less than 0.002 mm in diameter*; hence also, the name of a geological deposit or a soil-type where clay is a dominant component
Clay minerals	Fine-grained platey alumino-silicate minerals resembling mica flakes but of clay size. They have active surfaces conferring water absorption, plasticity, cohesion and the ability to absorb and release bases. Examples are kaolinite, illite and chlorite
Clitter	Scatter of granite boulders from periglacial destruction of a tor
Dolerite	Medium-grained basic rock of feldspars and ferromagnesians forming minor intrusions into the crust
Fault	A fracture face formed by shearing in a rock body under opposing pressures
Feldspars	Complex alumino-silicate minerals with varying amounts of sodium, calcium and potassium, having white or pale colours (often pink) and low densities
Felsite	Fine-grained acidic rock mainly composed of feldspars and quartz
Ferromagnesians	Silicate minerals with high amounts of iron and magnesium, with dark and/or greenish colours and high densities
Granite	Coarse-grained acid igneous rock of quartz, feldspars and micas
Growan	Coarse sandy weathering residue of granite. A useful term mostly used in Cornwall and on Dartmoor, being derived from a Cornish name for gravel.
Haematite	Anhydrous iron oxide with red or purplish colours. Long used as a pigment.
Head	Superficial deposit derived from periglacial weathering
Hornfels	Tough fine- to medium-grained rocks from thermal metamorphism of slates in a contact aureole
Hydrolysis	Alteration of minerals by water in chemical weatheringat the surface, or at very high temperatures in hydrothermal activity during magma emplacement
Igneous rock	Rock formed by solidification of molten material

Inselburg	A steep- sided outcrop of resistant rock which is a remnant on a surface affected by deep weathering and erosion.
Kaolinite	A clay mineral formed by weathering or hydrothermal alteration of feldspars
Killas	A name most often found in older West Country geological literature to distinguish slates from the granites
Limestone	Rocks composed mainly of calcium carbonate usually from biological, but sometimes chemical, processes.
Limonite	Hydrated iron oxide ('rust'), yellowish, orange or brown colours
Magma	Melt usually with suspended crystals and dissolved gases, derived from mantle or crustal rocks
Metamorphism	Processes by which rocks are changed by heat and pressure and fluids
Micas	Complex alumino-silicate minerals containing potassium, with very perfect platey cleavage. Black mica is additionally a ferromagnesian mineral
Mud	Loose deposit of clay minerals and finely divided quartz, sometimes with iron oxides and/or organic matter or calcite
Mudstone	Structureless accumulation of hardened mud
Net rainfall	Rainfall available to percolate after evaporation and transpiration by vegetation
Ochre	Red, yellow or brown iron oxides, used as pigments
Orogeny	The process of mountain building (Gk. *oros,* mountain)
Quartz	Hard, very stable crystals of silicon dioxide, with white or pale colours and low density
Sand	Mineral or rock grains, most often of quartz, conventionally defined as of 2.0 to 0.06 mm diameter*, with no surface activity
Sandstone	Sedimentary rock containing more than 25% sand
Shale	A mudstone, but visibly stratified and more or less fissile
Silt	Mineral or rock grains of 0.06 to 0.002 mm diameter*, with no surface activity, most often largely composed of quartz
Slate	Fine-grained metamorphosed mudstone or shale in which minute mica flakes have been strongly orientated by pressure producing typical 'slatey' cleavage
Terrane	A region of crust behaving independently of other adjacent regions
Thrusting	The driving of one body of rock against, and over, another during crustal shortening
Tuff	Consolidated sediment of volcanic ash
Umber	Brown mixtures of iron and manganese oxides, used as pigments
Volcanics	Rocks formed from extruded lava or ash
Wrench fault	Roughly vertical fracture face in a rock body along which separating segments have slid horizontally

** Geologists, pedologists (soil scientists) and civil engineers use varying scales of particle sizes; the ones quoted here are those most commonly used by pedologists.*

Robert Perrin
Ugborough Local History Group

III. HISTORY OF THE PARISH

The Medieval Period

The name of Ugborough is believed to derive from Ucga's hill,[1] although no documentation survives for the parish until the Domesday survey of 1086, by which date it is likely that many, if not most, of the farms in the parish had been established. The manorial history of the parish is exceptionally complicated as there were around six other manors named in the 1086 survey, two of them divided, while subsequent divisions, by the process known as subinfeudation, meant that eventually there could have been as many as 17 manors within the parish.[2]

In the Domesday Survey of 1086, what became Ugborough was referred to as Ulgeberge, being one of the estates of Alfred the Breton.[3] It had previous been held by the Saxon Alwin, when rated at three and a quarter hides. It has been very plausibly suggested that this was Abbot Alwin of the original Benedictine abbey of Buckfast, and that Ugborough was one of several manors appropriated from the abbey by King William prior to 1086.[4] At that date there was said to be land for 15 ploughs although only eight were actually present; two of them were on the demesne and worked by five slaves, while the other six were shared between nine villeins and nine smallholders. It was probably not the wealthiest manor in what was to become the parish. The royal manor of Langeford (or Langford Lester, today represented by Langford Barton, 2.5km north-east of the village), had land for 20 ploughs.[5] Here six slaves worked one plough, while 16 villeins and 10 smallholders held 13 ploughs. There were also perhaps five smaller manors, none of them with land for more than four ploughs, and all owned by the Count of Mortain. These were Bowcombe, Broadaford, Peek and Venn, while probably the northern of the two Ludbrooks came within the present parish boundary.[6]

The position subsequently became even more complicated, indeed one of the most complicated in the county, with a current listing of the manors including Filham, Leigh, Stone, Ugborough Rectory, Woodland and Wrangaton,[7] while records exist of the sale of the manor of Bolterscombe in 1569 and of Torpeake in 1779.[8]

The country is believed to have been completely divided up into ecclesiastical parishes by 1200, that of Ugborough being focused on the church at the south end of the village square,

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[1] Gover et al. 1931, 284.

[2] Mortimore 2006 lists Bowcombe, Broadaford, Filham, Ivybridge, Langford or Langford Lester, Leigh, Ludbrook North & South (otherwise Higher Ludbrook), Stone, Strode or Bradford and Strode, Torpeek (or Torhill or Peek), Ugborough, Ugborough Rectory, Venn and Wrangaton Leys. Other possible manors are Woodland and Bolterscombe,

[3] Thorn & Thorn 1985, 39,17.

[4] Luscombe 2006, 266–270.

[5] Thorn & Thorn 1985, 1,55.

[6] Thorn & Thorn 1985, 15,75, 69, 71, 68, 26 or 72.

[7] Mortimer 2006.

[8] Tingey transcripts No. 862; Trewman's Exeter Flying Post 4.6.1779 2d.

with its Norman font an indication of its antiquity. The dedication to St Peter appears to be a recent one and is not necessarily the original one.[9]

The 1332 Lay Subsidy, has been published, providing one of the earliest listings of taxpayers. At that date the parish was represented by the three manors of Ludbrook, Ugborough and Langford, with Langford again the largest, at least in terms of taxpayers and presumably population.[10] Many of the surnames derive from the farms occupied, and this often provides the first mention of that property, as well as helping to locate the taxpayers. While the names of the Langford taxpayers were clustered towards the east of the parish, those of Ugborough extended beyond Ludbrook to the western extremity of the parish, suggesting considerable intermingling of estates, perhaps the result of the splitting up of an earlier larger estate.

The villages of Ugborough and South Brent have a modest claim to fame in that they were the first in Devon to be depicted on a map, albeit in the highly stylised form appropriate to the date of around 1500. The map, preserved at Devon Record Office, was evidently drawn up during a dispute over the rights of common, and depicts the ten gates (two of them in Harford parish) which provided access to 'ougborouh more other wise langford more' and 'herforde more', which shared the elongated shape that allowed access to the whole Forest of Dartmoor.[11]

The 16th Century

The Exchequer Lay Subsidies of 1524–25 were a tax on all males aged 16 years or over. In Ugborough in 1525 this was paid by 201 males, which suggests a total population of somewhere around 900.[12] A complication of the listing is that it includes taxpayers in Venton tithing, which was presumably focused on Venn, although its extent remains unknown. Also in 1525 Richard Fouhell died and the inquisition into his complicated land-holding provides a little information on the parish at that date,[13] although not all the locations can be identified. He was almost certainly living at Fowelscombe, since he held 'one messuage, 40 acres of land [arable] and 12 of meadow in Fowhellyscomb, held of Roger Bolter [presumably of the neighbouring settlement of Bolterscombe] by 2s rent'. His other holdings included '27 acres of heath, 2 of meadow and 1 of wood in Blakdon' [Blackaton] and '16 acres of land in Swaneston or Swymyston [a lost name], held of the chantry priests of Porloke, [Porlock in West Somerset] of the manor of Uggeburgh'. His other holdings included '32 acres in Wydescombe or Wyttscombe, held of the Lady Mary Hastyngys, of her manor of Langford Lester'.

The earliest map of the county was produced by Christopher Saxton in 1575. It depicted the mansions of Marridge and Fowelscombe, the latter said to have been built in 1537 by Sir

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[9] Orme 1996, 212.

[10] Erskine 1969, 98–100.

[11] D[evon] R[ecord] O[ffice] 3950Z/Z1; The clearest version of the map is a re-drawing in Rose-Troup 1929, facing page 259. The map is discussed in Somers Cocks 1986, 293–302.

[12] Stoate 1986, 183–4; Goose & Hinde 2007, 79 suggest that 37.5% of the population were under 16 and that 30% either evaded the taxation or fell below the minimum threshold.

[13] Westcountry Studies Library transcripts of Inquisitions Post Mortem.

Thomas Fowell, and was to be one of the highest rated properties in the parish for some 250 years.[14]

A very minor claim to fame for Ugborough towards the end of the 16th century was the unsuccessful application for the post of parish clerk by John Prideaux, the son of a farmer at Stowford in Harford parish. This failure inspired him to walk to Oxford, where he entered Exeter College as a servant. From there his career blossomed and he became eventually regius professor of divinity and then bishop of Worcester, when he would say 'If I could have been clerk of Ugborough, I had never been bishop of Worcester'.[15]

The 17th Century

In 1642 the Protestation Oath was taken by 314 males aged 18 and over, from which it is customary to assume a population of slightly over 1,000.[16] The only gentry named were John Crocker and Adam Strode, both described as gentlemen, and John Fowell, Esquire. During the ensuing Civil War the majority of the people of the South Hams appear to have supported the Parliamentarians but it is difficult to find evidence for this away from the major towns. However, there is a record of the Ugborough parishioners celebrating a victory over the King's army with 'a great bonfire'.[17]

The 1674 hearth tax has been published, although the original listing has not survived in its entirety, with the names of the three at the head of the list, usually the highest-status persons, being lost through mutilation.[18] There were 167 taxpayers, while another 160 were exempted by their poverty. It is customary to regard the average household at this time as comprising 4.3 persons, which suggests a total population of around 1400.[19]

In 1675 John Ogilby, 'His Majesty's Cosmographer', produced his volume of strip maps of the main roads at one inch to the mile, which included the route from London to Land's End.[20] The direct route entered the parish at Brent Mill Bridge taking what is now a minor road through Beggar's Bush, passing just to the south of Cheston, and through Wrangaton to Bittaford before continuing along what was to become to A38 to Ivybridge. The route from Totnes entered the historic parish at Avonwick and followed the current B3210 as far as Ladydown before running due west on what is today a minor road, passing what the map suggests was a small area of open downland between Hookmoor Cross and Forder Cross before descending to Bittaford.

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[14] White 1850, 550.
[15] Oxford Dictionary of National Biography 2004, 45, 342–4; Ditchfield 1913, 247–8.
[16] Howard 1973, 229–230; Goose and Hinde 2007, 79.
[17] Stoyle 1994, 46.
[18] Stoate 1982, 164–166.
[19] Arkell 1982, 55.
[20] White 2005.

The 18th Century

A number of 18th-century manorial documents are preserved in the Devon Record Office, having been rescued from a wartime salvage collection. One dating from around 1720 gives an indication of medieval survivals in the form of open-field cultivation and the requirement either to work on the lords' demesne or to pay a sum in lieu, with the heirs of Mrs Fownes paying 6d for a parcell of landscores lying in a meadow at Eniton, and 1s for 'a ploughing day mowing day & harrowing day & for Land called Kells in Eniton'.[21] Several 18th-century taxation lists have survived in which the parish is divided up into quarters, including most of the land tax assessments up until 1804, when the listing became alphabetical by owner. Typically the east quarter had been given the highest assessment, this including Langford Lester and Maridge.

A series of so-called Freeholders Books, listing those qualified to serve on Devon juries, has survived from 1711 for more than half of the years up until 1816. Initially ownership of freehold or copyhold land worth at least £10 a year was required, and only five in the parish were so qualified, with only John Prideaux designated Gentleman; but in 1730 the criteria were somewhat relaxed, allowing tenants of land worth at least £20 a year held on long leases to be included, and this enabled numbers to increase to 12 by 1733, with the list headed by Henry Champernowne, Esquire, and John Savery, Gentleman.[22]

In 1744 Bishop Claggett sent questionnaires to all his parishes. The response from the vicar of Ugborough was that there were around 180 families. There was one school and one almshouse, but without any endowment. There had been chapels at Earlscombe and Filham, both in lay hands, 'and have time out of Mind been applied to Common Uses'.[23]

By 1765 when Benjamin Donn produced his one inch to the mile map of the county the roads from Exeter to Plymouth passing through the parish, both direct and through Newton Abbot and Totnes, had been turnpiked. The map also showed the workhouse some way south-west of the village, while at the other end of the social scale Maridge was occupied by 'Taylor Esqr', Dunwell by 'Legassicke Esqr' and Fowelscombe by 'Herbert Esqr'. The last named had purchased the property from the Champernownes in 1758.[24]

By 1779 another Bishop's set of visitation queries revealed that both glebe and tithes had been impropriated – acquired by a lay person, in this case Christopher Savery of Modbury as an investment – reserving to the minister a stipend of £20 a year and a cottage with about three acres of land. The estimate was then of about 170 families, with no papists or dissenters, while educational provision was limited to 'a common writing school'.[25] Also in 1779 the Manor of Torpeak was for sale, comprising nine properties totalling 380 acres plus the 377 acres of Peak Down, 'and also an unlimited Right of Common of Pasture upon

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[21] D[evon] R[ecord] O[ffice] Z7/Box 33/34.
[22] Dixon 2007.
[23] DRO Chanter 225B/407.
[24] Lake 1936, 3.
[25] DRO Chanter 232B/505.

Ugborough Moor, and Dart Moor'.[26] In 1781 the 'Capital Barton' of Fowelscombe was to let, which was presumably the farm adjoining Fowelscombe House, then owned by George Herbert of Plymouth. The Barton comprised 300 acres and included 'a suitable Quantity of Orchard Ground, well planted, and an unlimited Right of Common on Ugborough Moor'. There was also 'the very great Advantage of a Lime Stone Quarry, and well-accustomed Lime-Kiln on the Premises'.[27]

In 1786 Christopher Savery of Modbury, who had acquired the right to the tithes, sold the bulk of them to the principal landowners,[28] leading to an incomplete tithe survey the following century. In 1787 the manor of Ugborough was for sale: 'sundry Farms and Estates in Demesne' were let on short-term tenancies that brought in £170 a year, while the more archaic leasing for the duration of three lives at a low rent, where the high entry fine reflected the real economic value, brought in £7 14s 6d, and the even more archaic 'High and Chief Rents payable to the Lord of the said Manor' from the freeholders amounted to £10 17s 3d. Unusually, the great and small tithes were also paid to the Lord. The notice continued 'The Moors and Commons are very large and extensive, and there is also belonging to the Manor an unlimited Right of Common upon Dartmoor' and 'The Manor abounds with Game, and for Hunting and Shooting is equal to any in the Country'.[29]

In 1789 what appears to have been the first detailed map of the village was produced.[30] It shows the village divided more or less evenly between two owners by an irregular north–south line across the square, its boundary marked by bondstones. A subsequent map headed 'Ugborough Parsonage &c', dating from perhaps 1808,[31] identifies the west side of the village as being within that manor. This seemingly included the conduit, the origin of which is unknown, while the pound against the curving churchyard wall was in the other manor, presumably Ugborough. This map also showed the 'Poor House', which had been established in 1739 in Modbury Lane, just beyond the lane that once led to past Bowcombe to Ludbrook. The lane was subsequently called Workhouse-lane but the house was sold by the Guardians of Totnes Union in 1842.[32]

In 1792 the vicar provided an account of the parish for the Revd Richard Polwhele's history of the county:[33] '… the rivers [are] small, and easily crossed by bridges of one arch, which are mostly built of moor-stone or slate. The fields are enclosed by hedges, which are banks of earth five or six feet thick at the bottom, and about three feet over at the top; five feet high, and fortified with such shrubs and plants as will most quickly form a fence…. There are in the whole parish 82 cotts, mostly in a woeful plight; 2 mills, 5 public and 74 farm-houses … of which about a score or so are tolerably neat and compact; the rest make but a paltry figure…. Paupers between 60 and 70. Farms …. all in high cultivation, or the rackholder

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[26] Trewman's Exeter Flying Post 4.6.1779 2d.

[27] Trewman's Exeter Flying Post 1.6.1781 2c.

[28] White 1850, 550.

[29] Trewman's Exeter Flying Post 31.5.1787 3d.

[30] DRO Marley Map Book Vol. I, Z17/3/20, 19.

[31] DRO Marley Map Book Vol. II, 28.

[32] Lecture by W.G.W. Lake to Totnes Antiquarian Society on 'Some old Ugborough Documents', reported in The Totnes Times and Devon News, 23.2.1929 3b–c.

[33] Polwhele 1806, Vol III, 458.

could not live. Manufactures none. Inhabitants in what they call the Church-town, upwards of 400, thro' the parish between 5 and 600, in all about 1000; and of these not one dissenter….'

In 1799 the 'Capital Barton' of Maridge, said to have been occupied by Admiral Ourry, was to let. It comprised 156 acres '… in every Respect a compleat Situation for a Farmer. There is a sufficient Quantity of Orchard on the Premises, and a capital Engine Pound',[34] which was perhaps a horse-driven cider press.

The 19th Century

The earliest census was taken in 1801 and recorded a population of 956, which suggests an actual fall since 1641, during which period the population of England is believed to have increased by some 170 per cent.[35] It may be the case that the 1801 population was under-recorded since the 1821 figure was almost 50 per cent higher, at 1429, and it is difficult to account for such an increase in a parish with no industry to speak of. The last of the surviving Freemans Books dates from 1816. By that year the number of jurors had fallen to seven, comprising John King, Esquire, of Fowelscombe and six yeoman.[36] Nationally, land values are believed to have more than trebled since 1733, which should have increased the number of jurors and it is unclear whether the reduction is due to amalgamations among the larger farms or landowners replacing long leases with much shorter terms.[37]

In 1819 the civil engineer James Green proposed major road improvements that included over two and a half miles of new road from Bittaford Bridge to Brent Mill Bridge, avoiding Wrangaton and Cheston, to be constructed by the Plymouth Turnpike Trust; this was approved the following year and was to become the A38 until the dual carriageway was built on a new alignment around 1980.[38]

Another account of the parish was provided in 1822 by the Lysons brothers' two volumes on the County. Ugborough manor was by then owned by Sir Henry Carew, who also owned Langford Lister; Ludbrooke manor had been dismembered, Stone was owned by Mr King, and Torpeake by Robert Grant, Wrangaton was divided between the Reverend Jacob Ley and John Ley, while Woodland belonged to Herbert Cornish and Filham to John Pearce. Of the large houses, Fowellscombe was the residence of John King, Esq. but Marridge was occupied by a farmer.[39]

On 5 May 1848 Brunel's South Devon Railway was opened through to Laira Green on the outskirts of Plymouth.[40] It entered the parish crossing the Glazebrook on a viaduct, with another crossing the Lud Brook at Bittaford. Initially they consisted of granite piers with a timber superstructure. Wrangaton Station was opened on the same day at the summit of the

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[34] Trewman's Exeter Flying Post 7.11.1799 1b.
[35] Wrigley & Schofield 1989, 528–9.
[36] DRO QS7/64.
[37] Turner et al. 1997, 314–6.
[38] DRO DP 39; Plymouth and Exeter Road Act 1820.
[39] Lysons & Lysons 1822, 541–3.
[40] Gregory 1982, 41.

route; it served initially as the railhead for Kingsbridge and this led to a change of name to Kingsbridge Road, the name reverting to Wrangaton on the opening of the Kingsbridge branch from South Brent in 1893. Not until 1907 was a station provided at Bittaford, and both it and Wrangaton were to close in 1959.[41]

White's Directory of 1850 was the first to provide coverage of the whole county, and it referred to the large cattle fairs in May and November, there previously having been monthly fairs [42] (although no grant of a medieval fair has been located), and the Square would no doubt have presented an animated scene on fair days.

The 1851 Census is the first to provide a really detailed picture of the community. The solicitor Servington Savery lived at Fowelscombe, employing two lodge keepers and a huntsman at the kennels. He was soon to move to Hayford Hall at Buckfastleigh, taking the oak panelling and staircase with him.[43] Landed proprietors were still present in 1851 at Wrangaton, Venn and Foxhill House, but several of the other mansions had been reduced in status to farmhouses, 420 acres being farmed from Langford, 250 from Bolterscombe, 175 from Marridge and 120 from Stone. The economy was still substantially based on arable cultivation as is indicated by the four mills still active, three of them worked by members of the Parker family; Owley and Turtley were powered by the Glaze Brook, and Bittaford and Earlscombe by the Lud Brook.

Within the village there were 21 shoemakers (although no tannery was present), but in the parish as a whole they were outnumbered by the 23 masons. Ten of those living at the west end of the parish were paper makers, presumably employed at Stowford Mill in Harford parish. Five railwaymen were based at Kingsbridge Road station. Ugborough village seems to have been well supplied with services: there were four tailors, three victuallers, and two carpenters, thatchers, blacksmiths and schoolmasters. Other trades represented were seedsman, carrier, wheelwright, butcher, painter, saddler and a grocer and draper. A religious census was also taken in 1851, on 30th March.[44] At the parish church the vicar recorded a congregation of 60 at the morning service and 500 at the evening service, with 61 attending both sunday schools. At the Independent chapel there were 100 at the afternoon service and 120 at the evening service.

No miners appear to have been present in 1851 but Billing's Directory of six years later referred to the Ivy Consols Mine at Filham employing about 60 hands in mining for silver-lead.[45]

A school is believed to have been present by 1829, but its existence is not confirmed until 1868, when it sought a government grant, which required it to be inspected. This led to an inspector's censure that 'in no other Parish under my inspection are the school buildings so

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[41] Gregory 1982, 113.
[42] White 1850, 549.
[43] Lake 1936, 3.
[44] Wickes 1990, 57–8.
[45] Billing 1857, 558.

poor and inadequate as they are here'. A school board was formed which built a new school in 1876 and this was to be highly regarded: 'Few schools are held in better premises'.[46]

By 1881 a more diversified workforce was indicated by the census, although some found it necessary to combine more than one role, for instance John Jonas Smerdon, is described as 'smith, sexton, carrier & bill poster'. Also noticeable is that there was less work for the mills: Owley mill was uninhabited, the miller at Bittaford was also a grocer and farmer, and the miller at Turtley combined it with farming, although, oddly, there was by then a millwright in the parish. Other occupations were iron and ochre miners, a plasterer, police constable, gas house labourer, and a printer and copper worker, and there were also two hotel keepers. There had also been a change at Fowelscombe, which was inhabited by a farm labourer, as was the Higher Lodge, with the Lower Lodge being uninhabited.

In the 1880s the area was surveyed at a scale of 1:2500 by the Ordnance Survey. This was to provide the first detailed depiction of the antiquities on the moor, where the parish boundary was marked by some 90 boundary stones. This was a vast over-provision on the Harford side, where the boundary was largely of straight lines, and followed a dispute in the 1780s between Humphrey Savery of Stowford and Thomas Lane, lord of the manor of Langford Lester, when the boundary seems to have been defined only by natural objects or antiquities.[47] It should be noted that the Ordnance Survey initially mislocated Hobajohn's Cross, placing it close to Leftlake Mires on the boundary with South Brent; this was subsequently corrected to a stone with an incised cross on the boundary with Harcombe, close to Glasscombe Ball. Only five of the moor gates were named. Off the moor, the umber works was by then disused, as were the quarries at Wood, Bowcombe, Kennel and Dunwell. The only water meadow systems to be indicated by their sluices were those extending south west from the village beyond Bowcombe to Ludbrook. The remains of the chapel at Lower Fillham and the existing Wesleyan chapel at Bittaford were shown. The quaintly named crossroads, Sign of the Owl Cross and Alight-and-come-in-Cross were also indicated.

In 1891 the parish was chosen by the Borough of Plymouth as the site for its mental hospital, known as Blackadon Asylum. Some 75 acres at Blackadon was acquired and about £50,000 spent on the buildings, which could accommodate 250 patients. The building was built of granite and red brick, and the site included a chapel, mortuary and gas works, while around 50 acres were retained partly as recreation ground and partly as a working farm.[48] Local Government reform in 1894 led to Ivybridge being created a separate civil parish out of parts of four parishes including Ugborough, but the latter continued to grow over that decade.

The 20th Century

With the 20th century came the tourist industry bringing with it a demand for guide books. One of the most outspoken was a pocket guide written by the Revd Sabine Baring-Gould who

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[46] Bovett 1989, 345; Sellman 1967 57.

[47] Brewer 2002, 141–3.

[48] Kelly's Directory of Devonshire 1897, 728, & 1939, 826; Ordnance Survey 2nd edition 1:2500 map sheet CXIX.16, 1905.

referred to the church as occupying the site of ancient camp. He also deprecated the cutting down of part of the magnificent rood screen by a former vicar: ‘a pity he was not decapitated instead’.[49]

Also with the 20th century some limited industrialisation came to the parish. The China Clay Corporation was formed by 1911 to exploit the reserves on the moor.[50] Drying sheds were built at Cantrell, where the Great Western Railway provided a siding and signal box. A cable-worked incline, powered by a steam engine, rose from the works to where a three-foot gauge railway line began its sinuous course, crossing the Harford and Ugborough parish boundary several times, to the clay company’s Redlake works located just outside the parish boundary, although the settling tanks were within Ugborough parish. The line carried coal and workmen, the clay being conveyed by pipeline, until the company’s demise in 1933, after which a firm of agricultural engineers acquired the works.[51]

In 1915 the depressed condition of Fowelscombe mansion had come to the attention of the Society for the Protection of Ancient Buildings. A member described the exterior as tawdry and featureless, but the hall in the largely roofless interior still contained its granite fireplace bearing the date 1537 and the initials of Thomas and Mary Fowell.[52] Four years later the Estate was put up for sale, the catalogue referring to the mansion as being ‘unfortunately out of repair’ but it occupied ‘a most Sheltered Position’ and was ‘capable of being restored to its original importance’. It had ‘spacious Pleasure Grounds and Trees, Walled Fruit and Vegetable Gardens, Court Yard and Stabling’, and was ‘approached by an imposing Avenued Drive protected by Lodges at each end and bold cut Granite Pillars with Globe Surmountings on the North …’.[53] The purchaser was a Mr Nicholls.[54]

In 1932 the planner W. Harding Thompson produced a survey of the county for what was then the Council for the Preservation of Rural England, in which he praised Ugborough for ‘its excellent site, and for the manner in which that site has been utilized to advantage. It possesses a spacious village square, framed by cottages and shops, with a notable large church built on an eminence and approached by a long flight of steps from the square’; his book also incorporated a map of the village.[55] Later that decade Sir John Betjeman’s Shell Guide to the county referred laconically to the ‘[n]eatly planned village, dominated by high and fine 16th-cent. church tower …. Fowelscombe ruins of 15th-cent. mansion, on road to Kingsbridge, in trees’.[56] A Land Utilisation map of the county was produced in the 1930s.[57] It showed the predominant land use off the moor to be pasture, with islands of arable (which included temporary grassland).

Ugborough village and Bittaford have continued to grow during the 20th century, and development has occurred generally along the A38 corridor through the parish. However,

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[49] Baring-Gould 1911, 294–5.
[50] Kelly’s of Directory Devonshire 1919, 765.
[51] Hemery 1991, 47.
[52] Gray 2003, 31–3.
[53] DRO 547B/P 1832, 3.
[54] Lake 1936, 3.
[55] Harding Thompson 1932, 58–9.
[56] Betjeman c. 1936, 44.
[57] Land Utilisation Survey of Britain: Torquay and Dartmouth, Sheet 145, 1932–38.

there has been comparatively little development in the remainder of the parish. Wrangaton and Bittaford stations closed in 1959 and the A38 dual carriageway was built in 1974.

By 1939 mains water was supplied from the Totnes Corporation Water Works and electricity was also available in the parish.[58] In 1947 the Plymouth Borough Asylum was renamed Moorhaven Hospital, having been expanded to 280 acres with accommodation for 823 patients.[59] In 1993 the Hospital closed, leading to a dramatic fall in the parish population, from 2257 to 1510 between the two census years, but the site has since been redeveloped as Moorhaven Village, housing 100 families,[60] and the 2001 population figure of 1736 shows that there has been some recovery.In 1950 a small area at the eastern end of the parish was transferred to North Huish, so that the whole of Avonwick lay within that parish. In 1952 Professor W.G. Hoskins wrote an essay with the title 'The Making of the Agrarian Landscape', in which he cited Ugborough as an example of a nucleated village still showing traces of its former open fields, illustrating it with the Harding Thompson map.[61]

By way of a tailpiece to Ugborough's very complex manorial history, the final chapter has now taken place. The title of the Lordship of the Manor of Torpeak, now devoid of any property, was assigned by the Carews to Mr. Gerald Arnold of Torquay in 2006.

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[58] Kelly's Directory of Devonshire, 1939, 825.
[59] Bolt 2000, 32–3.
[60] Bolt 2000, 33.
[61] Hoskins 1952, 292.

IV ARCHAEOLOGY AND HERITAGE

1. MOORLAND ZONE

The Prehistoric Period

The moorland area is very rich in archaeological remains of prehistoric date, and contains a large number of Scheduled Monuments. The 'Lowland' area was probably also as densely occupied in prehistoric period, but subsequent agricultural activity and settlement has erased the evidence. Also, buildings off the moor may have been constructed of timber rather than stone, which will have affected their survival.The following are important examples of surviving prehistoric sites in the moorland zone:

(i) Neolithic (4000-2200BC)

Cuckoo Ball chambered cairn (UG 702) and Butterdon Hill long cairn (UG 703) are chambered tombs that were probably built as family vaults since they appear to have been re-used over a period of time. They possibly served as territorial markers, as they were permanent, monumental structures in a landscape of semi-mobile communities.

(ii) Early Bronze Age (2200-1600BC)

Stone circles. On Dartmoor, most stone circles, along with the stone rows and cairns with which they are associated, probably date to the Early Bronze Age. They typically lie on flatter interfluvial areas, away from the valleys and steeper slopes that were still probably wooded. During the Bronze Age there was a significant shift away from communal burial that was characteristic of the Neolithic Period to individual burials under earth round barrows and stone-built cairns are stone-lined burial pits (often with a cover-slab) frequently covered by a mound. Good examples are Glazemeet cist (UG 771) on the lower slopes of Glasscombe Ball, and Hangershell cist (UG 704) on Butterdon Hill.

Cairns are stone-built mounds that cover a burial. There are many examples including a group of four cairns on Butterdon Hill (UG 712, 713, 728 and 730) that are part of a series along the ridge between Butterdon Hill and Weatherdon Hill. UG730 is surrounded by a stone circle.

Round barrows are earth mounds covering a burial. Good examples of barrows are those on Three Barrows Tor, including UG 904. This, the largest, barrow has been incorporated into a later Bronze Age reave and also lies on the medieval parish boundary.
Stone rows: These are alignments of upright stones in single, double or triple rows. They are often associated with cairns and stone circles, and often have cairns at their ends. Their function is not understood, but they can be described as ceremonial monuments. Some of the best examples include the Butterdon Hill row (UG 534), the second longest row on Dartmoor

at more than 2km long; the 1 km long double row over Piles Hill (UG 573); and the complex sevenfold row at Corringdon Ball (UG 618).
Standing stones. Examples include the two recumbent stones known as the 'Hangershell menhirs' (UG 501), which may be fallen standing stones of prehistoric date. The Piles Hill longstone (UG 572), now recumbent, may originally have marked the end of a stone row.

(iii) ***Middle Bronze Age*** (1600-1200BC)

During this period the upland fringes of Dartmoor were transformed by the creation of extensive, regular, planned field and settlement systems that dominated the landscape - the Dartmoor reaves. They were constructed in an open landscape that had already been cleared of trees during the Neolithic and Early Bronze Age periods. The fields were maintained by grazing, with cultivable soils, unlike the peat cover of today. There is evidence that the fields in these systems were primarily used as good quality grassland with only very limited cereal cultivation. The central high moorland above the terminal reaves was open grassland possibly grazed through intercommoning (communal grazing) as it was during the medieval period and later. The reave systems in Ugborough parish are not as extensive as those in other areas of Dartmoor. At Bittaford it has been suggested that the regularity of the historic fields away from the moor results from the re-use of the Middle Bronze Age reaves that extended some way into the lowlands.

Outside the reave system settlement was based around enclosures containing round huts. There is often no evidence, or very limited evidence of associated field systems, probably indicating an exclusively or mainly pastoral economy with possibly only seasonal occupation of these settlements.

There are many examples of enclosures. One near Glazemeet (UG 575) is roughly circular (109m in diameter) and contains at least three huts. Just south of this is another large enclosure (UG 526) on the north side of the Scad Brook, near Owley Moor Gate, containing up to eleven huts.

(iv) ***Iron Age*** (800BC-43AD) and Roman (43-410AD)

No remains have been recognised for the Iron Age or Romano-British Periods.

The Medieval Period

There is a number of stone crosses on the moor that were probably route markers. Spurrell's Cross (UG 531), on Ugborough Moor, and Hobajons Cross (UG 576), south of Piles Hill, are both possibly 15th-century in date. Hookmoor Cross (UG 018), one of the crosses along an old east-west ridge route, could be medieval or 17th-century in date.

There are many parish boundary stones along the moorland boundaries. Although the boundaries are medieval in origin, the date of some stones is uncertain. Some may be medieval, but the 4km long series between Ugborough Moor and Red Lake Ford were erected in the 18th century following a boundary dispute. The Longstone (UG 533) on Butterdon Hill is a larger than usual boundary stone and may have marked the boundary between Harford Moor and the manor of Langford Lester in the medieval period.

Some of the tin mining remains in the moorland zone may be medieval in date. The blowing house for crushing and smelting ore, and tinners hut at Glazemeet (UG 577 and 578) are not closely dated. Blowing houses were introduced in the 14th century, but continued to be built and used after the medieval period. Old tin workings are found along streams in the moorland zone of Ugborough, like the extensive ones at Glasscombe Corner (UG 579), and these may be medieval in origin.

The Post-Medieval and Modern Periods

There are important industrial remains dating to the 19th and 20th Centuries in the Moorland Zone.

The Zeal Tor tramway (UG 569) passed through Ugborough parish. This operated from 1847 to 1850, and was a horse-drawn tramway that carried peat dug at Redlake to Shipley Bridge. Inflammable naphtha oil was extracted from the peat and used to make candles, mothballs and gas for lighting. The bed of the tramway and the turf ties at Redlake (UG 570) are still visible.

A small-scale granite quarry on the slopes of Western Beacon is one of several still visible in this area that produced stone for the railway viaducts at Ivybridge and Cornwood in the 1890s.

The China Clay Corporation operated from 1911 to 1932. China clay was extracted from the moor at Redlake, and a 7.5 mile-long narrow gauge railway (UG 567), worked by a steam locomotive, was built to transport workers, coal and other supplies between the clay drying plant at Cantrell (UG 352) and the Redlake workings. A cable incline connected the Cantrell works to the railway. The clay was initially pumped to settling tanks at Brown Heath (or Greenhill) (UG 812). From here, the separated china clay was carried in liquid form along a pipeline (UG 768) to the drying beds at Cantrell. The prominent waste tip at Redlake, the settling tanks, the works at Cantrell, and the railway bed still survive, the last-named now largely incorporated as part of the Two Moors Way.

2. LOWLAND ZONE

The Prehistoric Period

A Mesolithic flint core was found at SX68905770 to the south east of Cutwell Barn. A number of flint flakes (UG 153 -156), were found during monitoring of the construction works for the A38 in 1970-73.

The existing NW/SE field boundaries to the south of Wood (UG 194 and 196-198) may preserve the lines of prehistoric reaves. A large well-preserved Bronze Age bowl barrow (UG 248), over 40m in diameter, survives to the SW of Woodland Barton.

Two enclosures have been identified by aerial photography. A rectilinear double (?) ditched enclosure (UG 163) was observed on a hillslope to the east of Cannamore, and linear features that were possibly part of an enclosure (UG 161) were observed immediately north of Sign of the Owl Cross (UG 110). Enclosures of this type were enclosed farmsteads. They cannot be dated without excavation, but could be Iron Age or Romano-British in date.

Turtley Camp (UG 020) is an ovoid hillfort, or more precisely a hillslope enclosure, 137m in diameter, located on the south side of the Glaze valley, and is probably of Iron Age date. It has a single bank and an outer ditch with an entrance on the south side, and part of the rampart has been ploughed out. The site has not been excavated or investigated. The fields on the site of the fort were named ‘Yellowberries’ (UG 314) on the Tithe Map. The name signifies ‘old fort’ in Anglo-Saxon, and shows how field names can be useful in identifying archaeological sites.

The parish church(UG 021) and churchyard are said to be lie within an oval enclosure (UG 029) marked by a bank. As the church is located on a hill, it has been suggested that this enclosure could be prehistoric in date. The theory has not been tested by detailed survey or excavation. If the earthwork does exist, it could also be an early church enclosure.

The Roman Period

No sites from this period have been recorded. The upper stone of a rotary quern (UG 002) was recorded at Filham House in 1949, and could be Iron Age or native Roman in date. The source of the quernstone is unknown.

The Medieval Period

A Norman ringwork castle and bailey survives to the south of Langford Barton (UG 019). The earthworks are now mutilated and partly obliterated, but an early 19th-century description shows that they were much better preserved then. The ringwork, originally a bank and ditch enclosing a timber building, is roughly circular and 40m in diameter with one or possibly two entrances. This differs from the more common motte and bailey, where a timber castle was built on top of a mound (the motte). There are traces of a small sub-rectangular bailey (surrounded by a bank and ditch) adjoining its north side. The ringwork can be broadly dated to the 12th century AD. A rampart and ditch on the north-west side may be part of the enclosure of the earlier Anglo-Saxon and Domesday manor of Langford.

A series of strip fields (UG 239) extends north of Ugborough village to Ridge Road. These are the remains of a medieval open field system attached to the village. More strips are present on the 1843 Tithe Map and the 1889 OS 1:10560 map than survive today.

The most important building to survive from the medieval period is the parish church of St Peter (UG 021). The present church dates from the 14th century and was dedicated in 1311 and 1323; it was extended in the 15th century. It contains a 12th century red sandstone font (UG 025) from an earlier church on the site. It also contains a medieval rood screen with early 16th century painted figures (UG 023) and some fine large 14th century carved ceiling bosses in the north aisle.

At Filham there are the remains of a medieval chapel, licensed in 1400, that was rebuilt as a folly in the 18th century (UG 001).

There is a medieval cross (UG 016), reused as a gatepost at Haredon and a reused socket stone from another cross at Hill House in Ugborough village (UG 017). There is confusion about the original location of the medieval cross that is now in the garden of Manor Cottage, Wrangaton (UG 338).

The earliest manors in the parish recorded in the Domesday Survey of 1086 were Ulgeberge, that became Ugborough village; Langeforde, now Langford Barton (UG 087); and five smaller manors at Bowcombe, now Higher Bowcombe (UG 073); Broadaford (UG 062); Peek, now represented by Torpeek Farm (UG 095) and Piles Peek (UG 092); Venn (UG 032); and one of two manors at Ludbrook, identified with Ludbrook or North Ludbrook (UG 158), which is shown on the Tithe Map and on the 1889 Ordnance Survey map as Lower Ludbrook, but has since disappeared. The present farmhouses were all rebuilt in the post-medieval period, with Piles Peek, which is 16th-century, being the oldest.

A number of late-medieval farmhouses survive in the parish. Ware Farm (UG 097), on the edge of the village; Wood Farm (UG 102); Zeaston (UG 105) and Stone (UG 243) are all 16th-century with later additions.

The Post-Medieval Period

There are several Listed Buildings in the village of 17th-century date. A 1789 map of the village is the earliest illustration of the elegant stone conduit house (UG 166) that once provided the public water supply. Stylistically it was probably built in the 18th century, but no record of this has been found. It also shows the Poor House (UG 047), which had been established in Modbury Lane in 1739. A Workhouse, probably the same building, was marked on Donn’s map of 1765. The building, which does not survive, was sold off in 1842 when the Totnes Union took over the administration of poor relief in the parish. Other buildings still standing in the village are described on the 1889 Ordnance Survey map, including both the Anchor Inn (UG 059) and the Ship Inn (UG 060); the school (UG 150), that opened in 1868; and the Congregational Church (UG 030), built in 1851 and shown as the ‘Independent Chapel’. Another Wesleyan Chapel (UG 336), built in 1874, is shown at Bittaford.

The square, which is such a distinctive feature of the village plan, was the site of large cattle fairs in the 19th century. It must have fulfilled a similar function in earlier times, although no record has been found of a medieval fair.

A number of large houses that were in many cases the successors of late medieval manor houses, developed in the parish during this period; Fowelscombe (UG 031), now ruined, was built in 1537 and remodelled in Gothic style in the late 18th century. Marridge (UG 246), which has now completely disappeared, was a mansion in the 16th century, when it was shown with Fowelscombe on Saxton's 1576 map of the county. The present farmhouse dates from the 18th-century. Filham House (UG 003), documented in the 15th century, was completely rebuilt in the 18th century and remodelled again in the 19th century. Langford Barton (UG 087) and Dunwell (UG 136) were both shown as gentlemen's seats on Donn's map of 1765, but are now only 19th-century farmhouses.

In 1891 the parish was chosen by the Borough of Plymouth as the site for its mental hospital, known as Blackadon Asylum. It is first shown as the 'Plymouth Borough Lunatic Asylum'(UG 388) on the 1906 Ordnance Survey map. In the 1930s it became the Plymouth Mental Hospital, and in 1947 was renamed Moorhaven Hospital. The hospital closed in 1993 and the site has since been redeveloped as Moorhaven Village.

In the 18th and early 19th centuries roads in South Devon were being improved through the activities of turnpike trusts. Soon after 1819 the Plymouth Turnpike Trust constructed a new road between Bittaford and South Brent, bypassing Wrangaton and Cheston (UG 327). This became part of the old A38, the main road from Exeter to Plymouth until it was replaced by the dual carriageway around 1980. A tollhouse, which is still in existence, was built at Bittaford (UG 332) to collect the charges on the new turnpike road. Two more controlled other turnpike roads through Ugborough parish. One was built by the Kingsbridge Trust at Fowelscombe Gate (UG 112) on the Kingsbridge to Wrangaton road; another was built at Ludbrook (UG 144) on the Totnes to Ermington road. Both are shown on the Tithe Map, but neither of them survives.

In 1848 Brunel's South Devon Railway line (UG 126) to Plymouth was opened, crossing the parish via Wrangaton and Bittaford. It crossed the Glazebrook and Lud Brook on viaducts, the granite piers of which survive (UG 373 and 347). A station was opened at Wrangaton (UG 232), known initially as Kingsbridge Road Station; the station at Bittaford (UG 428) was not built until 1907.

In 1851 there were four mills active: Owley Mill (UG 402) and Turtley Mill (UG 115), powered by the Glaze Brook, and Bittaford Mill (UG 333) and Earlscombe Mill (UG 114) by the Lud Brook. Other mills are documented at Coarsewell Farm (UG 262), Marridge (UG 261), Peek Mill (UG 240) and Fowelscombe (UG 238). Only Turtley Mill has been documented before 1800, but it seems likely that some at least were operating in the earlier post-medieval and medieval periods. Mill buildings survive at Turtley, Owley, and Earlscombe. Ludbrook Mill, a listed early 19th-century mill and millhouse, just outside the Parish, which does not appear to correspond to any of the other mills, is also still standing.

A silver/ lead mine at Filham (UG 014), also known as Ivybridge Consols, was worked in the first half of 19th century. Some remains of the buildings were standing in 1996. There was also an umber works immediately north of Leigh Cross, where pigment for paint was produced by heating clay containing oxides of iron and manganese (UG 379) . The works are shown as disused on the 1889 Ordnance Survey map, and there are no surviving remains.

There were many stone quarries in the lowland parish. Bowcombe (UG 145) and Wood (UG 125) were large slate quarries. Bowcombe was operating in the 19th century. Wood started up in the 18th century, and was still operating in the 19th. Dunwell was another large 'dunstone' quarry (UG 146), shown on the 1843 Tithe Map but disused in 1889. Kennel Quarries (UG 147), so called because they were located close to the kennels on the Fowelscombe estate, were also shown as disused in 1889. Ennaton limestone quarry (UG 117) is recorded in the 19th century and was disused by 1906. The stone was burnt in kilns on the site to produce lime for agricultural use. Large quarry pits survive at Bowcombe and Dunwell and smaller ones at Kennel Quarries and Ennaton.

The Modern Period

See Chap.III 'History of the Parish'

3. SITES OF SPECIAL INTEREST

Moorland Zone

Brown Heath: china clay settling tanks etc. (UG 612)
Butterdon Hill: cairns (UG 512, 513 and 528)
Butterdon Hill: long cairn (UG 503)
Butterdon Hill: stone row (UG 534)
Butterdon Hill: The Longstone (UG 533)
Cantrell: china clay drying beds (UG 352).
Cuckoo Ball: chambered cairn (UG 502)
Glasscombe Corner: tin workings (UG 579)
Glazemeet: blowing house and tinners' hut (UG 577 and 578)
Glazemeet: cist (UG 571)
Hangershell: cist (UG 504)
Piles Hill: longstone (UG 572)
Redlake: china clay works railway (UG 567)
Redlake: turf ties (UG 570)
Scad Brook: enclosure (UG 526)
Spurrell's Cross (UG 531)
Three Barrows Tor: barrows (UG 504)
Zeal Tor tramway (UG 569)

The Lowland Zone

Bittaford: tollhouse (UG 332)
Bowcombe Quarry (UG 145)

Earlscombe Mill (UG 114)
Ennaton Quarry (UG 117)
Filham: chapel and folly (UG 001)
Filham House (UG 003)
Fowelscombe (UG 031)
Glaze Brook and Lud Brook: viaducts (UG 373 and 347)
Haredon: re-used cross (UG 016)
Hookmoor Cross (UG 018)
Langford Barton: ringwork and bailey (UG 019)
Owley Mill (UG 402)
Piles Peek: farmhouse (UG 092)
Stone: farmhouse (UG 243)
Turtley Camp (UG 020)
Turtley Mill (UG 115)
Ugborough: Anchor Inn (UG 059)
Ugborough: conduit house (UG 166)
Ugborough: Congregational Church(UG 030)
Ugborough: Parish Church of St Peter (UG 021)
Ugborough: Ship Inn (UG 060)
Ugborough: strip fields N of village (UG 239)
Zeaston: farmhouse (UG 105)

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Revised by Ugborough Local History Group

V. BIBLIOGRAPHY AND OTHER INFORMATION SOURCES

Books and other Printed Material

An Act to improve certain parts of the line of the road between the Borough of Plymouth and the City of Exeter, through Ashburton and Chudleigh, in the County of Devon 1820 (1 Geo. 4 Ch. xxi)

Arkell, T. 1982 'Multiplying Factors for Estimating Population Totals from the Hearth Tax', *Local Population Studies,* 28, 1982, 51–57.

Baring-Gould, S. 1911 *Devon* [2nd edition].

Betjeman, J. 1936 *Devon: Shell Guide*.

Billing, M. 1857 *Directory and Gazetteer of the County of Devon*

Bolt, B. 2000 'The Hospitals and Asylums of Devon and their Records' *Devon Family History Society*.

Bovett, R. 1989 *Historical Notes on Devon Schools.* Devon County Council.

Brewer, D. 2002 *Dartmoor Boundary Markers and other Markers on and around the Moor*

Butler, J. 1993 *Dartmoor Atlas of Antiquities*. Vol.4: *SouthEast*

Cherry, B. & Pevsner, N. 1989 *The Buildings of England: Devon*

Crossing, W. 1910 *Guide to Dartmoor*

Ditchfield, P.H. 1913 *The Parish Clerk*.

Dixon, S. (ed.) 2007 'Eighteenth Century Devon: People and Communities: Devon Freeholders, 1711–1799', *Friends of Devon Archives.* Eighteenth Century Devon project accessed 14 January 2008 <http://www.foda.org.uk/main/projects/eighteenthcentury.htm>.

Donn, B. *A Map of the County of Devon 1765* (1965 edition, reprinted by the Devon and Cornwall Record Society and the University of Exeter).

Durrance, E.M. and Laming, D.J.C. 1982 *The Geology of Devon*

Ekwall, E. 1928 *English River Names*

Erskine, A.M. (ed.) 1969 'The Devonshire Lay Subsidy of 1332' *Devon & Cornwall Record Society New Series 14.*

Fleming, A. 1988 *The Dartmoor Reaves*

Fox, A. 1964 *South West England*

Fox, A. 1996 *Prehistoric Hillforts in Devon*

Gaskell-Brown, C. & Hankin, C. 1975 'Archaeological Check-List of Ugborough Parish', *Proc. Devon Archaeol. Soc. 33, 311–324*.

Geological Survey of Great Britain (England and Wales) 1974 *1:50 000 (Drift) Sheet 349, Ivybridge*

Gerrard, S. 1997 *Dartmoor*

Gerrard, S. 2000 *The Early British Tin Industry*

Goose, N. and Hinde, A. 2007 'Estimating Local Population Sizes at Fixed Points in Time: Part II – Specific Sources', *Local Population Studies No.78, Spring 2007, 74–88.*

Gover, J.E.B., Mawer, A. and Stenton, F.M. 1931 *The Place Names of Devon*

Gray, T. 2003 *Lost Devon: Creation, Change and Destruction over 500 Years*.

Greenwood, C. & J. 1827 *Map of the County of Devon from an Actual Survey made in the Years 1825 & 1826*

Gregory, R.H. 1982 *The South Devon Railway*

Griffith, F. 1988 *Devon's Past: an Aerial View*

Griffiths, D.M. (ed.) 1994 'The Archaeology of Dartmoor: Perspectives from the 1990s', *Proceedings of the Devon Archaeological Society* 52

Harding Thompson,W.1932 *Devon: A Survey of its Coast, Moors and Rivers with some Suggestions for their Preservation*

Harris, H. 1968 *Industrial Archaeoloy of Dartmoor*

Hemery, E. 1983 *High Industrial Archaeology of Dartmoor*

Hemery, E. 1991 *Walking the Dartmoor Railroads*

Hoskins, W.G. 1952 ''The Making of the Agrarian Landscape', in Hoskins, W.G. & Finberg, H.P.R. *Devonshire Studies, 289–333.*

Hoskins, W.G. 1992 *Devon*

Kain, R. & Ravenhill, W. (eds.)1999 *Historical Atlas of South-West England*

Kain, R. (ed.) 2006 *England's Landscape: the South West (1897, 1919 & 1939)*

Land Utilisation Survey of Britain: *Sheet 145, Torquay and Dartmouth*, Surveyed 1932–4, General checking, completion and revision 1935–8.

Luscombe, P. 2006 'Buckfast Abbey and Domesday' Devon and Cornwall'. *Notes & Queries* 39 *Part 9, 266-70*

Lysons, D. & Lysons, S. 1822 *Magna Britannia:* 6 *Devonshire Part II.*

Mawer, A. (ed.) 1924 *The Chief Elements used in English Place-names.*

Mercer, I. 2010 *Dartmoor*

Milles, D. C. 1750 *Questionnaire*

Mortimer, I 2006 *A Guide to the Manors of Devon: Index of Parishes* http://genuki.cs.ncl.ac.uk/DEV/DevonManors/parishes.html>

Orme, N. 1996 *English Church Dedications with a Survey of Cornwall and Devon*

Ordnance Survey 1889 First Edition 1:10,560 map sheets CXIII.SE, CXIX,NE, SE & SW, CXXV.NE & SE, CXXVI.NW.

Oxford Dictionary of National Biography 45

Pearce, S.M. 1981 *The Archaeology of South West Britain*

Polwhele, R. 1793-1806 *The History of Devonshire*

Pye, A. & Woodward, F. 1996 *The Historic Defences of Plymouth*

Rippon,S. 2006 'Landscapes of Pre-Medieval Occupation' in Kain, R.J.P.(ed.) *England's Landscape: the South West*

Rose-Troup 1929 'The New Edgar Charter and the South Hams' *Rep. Trans. Devonshire. Ass. LXI, 249–280.*

Sellman, R.R. 1967 *Devon Village Schools in the Nineteenth Century.*

Soil Survey of England & Wales 1983 1:250,000 Map of Soils of South West England

Soil Survey Record 39. 1976 Soils in Devon II Sheet SX65 Ivybridge

Somers Cocks, J.V. 1986 'Dartmoor, Devonshire: late 15th or early 16th century', in R.A. Skelton & P.D.A. Harvey (eds) *Local Maps and Plans from Medieval England,* 293–302.

Stoate, T.L. (ed.) *1986 Devon Lay Subsidy Rolls 1543-1545*

The Totnes Times and Devon News, 23.2.1929.

Thomas, D. St J. 1981 *A Regional History of the Railways of Great Britain Vol. 1 The West Country*
Thorn, C. & Thorn, F. (eds) 1985 *Domesday Book 9: Devon.*
Todd, M. 1987 *The South West to AD 1000*
Trewman's Exeter Flying Post 1779, 1781, 1787, 1799.
Turner, M.E., Beckett, J.V., & Afton, B. 1997 *Agricultural Rent in England,1690–1914.*
Turner, S. (ed.) 2006 *Medieval Devon and Cornwall: Shaping an Ancient Countryside*
Turner, S. 2007 'Ancient Country: The Historic Character of Rural Devon' *Devon Archaeological Society Occasional Paper 20*
Ussher, W.A.E. 1912 The Geology of the Country around Ivybridge and Modbury *Memoirs of the Geological Survey of Great Britain*
Wade, E.A. 2004 *The Redlake Tramway and China Clay Works*
Western Morning News 7 July 2007 .
White, P. 2005 *The South-West Highway Atlas for 1675*
White, W. 1850 *History, Gazetteer and Directory of Devonshire*
Wickes, M.J.L. 1990 *Devon in the Religious Census of 1851*
Worth, R.H. 1953 *Dartmoor*
Wrigley, E.A & Schofield, R.S. 1989 *The Population History of England 1541-1871: A Reconstruction*

Websites

Dartmoor National Park Authority, Parke, Bovey Tracey, Newton Abbot TQ13 9JQ <hq@dartmoor.gov.uk>
Devon Historic Environment Record, Devon County Council, County Hall, Topsham Road, EX2 4QW; 01392382246 www.devon.gov.uk/historic_environment>
Images of England website (English Heritage) <http://www.imagesof England.org.uk/>
LandIs. Extensive official information on soils and landscapes.<www.landis.org.uk/services>
Old Maps : Zoomable OS 1:2500, 1:10560 and 1:10000 maps from 1887 to the present. <http;//www.old-maps.co.uk>
PastScape (English Heritage): Zoomable satellite images from July 2010 <http://pastscape.english-heritage.org.uk/>
'The Workings of the Earth'. An article explaining the principles of geology relevant to Chapter II in the present work. <www.ugborough.com>

Record Offices and Local Histories Libraries

Devon Record Office, Great Moor House, Bittern Road, Sowton, Exeter, EX2 7NL; 01392 384253 <www.devon.gov.uk/record_office.htm>

See especially*:*
Map 3950Z/Z1
Replies to Visitation Queries Chanter 225B & 232B
Marley Map Book Vols. I & II, Z17/3/20-21
Documents in Z7/Box 33/34
Freemans Book QS7/64
Tingey transcripts of enrolled deeds
Sale catalogue 547B/P1832

'Map of the Turnpike-Road from Plymouth to Exeter, with Improvements, as proposed by James Green, Civil Engineer,1819', Deposited Plan DP 39

Devon Rural Archive, Shilston, Modbury, Devon, PL21 0TW; 01548 830832 <www.devonruralarchive.com>

Local & Naval Studies Library, Drake Circus, Plymouth, PL4 8AL; 01752 305909 <www.localstudies@plymouth.gov.uk>

Plymouth & West Devon Record Office, 3 Clare Place, Coxside, Plymouth, PL4 0JW; 01752 305940 <http://www.plymouth.gov.uk>

Torquay Local History Library, Lymington Road, Torquay TQ1 3DT; 01803 208300 <www.torbay.gov.uk/libraries>

Westcountry Studies Library, Castle Street, Exeter, EX4 3PQ; 01392 384216 <http://www.devon.gov.uk/localstudies>

See especially:

Transcripts of Inquisitions Post Mortem

Ugborough Parish cuttings file

Ordnance Survey two-inch Drawings Nos 22W (1803–04) and 25 (1802-03)

Censuses for 1851 and 1881 (microfilm)

Museums

Dartmouth Museum, 6A The Butterwalk, Dartmouth, TQ6 9PZ; 01803 832923 <http://dartmouthmuseum.org>

Kingsbridge: Cookworthy Museum, The Old Grammar School, 108 Fore Street, Kingsbridge TQ71AW; 0154885323 <www.cookworthy@devonmuseums.net>

Plymouth: City Museum & Art Gallery, Drake Circus, Plymouth, PL4 8AJ; 01752 304774 <www.plymouthmuseum.gov.uk>

Royal Albert Memorial Museum & Art Gallery, Queen Street, Exeter, EX4 3RX; 01392 665858 <www.exeter.gov.uk/museums>

Salcombe Maritime & Local History Museum, The Old Council Hall, Market Street, Salcombe, TQ8 8DE; 01548 843080 <www.salcombemuseum.org.uk

Totnes: Elizabethan House Museum, 70 Fore Street, Totnes, TQ9 5RE, 01803 863821 <www.devonmuseums.net/totnes>

Societies

Devon Archaeological Society c/o Royal Albert Memorial Museum & Art Gallery, Queen Street, Exeter, EX4 3RX <www.groups.ex.ac.uk/das/>

Devon History Society <www.devonhistorysociety.org.uk>

Local history societies. The Westcountry Studies Library holds a list of societies. There is a list on the Devon History Society website, but not all societies are affiliated.

Ugborough Local History Group. The Group holds a collection of some 1600 archive photos of the Parish, and a full cover of RAF vertical air photography from the period 1946 to 1949. <www.ugborough.com>

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Exeter Archaeology