

Ancient Britain

1

Geology and Early Humans

Feb. 2 — Introduction / Geology and Geography / Earliest Human Species

—The class will begin with the British landscape's geological foundations including both plate tectonics and glacial topography, the foundation of all later cultures. Current findings of the earliest human inhabitants (pre-Homo Sapiens) will be described, including Happisburgh, Boxgrove and Swanscombe.

Feb. 9 — Ice Age and After: Paleolithic and Mesolithic Cultures

—Modern humans appear in the late Pleistocene, with finds at Paviland Cave, Cheddar Gorge, Creswell Crags and elsewhere. After the ice, Mesolithic hunter-gatherers appear at sites such as Star Carr, and the connection with Europe through "Doggerland" ends as Britain becomes an island.

Feb. 16 — Neolithic Ways of Life: Shaping the Landscape

—The most recent findings about the transition to farming and herding c. 4000 BCE will be described, including DNA analysis. Flint mines at Grimes Graves and Langdale Pike and earthworks like Windmill Hill provide information about this fundamental change in lifestyle.

Feb. 23 — Monuments in Earth and Stone

—Neolithic farmers marked their presence in the land with impressive structures: earthen long barrows like Belas Knap, megalithic tombs such as Tinkinswood in Wales and Kits Coty House in Kent. Theories of how and why they were constructed will be discussed.

Mar. 2 — Sacred Landscapes: Stonehenge and Avebury

—The best known megalithic structures at Stonehenge and Avebury are the subjects of continuing study, and new findings appear regularly. These and other sites must be seen as part of "sacred landscapes," not as isolated structures.

Mar. 9 — Bronze Age Ways of Life

—Metallurgy and its impact on society can be seen at sites like Flag Fen in Norfolk and Arthur's Seat in Scotland. These will be discussed, and exhibits in the British Museum shown as well.

Mar. 16 — The Iron Age

—The last millennium BCE sees the appearance of Celtic-speaking peoples and of ironworking. Spectacular hillforts like Maiden Castle and farming communities like Glastonbury provide evidence of this period.

Mar. 23 — Celtic Kingdoms and the Coming of Rome

—Written history and classical culture shed light on the final century of Celtic Britain, from Caesar's raids in 55 and 54 BCE to Claudius' invasion in 43 CE. The class will conclude with a portrayal of the ways of life of that period, and their continuity with previous eras.

ANCIENT BRITAIN—RECOMMENDED READINGS

Spring 2022 * = especially recommended.

REFERENCE WORKS / GUIDEBOOKS:

- *Ordnance Survey Map, *Ancient Britain* (Edition D, 2011).
*English Heritage Map, *Stonehenge and Avebury: Exploring the World Heritage Site* (2013)
- Barry Cunliffe et al., eds., *The Penguin Atlas of British and Irish History* (2001)
- Timothy Darvill, Paul Stamper and Jane Timby, *England: an Oxford archaeological guide to sites from earliest times to AD 1600* (2002).
- James Dyer, *Discovering Prehistoric England: A gazetteer of prehistoric sites* (Shire Books, 2nd ed., 2001).
- *Jacquetta Hawkes, *A Guide to the Prehistoric and Roman Monuments in England and Wales* (1951, new edition, 1976)....*very readable tour of the countryside, describing the visible sites.*
- Jacquetta Hawkes, *The Shell Guide to British Archaeology* (1986)
- Anna and Graham Ritchie, *Scotland: an Oxford archaeological guide* (1998)
- Christopher Snyder, ed., *Early Peoples of Britain and Ireland: An Encyclopedia* (2 vols., 2008)

BOOKS / EUROPEAN PREHISTORY:

- *Barry Cunliffe, *Europe Between the Oceans, 9000 BC—AD 1000* (2008)
- Barry Cunliffe, ed., *The Oxford Illustrated Prehistory of Europe* (1994)
....*softcover edition as Prehistoric Europe: An Illustrated History.*
- Brian Fagan, ed., *The Complete Ice Age: How Climate Change Shaped the World* (2009)
- *Johannes Krause and Thomas Trappe, *A Short History of Humanity: A New History of Old Europe* (2021)....*discusses the newest findings of archaeogenetics.*

BOOKS / BRITISH PREHISTORY:

- *Barry Cunliffe, *Britain Begins* (2013)....*covers the period after the Ice Age.*
- *Rob Dinnis and Chris Stringer, *Britain: One Million Years of the Human Story* (2013)....*covers the period from the earliest humans through the Ice Age.*

*Ronald Hutton, *Pagan Britain* (2014)....*good account of British archaeology, emphasizing what can be known about beliefs and rituals.*

Nicky Milner, Barry Taylor, Chantal Conneller, and Tim Schadla-Hall, Star Carr: *Life in Britain after the Ice Age* (2013)....*describes Britain's most famous Mesolithic site.*

*Mike Parker Pearson, *Stonehenge: A New Understanding of the Greatest Stone Age Mystery* (2012)....*best account of Britain's most spectacular site.*

*Francis Pryor, *Britain B.C.: Life in Britain and Ireland Before the Romans* (2003)....*perhaps the best one-volume introduction. For findings since '03, read the next two books listed.*

Francis Pryor, *Scenes from Prehistoric Life: From the Ice Age to the Coming of the Romans* (2021)....*good short summaries of the latest findings of the most famous sites.*

*Alice Roberts, *Ancestors: A Prehistory of Britain in Seven Burials* (2021)....*includes the latest findings of genetic research and other sciences.*

Chris Stringer, *Homo Britannicus: the Incredible Story of Human Life in Britain* (2006)....*discusses the earliest humans in Britain, before the coming of agriculture.*

"*English Heritage*" series:

*Nick Barton, *Ice Age Britain* (2nd ed., 2005).

*Michael Parker Pearson, *Bronze Age Britain* (2nd ed., 2005).

*Barry Cunliffe, *Iron Age Britain* (2nd ed., 2004).

SMALL BOOKS / BOOKLETS:

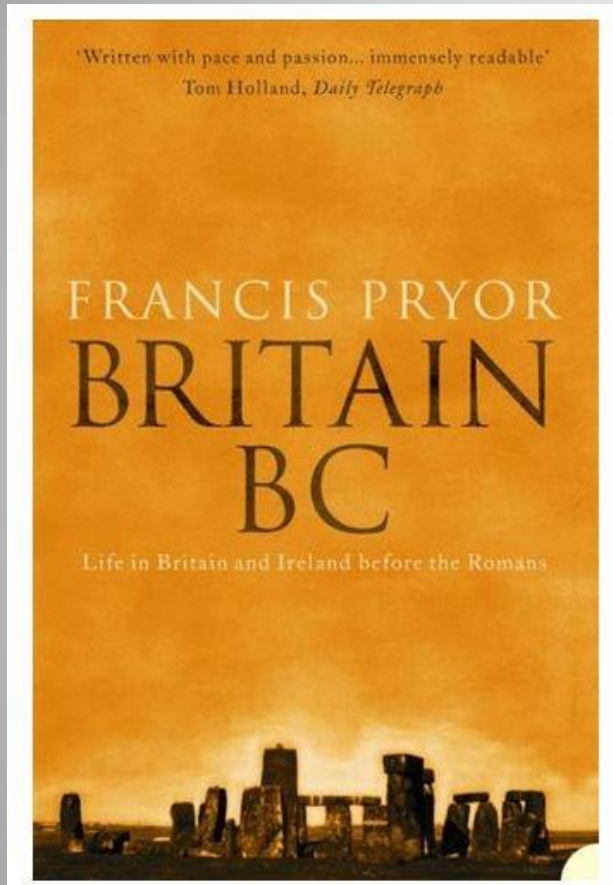
- Aubrey Burl, *Prehistoric Astronomy and Ritual* (Shire Archaeology, 2nd ed., 2005)
Aubrey Burl, *Prehistoric Stone Circles* (Shire Archaeology, 4th ed., 2005).
James Dyer, *Hillforts of England and Wales* (Shire Archaeology, 2nd ed., 1992).
Frances Lynch, *Megalithic Tombs and Long Barrows in Britain* (Shire Archaeology, 1997).
Caroline Malone, *The Prehistoric Monuments of Avebury* (National Trust, 2nd ed., 1994).
Nick Merriman, *Prehistoric London* (Museum of London, 1990).
Joshua Pollard, *Neolithic Britain* (Shire Archaeology, 1997)
W.F. and J.N.G. Ritchie, *Celtic Warriors* (Shire Archaeology, 1985)
John Wymer, *Mesolithic Britain* (Shire Archaeology, 1991)

ARCHAEOLOGICAL REPORTS (available in the UI Library):

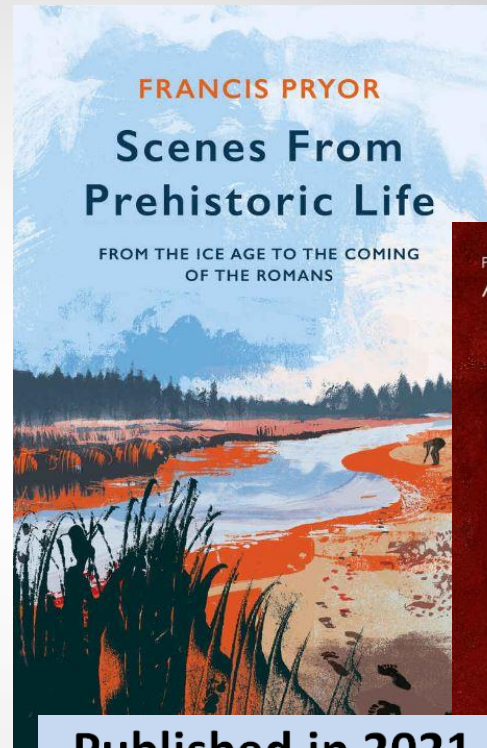
Richard Bradley, *The Good Stones: a new investigation of the Clava Cairns* (2000)

Susan Hirst and Philip Rahtz, "Liddington Castle and the Battle of Badon: Excavations and Research 1976," *Archaeological Journal* (153), 1996.

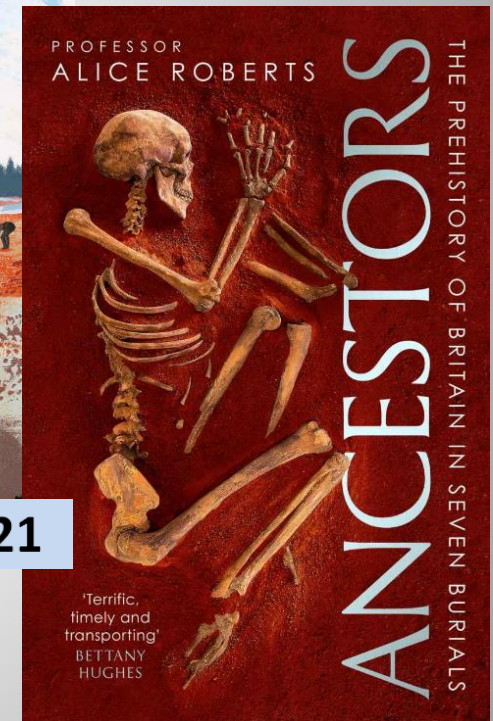
Recommended Readings: where to start—



Published in 2003



Published in 2021



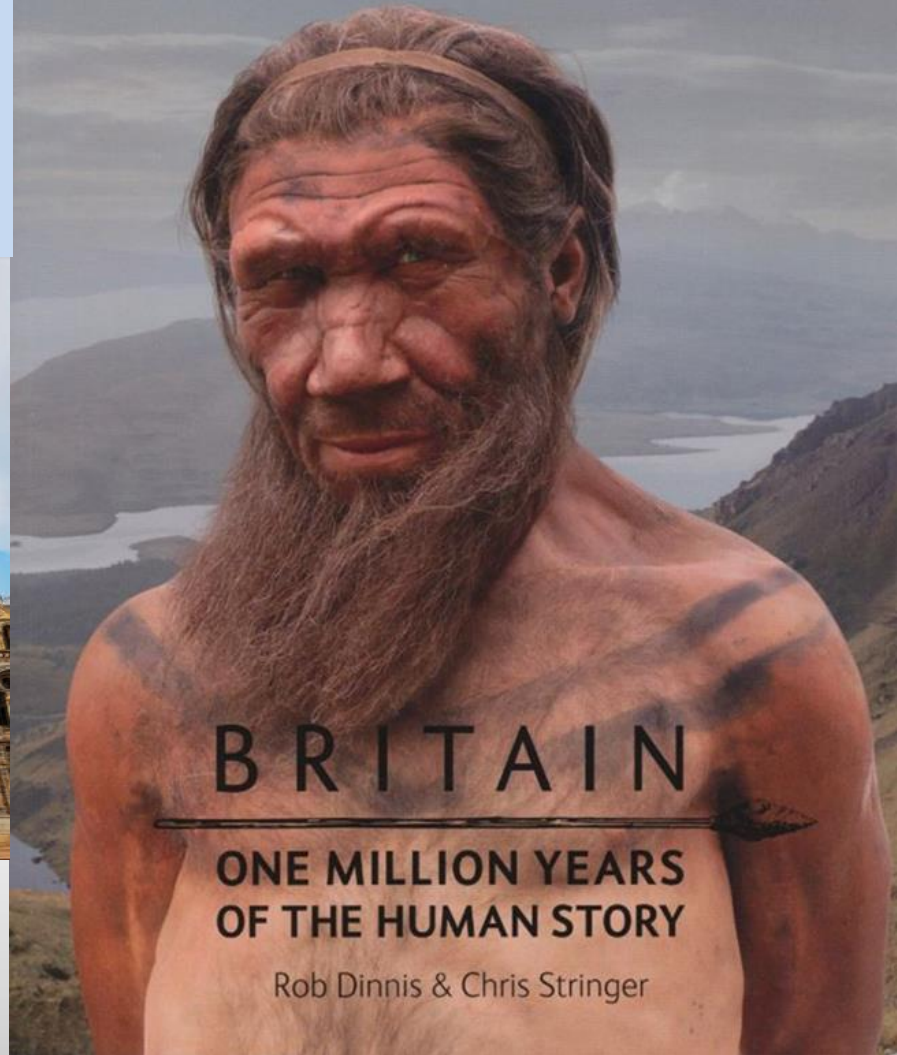
The Natural History Museum, 2013

Special Exhibition—

—Paleolithic and Mesolithic humans



N NATURAL
HISTORY
MUSEUM



The British Museum, 2022

Special Exhibition— —Neolithic and Bronze Age



EXHIBITION

The world of Stonehenge

In February, the UK's first major exhibition focusing on the story of Stonehenge will open at the British Museum. **Carly Hilts** went to a preview of the upcoming blockbuster to find out more.

The imposing silhouette of Stonehenge is one of the most recognisable archaeological sights (and sites) in the UK, if not the world. For many, the Neolithic stones appear to stand in glorious isolation on Salisbury Plain – but recent geophysical surveys have revealed what a monument-crowded landscape this once was (see CA 296 and 320). An exhibition set to open at the British Museum next month, however, will place the Wiltshire landmark in its wider context, exploring the world that its builders knew and the immense social, cultural, and technological changes that the site witnessed.

Organised in partnership with the State Museum of Prehistory, Halle/Saale, Germany, the exhibition will feature more than 430 objects drawn from 35 institutions across the UK, Ireland, France, Germany, Italy, Denmark, and Switzerland. These artefacts will include new archaeological discoveries from the Stonehenge landscape and from key sites like the Ness of Brodgar in Orkney, many of which have never been on public display before.

The exhibition's story begins before the building of Stonehenge, in the hunter-gatherer world of the Mesolithic – a landscape that curator Neil Wilkin describes as one of 'wild woods and wild animals' – where objects like one of the deer skull 'frontlets' found at Star Carr (CA 282 and 349) hint at how people understood and related to their natural surroundings. The displays will then trace how Britain made the transition to a Neolithic way of life, as new ideas including farming and animal husbandry arrived from the Continent. Huge monuments began to rise within these shores, and intricate new artistic styles evolved in Orkney and Ireland.

These Continental connections gave rise to far-ranging trade networks and migration in the Bronze Age, something that will be reflected by the inclusion in the exhibition of grave goods from some of the richest burials from the



LEFT The Schifferstadt gold hat, c.1600 BC, found in Germany.



LEFT The Nebra Sky Disc, the earliest known representation of the cosmos.

Stonehenge landscape. These include artefacts interred with the 'Amesbury Archer', an individual who had travelled from central Europe, and was laid to rest three miles from Stonehenge with objects reflecting the new technologies, particularly metalworking, that had travelled with him and his contemporaries (CA 184 and 265).

Exemplifying these long-distance commercial links is the cargo of the Langdon Bay shipwreck, found near Dover. This mass of metal objects was being transported from what is now France to Britain when they were lost to the waters – and the scale of this collection highlights that it was not just individual objects being carried across the Channel: this was a significant, organised trade.

As well as commercial developments, *The World of Stonehenge* explores the evolution of different religious ideas. Stonehenge's own solstice-centred alignment points to a keen awareness of the heavens, as does the Nebra Sky Disc, the oldest surviving depiction of the cosmos, which will travel to the UK for the first time as part of the exhibition. Some of the other objects on display reflect an interest in solar imagery; these include striking conical gold hats from France and Germany which are covered in solar symbols, and the Shropshire bulla, cover star of CA 349. This gold pendant, adorned with geometric designs, has potent Irish parallels and, for Neil Wilkin, 'evokes the world of solar symbols, connectivity, restless creativity – it distils all the themes of our exhibition, and all in a jewel that fits in the palm of the hand.'

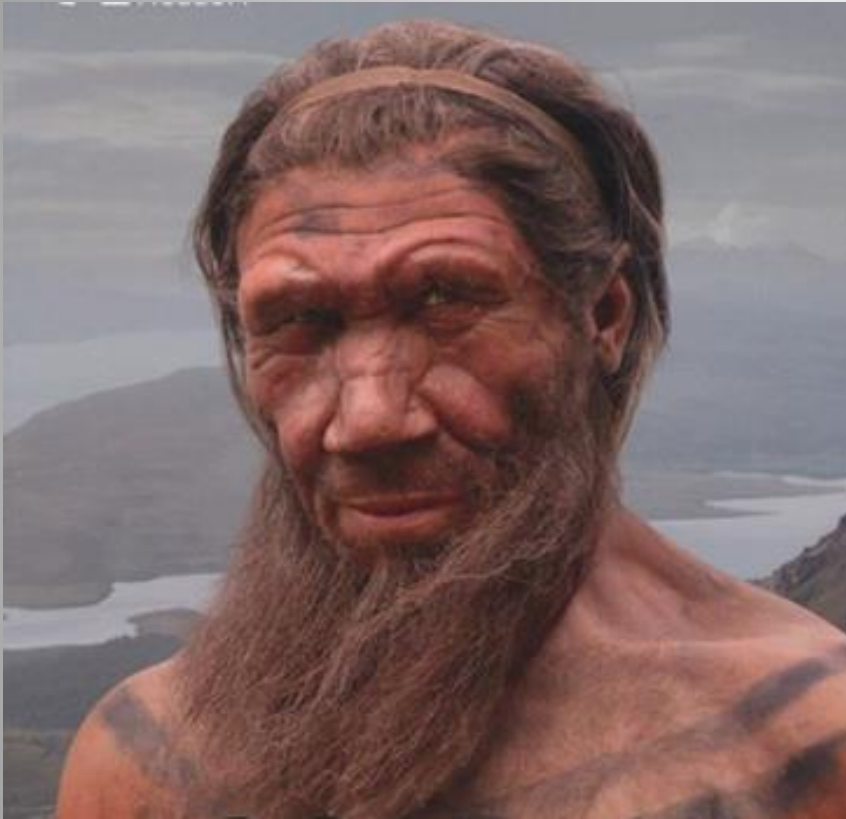
Of all the objects included in the exhibition, however, one of the star loans is an actual monument from the time of Stonehenge – not one of the Salisbury Plain sarsens, but elements of Seahenge, the Bronze Age timber circle revealed by shifting sands on a Norfolk beach in 1998 (CA 167 and 219). The 4,000-year-old monument represents a rare survival of the wooden circles that are thought to have scattered the prehistoric landscape – including around Stonehenge. **I**

Further information

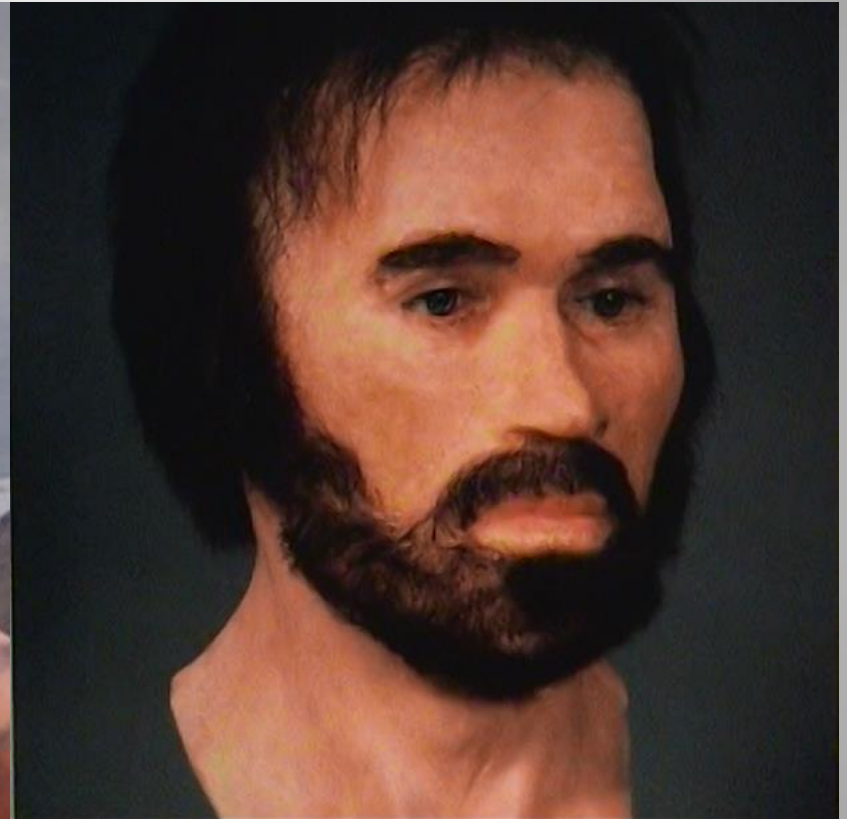
The World of Stonehenge runs from 17 February until 17 July 2022 at the British Museum in London. For more information, see www.britishmuseum.org/stonehenge.

Stonehenge is cared for by English Heritage; for more about the site, see www.english-heritage.org.uk/stonehenge.

The Faces of Ancient Britain—

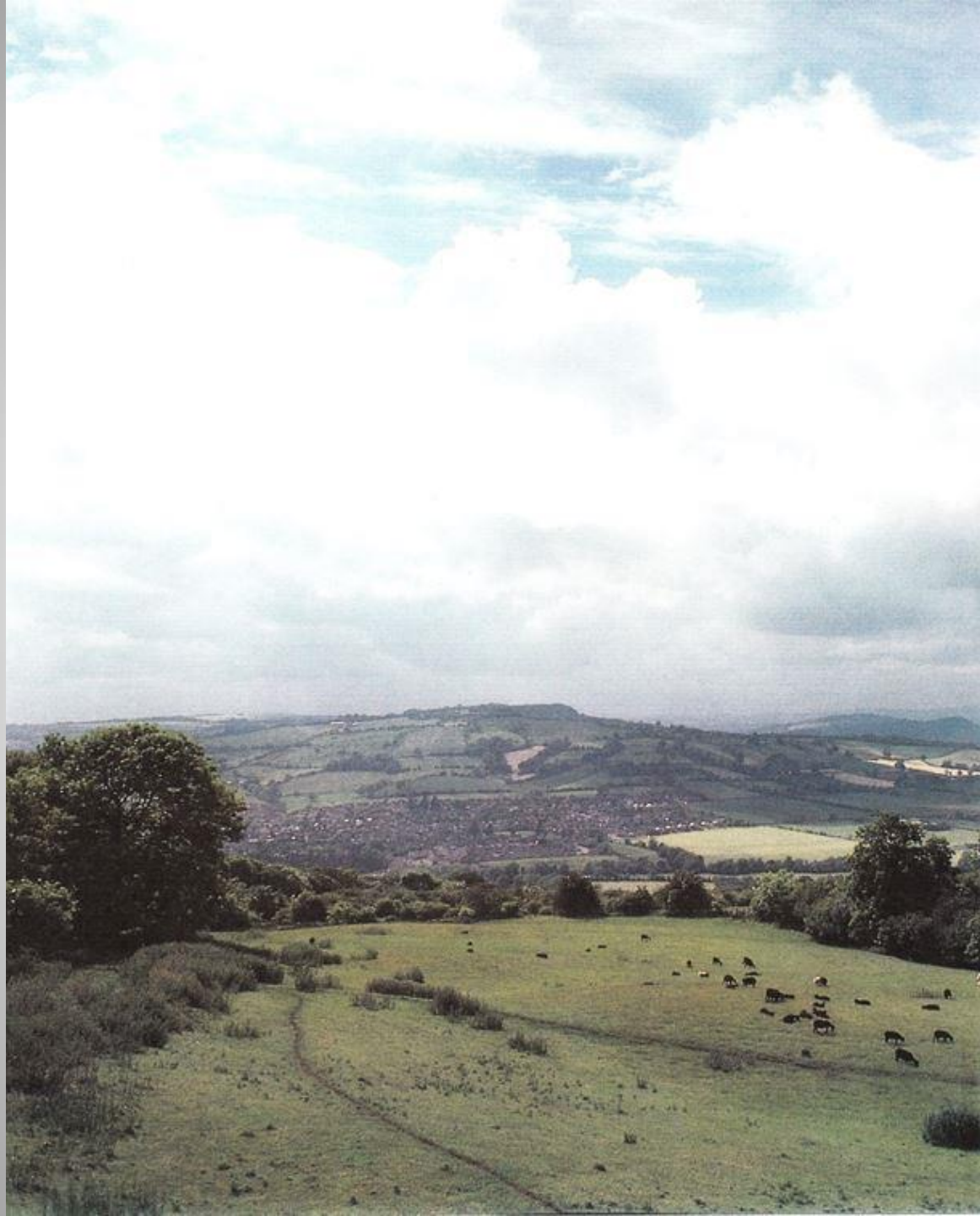


Neanderthal man, c. 50,000 BCE

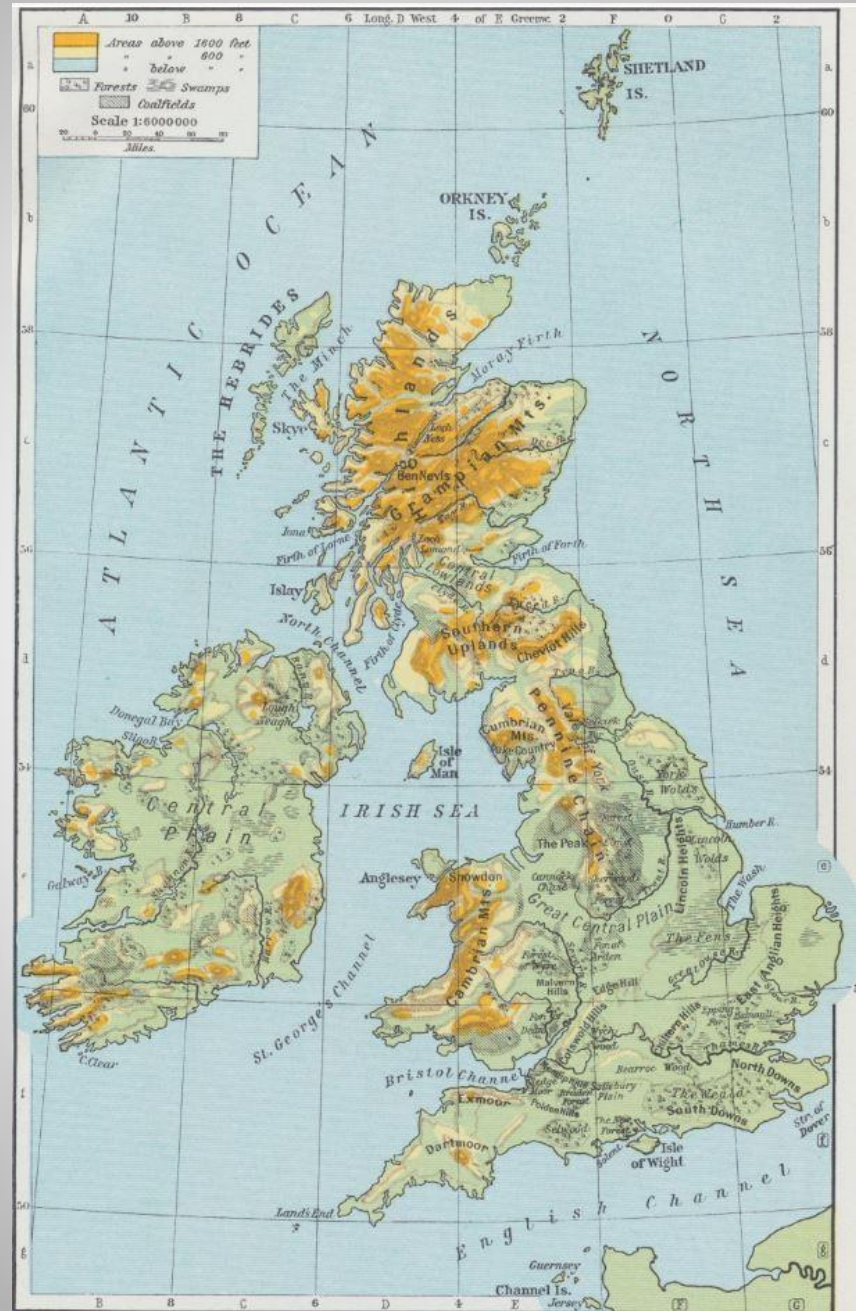


Lindow Man, Celtic, c. 100 AD



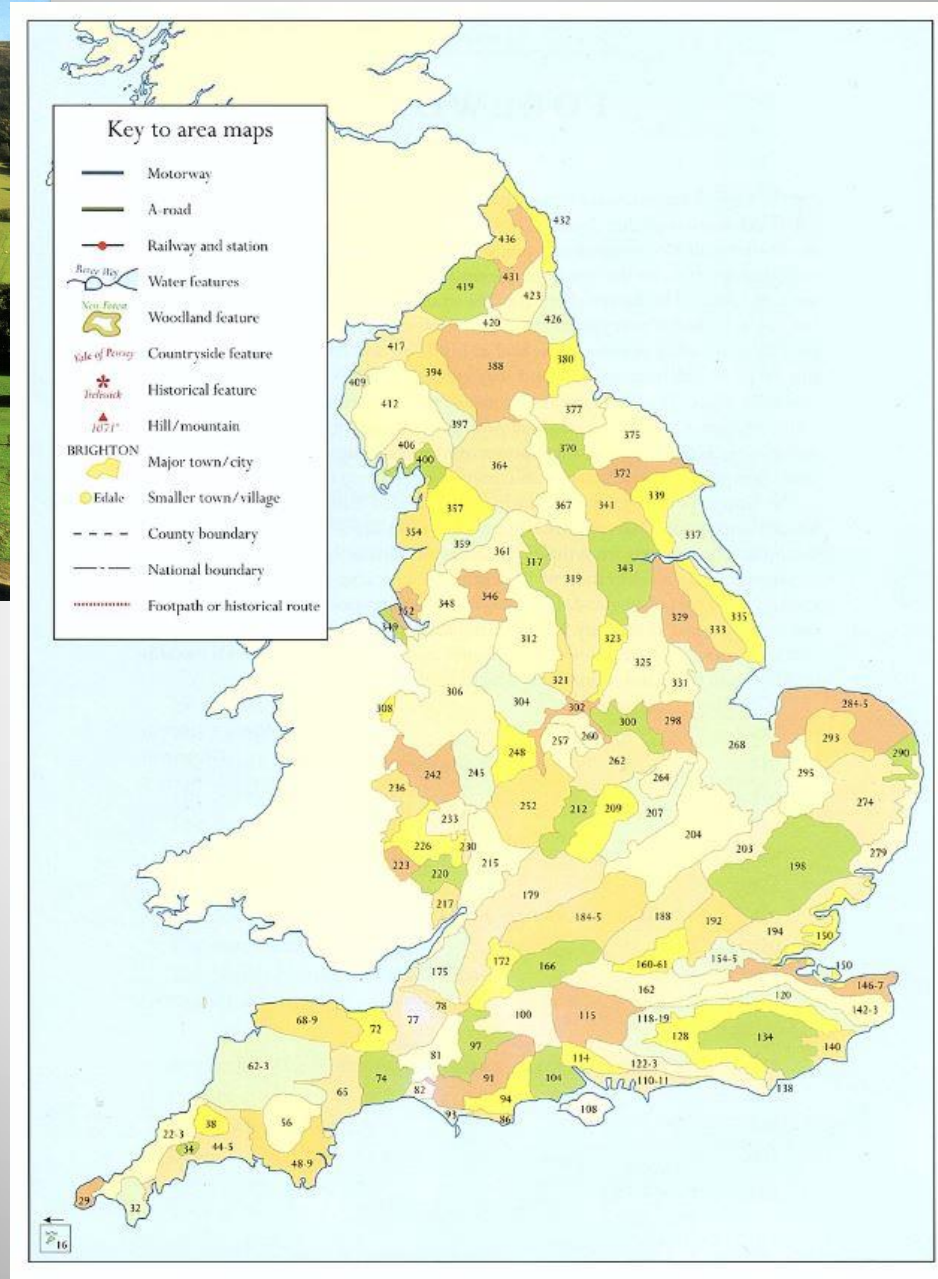
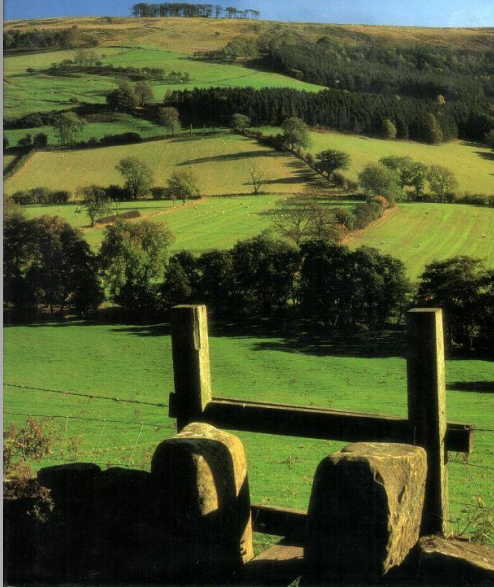


Ancient Britain: the Geological and Geographical Foundations



The English Landscape

with an introduction by Bill Bryson



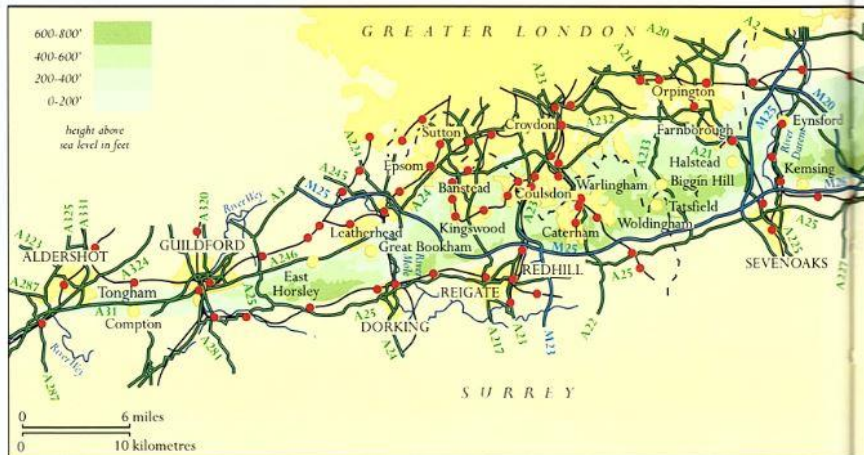
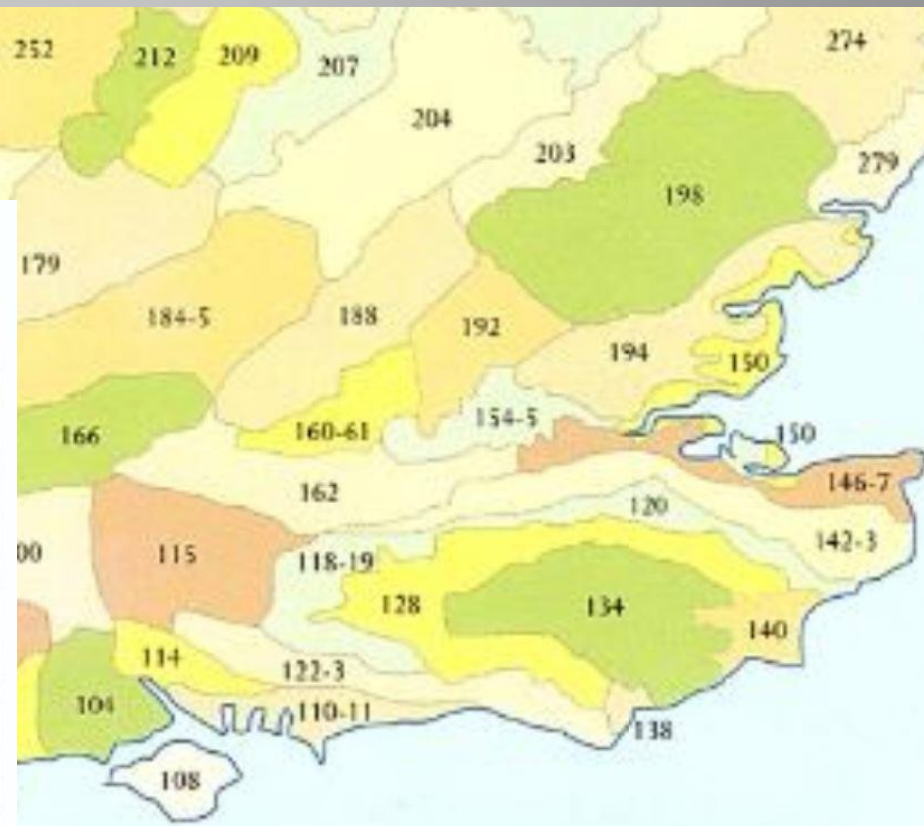
THE NORTH DOWNS



The North Downs are a ridge of chalk running from the thin ridge known as the Hog's Back to the west of Guildford in Surrey, eastwards as far as the white cliffs of Dover, where they drop dramatically to the sea. In places, the chalk rises nearly five hundred feet above sea level, but in the middle, where they are largely swallowed up into South London, the Downs merge into the North Kent plain.

Very much like the Hampshire and Dorset Downs, the rolling, open landscape and gentle slopes of the North Downs make good arable land for today's farming. There are comparatively few patches of unimproved chalk grassland, but where steep valleys have formed and the land is less accessible, copses or larger woods have taken hold. Oak and ash are the most common trees, especially on higher ground, with beech and maple also frequent on the valley sides. There are large areas of yew and box in East Surrey; the scrub is generally hawthorn.

Before ploughing became mechanised in the twentieth century, the Downs were less viable as agricultural land, and forest land that had been cleared was used mainly for grazing. Drovers' roads, forming the present North Downs Way or Pilgrims' Way – which led from London to Canterbury and is immortalised by



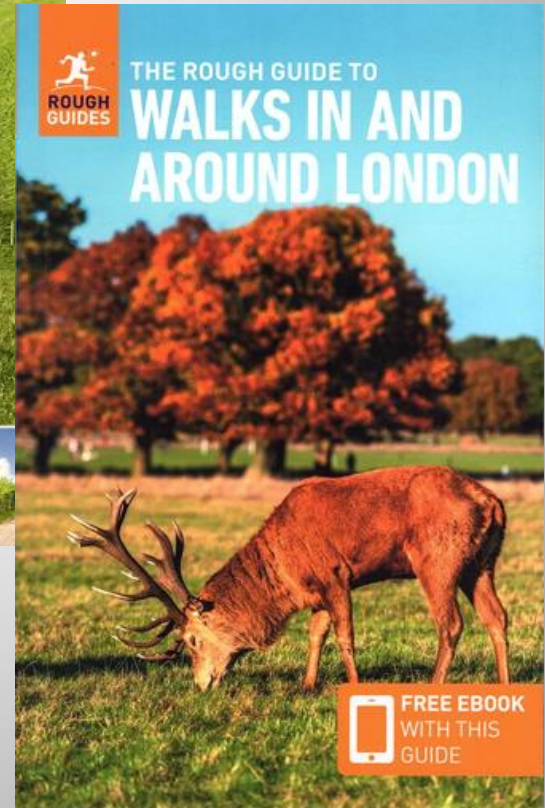
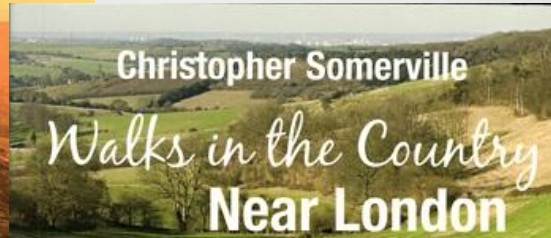
The best way to see “ancient Britain:”



100 OUTSTANDING BRITISH WALKS

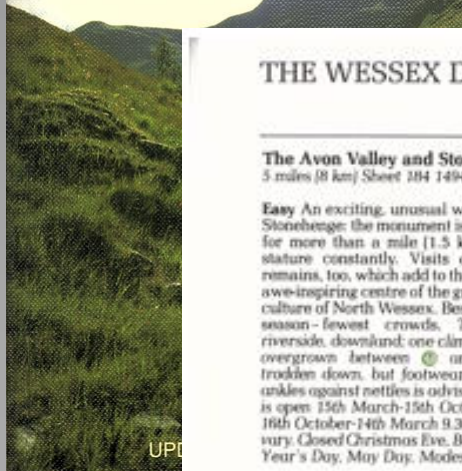


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THE WESSEX DOWNS

The Avon Valley and Stonehenge

5 miles (8 km) Sheet 104 149411

Easy An exciting, unusual way to approach Stonehenge: the monument is directly ahead for more than a mile (1.5 km), growing in stature constantly. Visits other Neolithic remains, too, which add to the picture of this awe-inspiring centre of the great prehistoric culture of North Wessex. Best out of holiday season - fewest crowds. Town, wooded riverside, downland; one climb; path may be overgrown between ① and ② - easily trodden down, but footwear to protect the ankles against nettles is advised. Stonehenge is open 15th March-15th October, 9.30-6.30; 16th October-14th March 9.30-4.00. Sundays vary. Closed Christmas Eve, Boxing Day, New Year's Day, May Day. Modest entry fee.

Start Recreation Road, Amesbury, which is a lane leading from the corner of Church and Stonehenge Roads; frequent buses - from bus station turn left, left again past church and abbey, then cross river. First left is Recreation Road. **Car park** off Recreation Road in front of playground. Optional return to start from Stonehenge by bus, last one leaving at 4.30 p.m.

① From car park turn left and follow lane to cross Avon by 2 bridges. ② At cross-tracks keep straight on in direction of sign for Durnford. ③ Go through iron gate but do not follow obvious track straight ahead. Turn right and walk around edge of field, passing mound on left, reaching gate on right. ④ Turn left (back to the gate) and follow the valley (do not go uphill) with stream, then wider expanse of water, on right. ⑤ Straight on through small wood of willow trees. ⑥ Turn right over small wooden bridge. ⑦ From bridge follow path as it bears right for about 50 yards (46 m) [may be overgrown]. ⑧ Follow path left to cross bridge over Avon. ⑨ Cross stile and follow path ahead a few yards then left to pass house. ⑩ Go through gate and turn right to follow lane to minor road. ⑪ Turn left and follow road for ¼ mile (0.5 km) until just before Wilsford church. ⑫ Turn right up well-defined track between 2 thatched cottages. ⑬ Follow track, passing Springbottom Farm on right. ⑭ Follow wide, grassy way which leads uphill between fences - Stonehenge directly ahead. ⑮ Turn right and follow A303 to junction with A344. ⑯ Turn left and continue to car park for entry to the monument. Either walk back to

Amesbury following footpath beside the A303, taking the first right which leads to Recreation Road; or take a bus.

Ⓐ The church is mainly Norman and Early English, with a well-carved roof.

Ⓑ There is nothing quite like Stonehenge anywhere else in the world. Exactly why these massive stones were transported, carved and set upright in these formations remains a matter for speculation. Some of the stones come from the Preseli Hills in S Wales - 135 miles (217 km) away. The place seems to have been devoted, at least partly, to sun worship. On midsummer's day the sun rises in line with the axis of the avenue leading into the monument. Recently experts have shown that the circle's positioning may have made it useful for certain astronomical observations. It was probably a burial place, too.



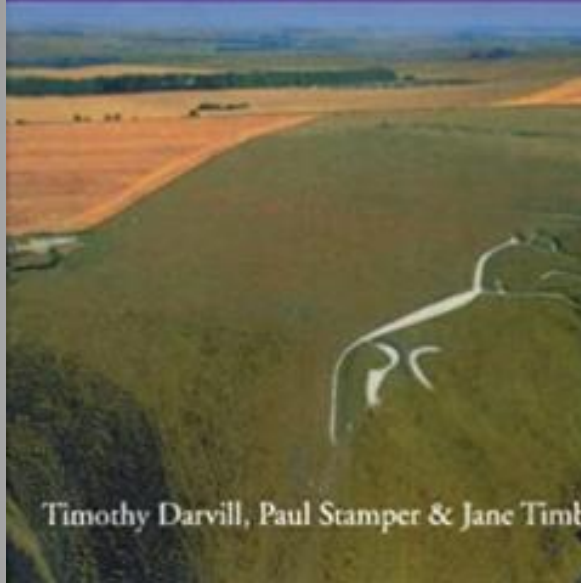
The majesty of Stonehenge now, and how it may have looked to those who used it as a cathedral, burial place, observatory and landmark up to 4,000 years ago, its age is uncertain, but some authorities put its earliest form, a simple, circular, wooden building surrounded by a ditch and a few stone posts, as early as 2800 BC. Around 800 years later, it could have looked more or less complete; but it seems that reconstruction and refinement took place over a further 800 years. The largest stone upright is 21 feet (6.5 m) high and sunk 8½ feet (2.5 m) below the ground. The larger blocks are sarsen sandstone, the smaller granite 'blue' stones.

THE WESSEX DOWNS



Oxford
Archaeological
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England



Timothy Darvill, Paul Stamper & Jane Tim

Oxford
Archaeological
Guides

Scotland

*The travel guide
to over 200 sites
with maps,
plans, and
photographs*

128 Scotland

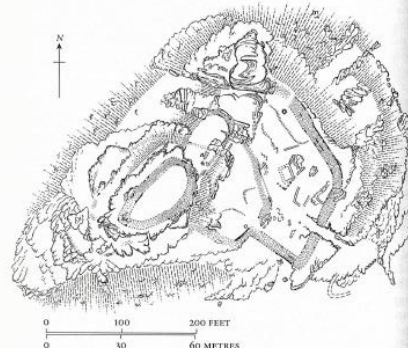
There are two rock outcrops with simple cupmarks, cup-and-ring markings, some with gutters from the centre. The markings are of importance in themselves, but it is also important to appreciate the placing of the site within the wider landscape with extensive views to the south.

Dunadd Fort, Kilmartin

NR 873935 Follow the signposts from the A816, 1.5 m. N. of Kilmichael Glassary, park in the indicated area, and walk to the summit of the hill along the official path.

The rocky mass of Dunadd rises abruptly from a flat valley floor, an ideal site for a fort that was one of the strongholds of the kingdom of Dalriada. The plan should help to orientate the visitor and an evocation of Heroic society may help to explain the importance of such high-status sites. What we see now are the stout stone walls within which timber halls and roofed buildings would offer a robust residence and workshop area for a Dark Age magnate. The lowest terrace would have had a strong timber gateway half-way along the defile that leads to the interior. There was clearly industrial activity on the next terrace for metalworking finds include crucibles and moulds, implying activity in the C8 and C9 AD. The terrace immedi-

Y Plan of Dunadd fort (RCAHMS)



Argyll and Bute 129



A View of the fort at Dunadd (RCAHMS)

ately below the summit has unusual carved rock surfaces. There is a large rock-cut basin and about 2 m. NE of the basin a shallow footprint and an incised boar. There is also the modern incised head and shoulders of a man smoking a pipe with the inscription King Fergus. Farther to the north there is another footprint and an ogham inscription, the reading of which remains obscure. While there is little doubt that the identification of Dunadd as the capital of Dalriada by W. F. Skene increased archaeological interest in the site in the first quarter of the C20, the scant resultant evidence should be linked with the tales of the Heroic Age in Ireland and the visitor should try to see the site as one of the centres of a complex of sites supported by considerable sea-power and inter-family authority and loyalty.

Kintraw Cairns and standing stone, Ardfern

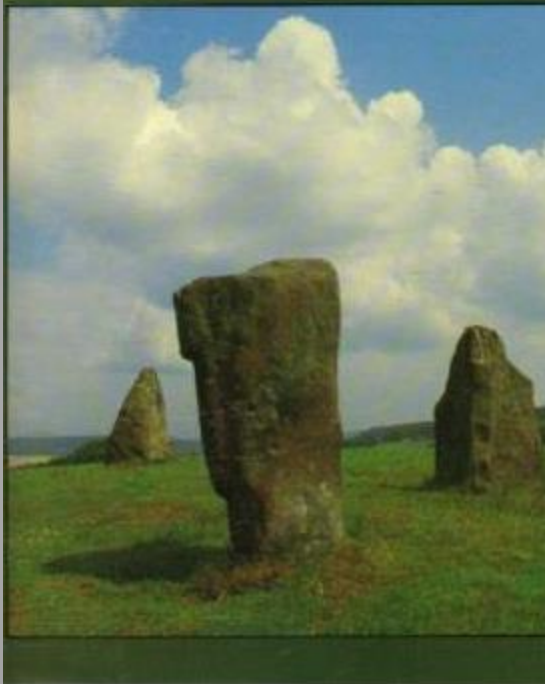
NIM 830049. The site is situated by a sharp bend on the A816 at a point 1 km. SE of the road junction to Ardfern. Park very carefully to view the cairns and associated standing stone in a field to the E. of the road.

The cairn is a dramatic monument set on a terrace with wide views down Loch Craignish, a position that emphasizes the sense of location that is so often a feature of Highland archaeology. It is some 15 m. in diameter and almost 3 m. in height. When excavated in 1959-60 a setting of stones on the SW side with two stones at right angles to the kerb with a massive slab



Jacquetta Hawkes

Photographs by Jorge Lewinski



THE SHELL GUIDE TO BRITISH ARCHAEOLOGY

these are male and female symbols. Beaker burials were found at the foot of 4 of the stones.

This avenue has been restored at its s end adjoining the main temple. Towards its s end, at West Kennet village, it bends s and climbs the hill beside the A4 to Overton Hill, ending in the site known as The Sanctuary. (For an account of its destruction, see p. 101).

The Sanctuary, beside the Ridgeway above the river Kennet, appears first to have been a round wooden house, probably used for ritual purposes at the end of the New Stone Age. Its position was indicated by 6 concentric rings of postholes, now marked by concrete pillars. It is possible that this was not a building but circles of free-standing posts. The wooden construction was succeeded by a double circle of sarsen stones, now marked by rectangular concrete blocks, the outer one about 40m in diameter. Against one of the stones of the inner circle was the grave of a young man with a beaker beside him. There is a group of round barrows, perhaps later in date, to the north of The Sanctuary.

In Stukeley's day (p. 10), a second avenue led from the s entrance of the Avebury temple to the Longstones w of Beckhampton (SU489695). Two of these now survive: a crouched Beaker burial was found beside one of them.

The Avebury temple must date from the second half of the 3rd millennium BC, perhaps to a few centuries before the construction of Stonehenge I. The Avenue and the stone circles of The Sanctuary were certainly the work of the Beaker Folk.

Barbury Castle Hillfort Iron Age



who probably added them early in the following millennium.

Barbury Castle Hillfort Iron Age
 of Wootton 175(SU449763)
 From the Ridgeway or road s from BU995 towards
 Blandford Down Slightly north.

An impressive egg-shaped fort of 4.7ha, on the edge of the Marlborough Downs, it has 2 strong ramparts and deep ditches, with an unturned entrance on the s, and an eastern entrance with a curved outer earthenwork. From the air, traces of huts and storage pits can be seen inside the fort, and Iron Age jewellery and chariot fittings have been found. Finds in Devizes Museum. The Ridgeway follows the edge of the downs, passing just s of (and below) the fort on its way to Avebury (qr).

Battlesbury Hillfort Iron Age
 Warmistoe 184(ST898456)
 s of A4, from Sack Hill. 2 also s of Warmistoe
 Just s of Beaton Castle (qr) and 1.6km s of
 Southbury (qr).

This oval fort of 9.7ha, dominating the Wyke valley, has a double rampart with a ditch in between, and triple defences on the more vulnerable w side. There are entrances on the s and sw, with outworks. Skeletons of men, women and children found outside the s entrance may represent a war cemetery. Storage pits inside the fort have yielded pottery, spurs, whetstones, slingstones, animal bones and iron tools. Finds in Devizes Museum.

Bratton Castle Hillfort New Stone/Iron Ages
 of Bratton 184(ST901516)

Just s of BU996, above Weatherly White Horse. Just s of Battlesbury (qr). *HEMSE.*
 A rectangular hillfort of 10ha with superb views, it has a single bank and ditch, but double defences on the more vulnerable s. The entrances at the s and w have outworks, and the modern road runs through them. Querns and slingstones have been found in the fort, which also contains a New Stone Age long barrow, 70m long and 3.7m high at its s end, where charred human skeletons were found.

The white horse below the fort used to face the other way, but was remodelled in 1778. It may have originated in 878 to celebrate a victory by King Alfred.

Cow Down Round Barrows Bronze Age
 s of Collingbourne Ducts 184(SU229515)
 Just w of junction of A338 and A342 s of Nail
 Down (qr).

Thanks to ploughing, vegetation and vehicle tracks, this linear cemetery is not in the best of condition. It comprised 12 hand barrows and a disc barrow in 2 lines running s-sw. Many cremations were found in them. Finds in Devizes Museum.

Durrington Walls Henge and Woodhenge Monuments New Stone Age

Durrington 184(SU150437; Woodhenge 152432)
 A343 from Netberston s to Avebury runs through
 Durrington Walls. Woodhenge is just s of A345 and
 the river Afton.

Durrington Walls is an enormous henge, 520m across and 12ha in area. Its flat-bottomed ditch was 6m deep, over 18m wide at the top, and the external bank may have been 27m wide, and is still 1m high. There are entrances on the s and sw; hundreds of deer-antler picks have been found, including many by the s entrance, and it has been estimated that the henge must have involved 900,000 man-hours of work. Radiocarbon dates average 1950-2000 BC. Excavation of part of the henge revealed a timber structure just inside the s entrance, comprising 6 concentric rings of postholes, which was rebuilt several times. Its door faced the henge entrance. Further s was another circle of posts and an avenue of postholes leading from it through a horn-shaped facade of timbers. There were no doubt many more such structures inside this henge, and just the larger of the 2 that are known must have used up 3.5ha of natural oak forest. Halls of them may have been roofed buildings like the one at Woodhenge. There is little to be seen of the site today. Finds in Salisbury and South Wiltshire Museum.

Woodhenge, 91m to the s, was discovered from the air in 1928. Its ditch, almost 50m in diameter and 1.8m deep, has an external bank, and an entry on the s. Inside are 6 concentric oval settings of postholes, which are now marked by concrete pillars. It may have been a roofed building with an open centre, or perhaps just a series of decorated posts. A small cairn now marks the spot where a grave was found containing a 3-year-old girl who died of a fractured skull. Some postholes contained treeless chalk axes. The site, whose name was given in jest, has produced radiocarbon dates of c. 1840 BC, and is therefore slightly later than Durrington Walls. Finds in Devizes Museum.



Durrington Walls, Wiltshire
 (after G. Wainwright)

Figbury Rings Hillfort Iron Age
 184(SU188338)

Wiltshire
 Track s from A30. Slightly west, National Trust.
 This circular fort of 0.6ha has a single rampart, still up to 5m high and 12.8m wide, and an external v-shaped ditch, over 10m wide and over 4m deep. There are entrances on s and w. A second ditch inside the fort is clearly unfinished, but it is not known whether it is earlier or later than the fort, which probably dates to the 5th or 4th century BC. It may have been dug to obtain more chalk for the rampart. A Bronze Age sword was found here in 1704. Finds in Devizes Museum.

Pyfield and Overton Downs Celtic Fields Iron Age

Pyfield region 175(SU1442710)
 s of A4, s of Marlborough. *Devizes de Wiltshire Nature Conservancy Council* reserve. *National Trust.*

In this landscape, one can still see many great sarsen stones, like those used in the prehistoric monuments, scattered over the chalk downs. Rectangular 'Celtic fields' can also be seen, with hynchet banks up to 5m high, and at SU128715 there is a sarsen that was used for polishing stone axes.

At SU129706 is the Overton Down experimental earthwork, built in 1960 to study the efficacy of prehistoric tools, and the effects of time and weathering on the mound itself and on materials buried inside it. There are plans to cut through the mound after 2, 4, 8, 16, 32, 64, etc. years.

A guide to the Prehistoric and Roman Monuments in England & Wales

A New Edition
Revised and with new Illustrations

Jacquetta Hawkes



Chapter Three

THE SOUTH-EAST

A. SURREY AND KENT B. THE SOUTH DOWNS

I ought to begin with London. Now, as in Roman times, our system of communications is designed to make every traveller start from London, and perhaps one ought not to leave a place without first looking at it. Nevertheless, I am chiefly concerned to guide those who wish to enjoy the remains of the prehistoric past in the countryside, and although I shall never ignore Roman antiquities when they are encountered, it is hardly part of my purpose to seek them out from under the accumulation of modern cities. A few words, then, about *Londinium*, and I shall feel free to leave the capital behind.

Although the Thames made one of the most-used thoroughfares all through prehistoric times, again and again giving immigrants access to the heart of the country, its lower reaches were too closely hemmed in by forest to be attractive for settlement. There were prehistoric waterside dwellings, but nothing which has left visible structural remains.

It was not until Roman times and the beginning of the shift from the hills that the importance of this lowest crossing-place of the Thames could develop. Merchants began to settle there immediately after the conquest, and, after Boudicca's bloodthirsty revolt had destroyed both towns, the capital seems to have been shifted there from Colchester. The stone walls, however, were not added until after the middle of the second century; they were built of Kentish Ragstone with bonding courses of the characteristic thin red bricks of the Romans; there was a stone plinth at the base projecting on both inner and outer faces. They enclosed some 326 acres with an external ditch running at a distance of about twelve yards from the foot of the wall. These walls are almost all that remains to be seen outside museums and are therefore all that concern us now. The trading city, which nearly two thousand years later was for a time to be the commercial capital of the world, was first built on two small gravel-topped hills separated by Walbrook and immediately to the east of the Fleet. The walls raised round it continued to contain London throughout medieval times, though con-

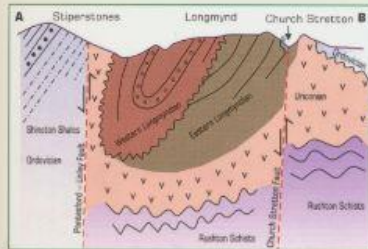
stantly altered and raised as the ground level crept up with the mounting rubbish of the centuries. Even now the heart of the City of London lies within their lines. The names of Newgate, Aldersgate, Cripplegate, Bishopsgate and Aldgate still mark the Roman gateways. Moorgate may have been another. The roads entering from the south crossed a bridge rather to the east of the present London Bridge. Material remains are pathetically meagre and sometimes unattractive; large parts of the walls were pulled down in the eighteenth century by the Commissioner of Sewers and very much more has gone since. Part of the original wall can, however, be seen at the Tower of London where a short stretch is visible behind the ruin of the Wardrobe Tower and a more impressive section of wall, preserved in a sunken garden, can be visited to the north of the Tower on the opposite side of Tower Hill. One relic of particular interest, set into a modern wall in the car park behind Tower House, is a reproduction of the inscription from the tomb of a Roman Procurator of Britain, C. Julius Alpinus Classicianus. Classicianus deserves to be remembered, for it was his intervention that halted the brutal policy of retribution against the native population after the Boudiccan rebellion.

With determination and a map it is possible to trace the circuit of the Roman wall catching occasional glimpses of the original structure in Cooper's Row, Trinity Square, No. 1 Crutched Friars, 36 Jewry Street, Sir John Cass College, the underground car park at the west end of London Wall, and St. Alphage's Churchyard. In several places the wall is preserved only at basement level, sometimes on private property, and as such is not generally on view to the public unless permission has been obtained beforehand. At Cripplegate and below the building of the General Post Office in King Edward Street bastions survive, the massive semicircular towers that were added to the walls at various times against the threat of barbarian raids. Indeed their very composition reflects the emergency of the time, for those on the east were roughly built with fragments of demolished buildings, broken statuary, tiles, tombstones and other waste materials—a reminder of urban life in decay.

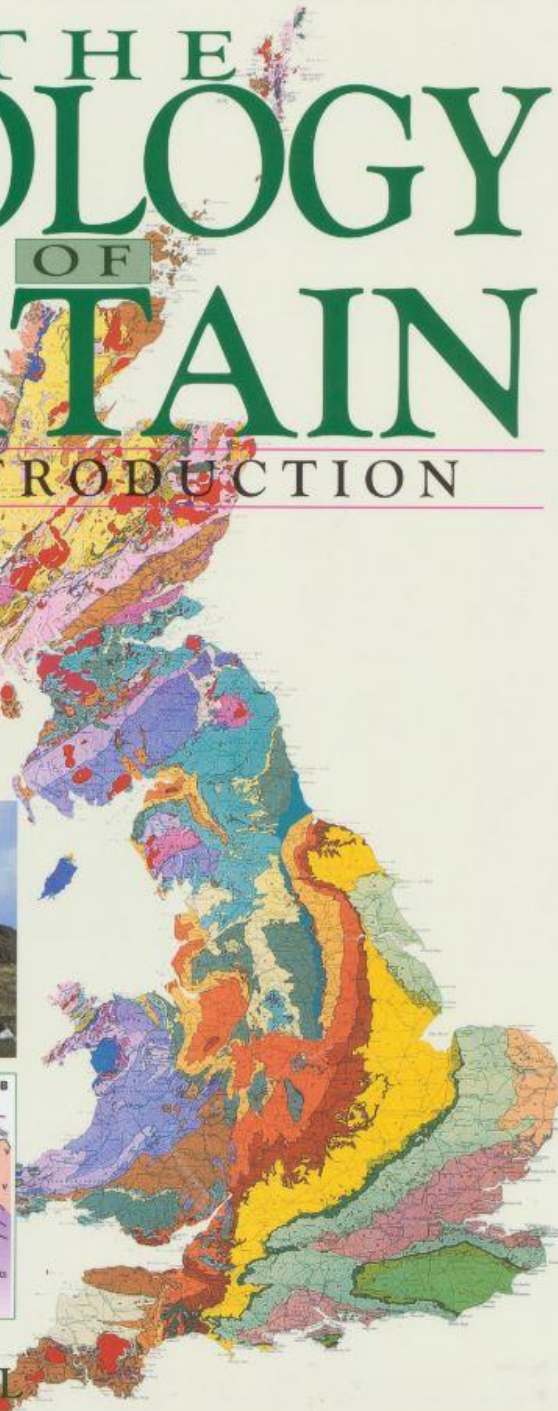
As for the great public buildings and the private houses of the Roman capital, although their foundations are often struck at depths between ten and twenty feet below the modern ground level, practically nothing remains to be seen. The most important of them, the basilica or town hall, centre of *Londinium's* civic life, lies partly under Leadenhall Market; the best-known private house was found in Lower Thames Street where part of the walls and central heating system are preserved in the basement of the Coal Exchange.

THE GEOLOGY OF BRITAIN

AN INTRODUCTION



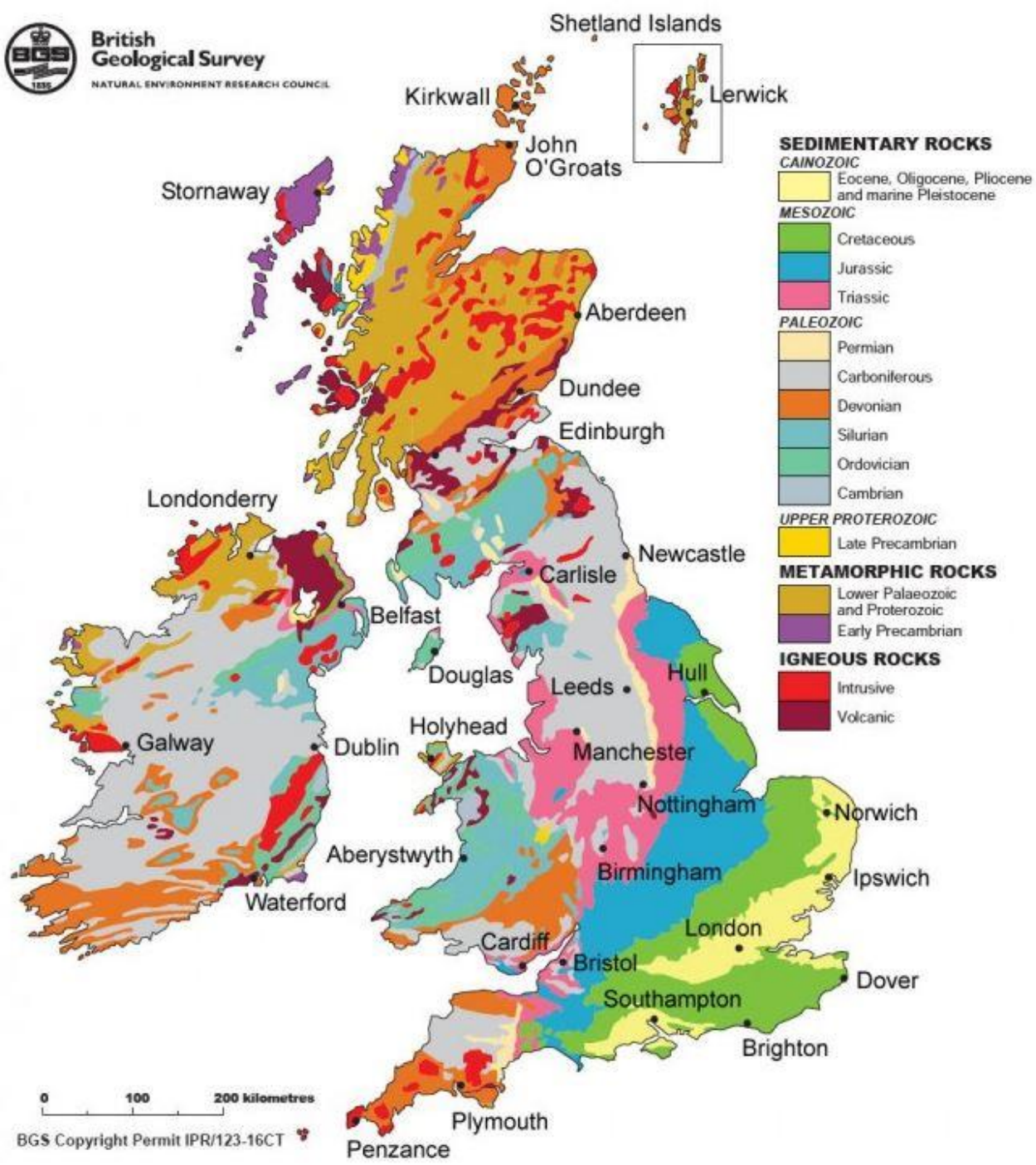
PETER TOGHILL



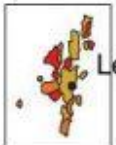
78: James Hutton's "aha!" moment: the beginnings of modern geology.



FIG. 4. Unconformity at Siccar Point, Berwickshire, first described by Hutton in 1795. TOP PICTURE: The classic view with gently dipping Upper Old Red Sandstone rocks resting on steeply dipping Silurian greywackes. (Copyright, Landform Slides.) LEFT: View from the south showing a thicker cover of Old Red Sandstone.



Shetland Islands



Kirkwall

Lerwick

John O'Groats

Stornaway

SEDIMENTARY ROCKS

CAINOZOIC
Eocene, Oligocene, Pliocene and marine Pleistocene

MESOZOIC
Cretaceous
Jurassic
Triassic

PALEOZOIC
Permian
Carboniferous
Devonian
Silurian
Ordovician
Cambrian

UPPER PROTEROZOIC
Late Precambrian

METAMORPHIC ROCKS
Lower Palaeozoic and Proterozoic
Early Precambrian

IGNEOUS ROCKS
Intrusive
Volcanic

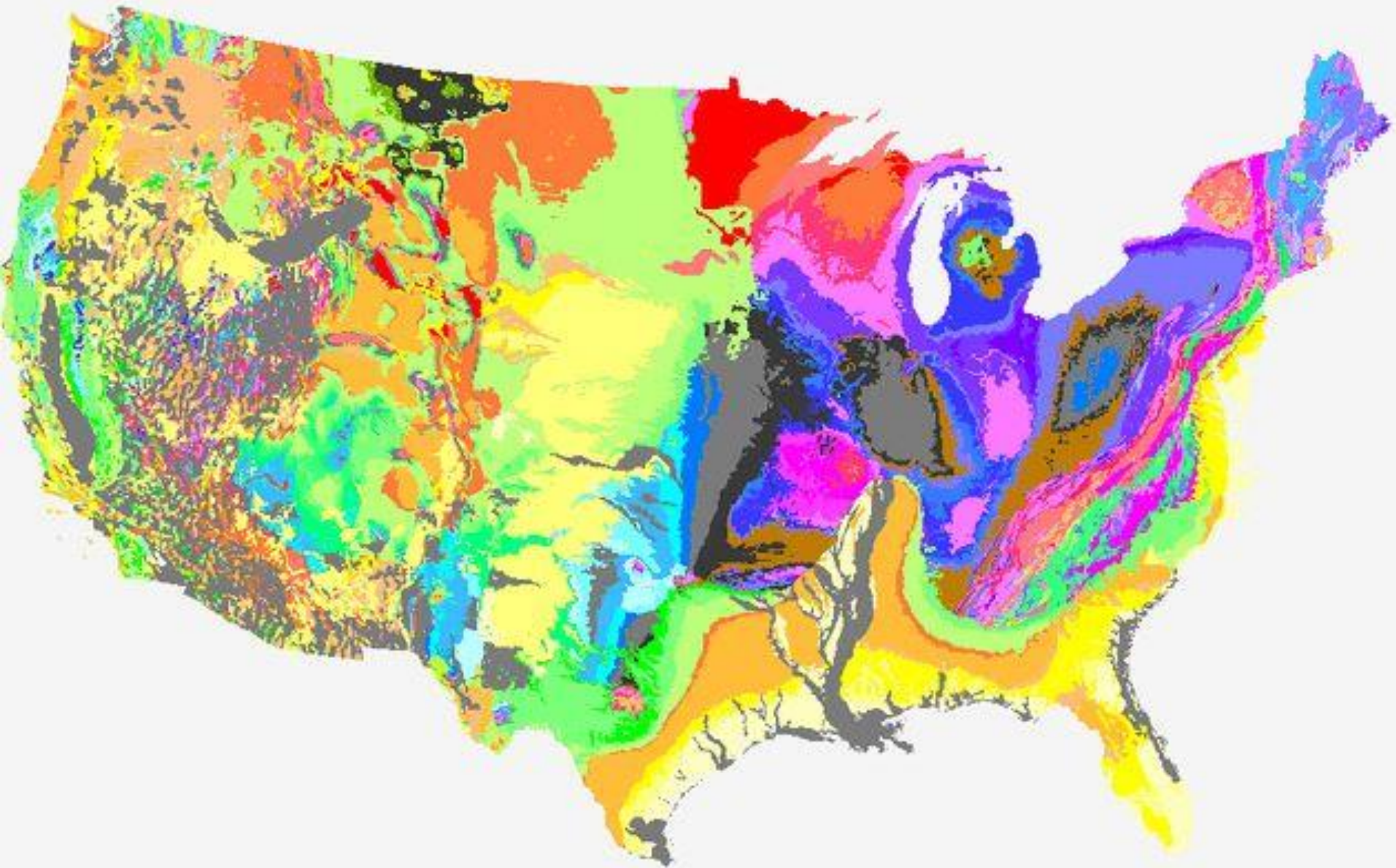
0 100 200 kilometres

Geological Map of Western Europe

(Modified after Kirkaldy, 1967)

- Quaternary Drift
- Tertiary
- Cretaceous
- Jurassic
- Triassic and Permian
- Coal Measures
- Lower Carboniferous to Cambrian
- Crystalline Rocks of Pre-Cambrian and Later age
- Tertiary Volcanic Rocks



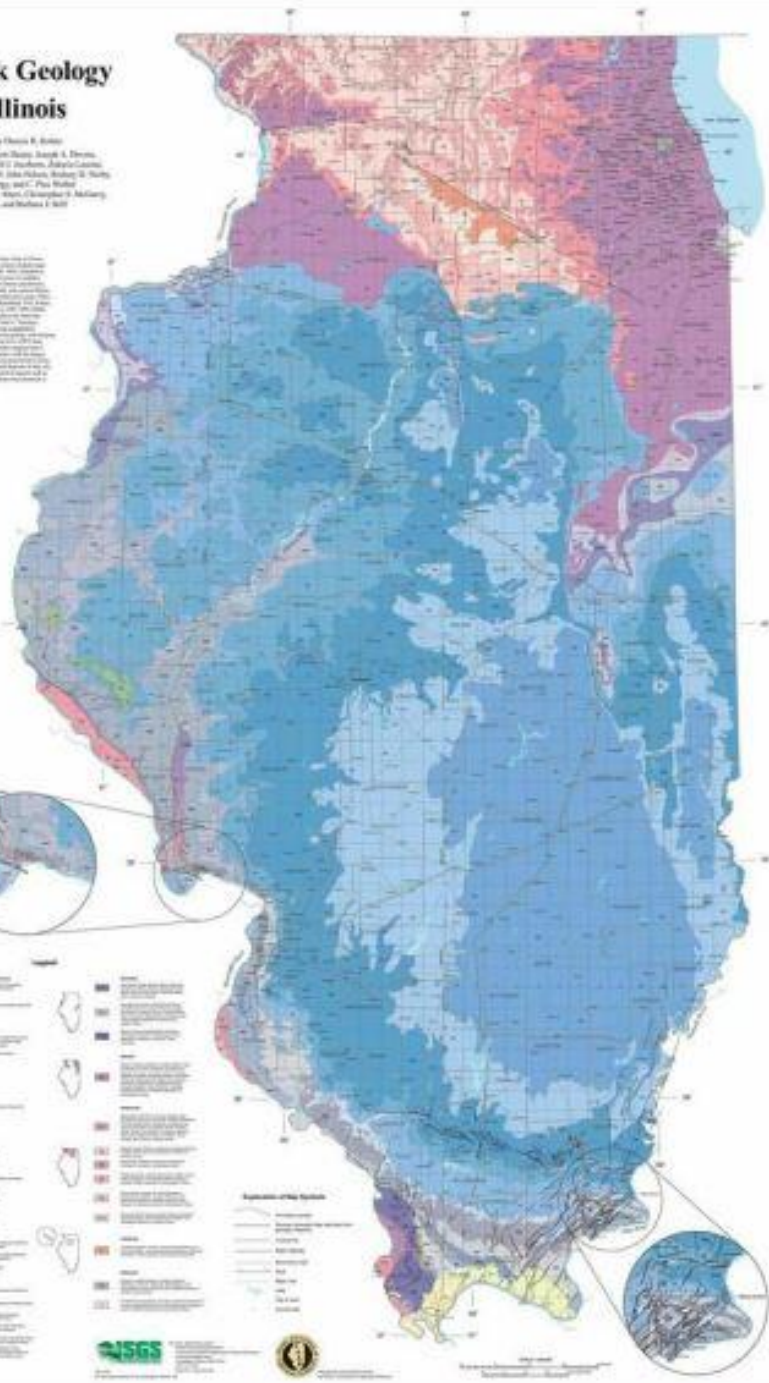
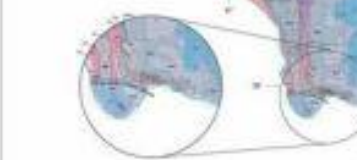


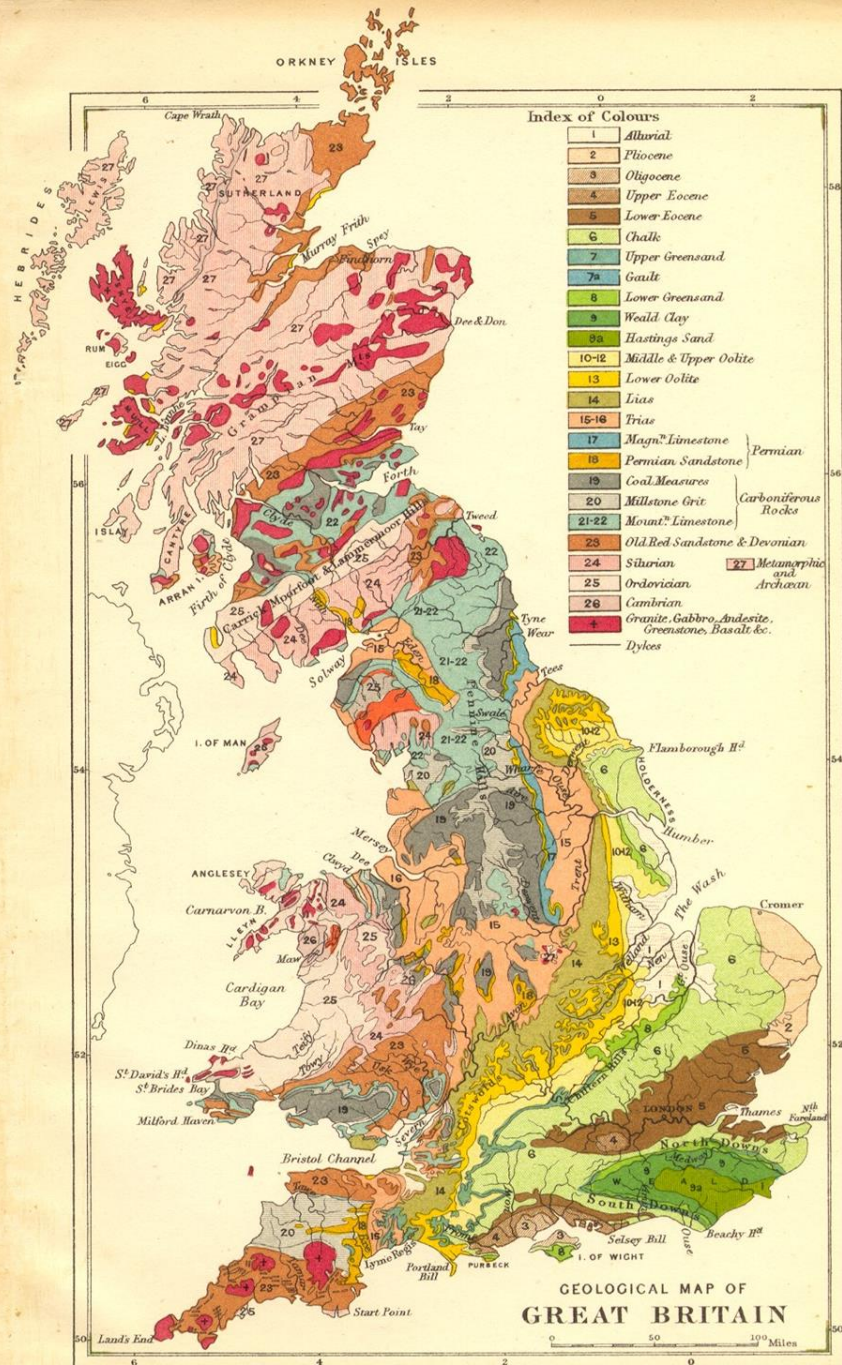
Bedrock Geology of Illinois

Compiled by Thomas R. Baker
Contributors: T. Mark Galloway, David A. Dwyer,
Robert E. Shover, Ronald F. Anderson, John G. Cooper,
Christopher S. Wilgus, W. John Wilson, Andrew G. Durr,
John E. Thompson, and C. Paul Weber
Copyright © 1998 by the Illinois Geological Survey,
State Museum, and University of Illinois

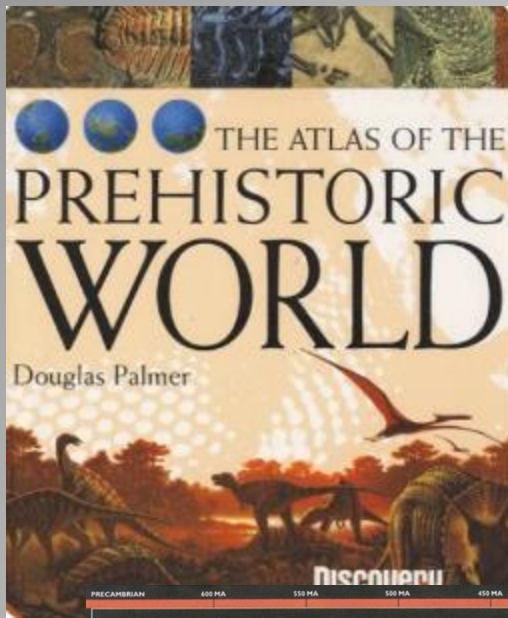
This map is a compilation of bedrock geologic maps of Illinois. It is based on the work of many geologists who have mapped the bedrock geology of Illinois over the years. The map is a compilation of maps published by the Illinois Geological Survey and the United States Geological Survey. The map is a compilation of maps published by the Illinois Geological Survey and the United States Geological Survey. The map is a compilation of maps published by the Illinois Geological Survey and the United States Geological Survey.

Area Shaded on Map





After Horace B. Woodward (1904), Stanford's Geological Atlas, based on Reynold's Geological Atlas of 1860 and 1889. Ian West, 2000.



LATER CRETACEOUS TIMES

1. FROM CALIFORNIA TO ALASKA
Subduction (movement of ocean crust down into the Earth's mantle at a plate boundary) continued on the west coast of the Americas. A terrane (fragment of continental crust) collided with the west coast of North America in the region of Big California. It was then forced northward along the western edge of North America. Some terranes have been moved as much as 1,000 miles (1,600 kilometers) by such faults, ending up in Alaska.

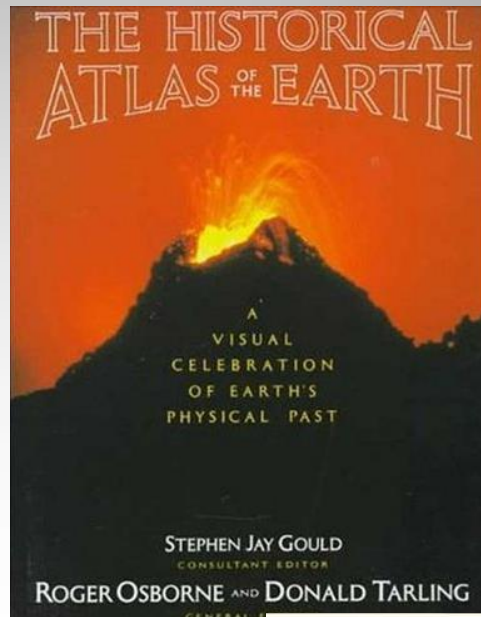
2. SEAS ACROSS THE MIDWEST
Sea levels were high during mid-Cretaceous times, and the sea flooded through North America from the Gulf of Mexico to the Arctic Ocean. The formation of the mid-American seaway separated the Rockies in the west from the plains and mountain ranges in the east.

3. OCEAN CONNECTIONS
The Atlantic was connected to the Pacific at its western edge by a tropical seaway between the Americas. At its eastern edge, the Atlantic joined up with the Tethys Ocean. Thus, South America was isolated from North America and Africa was isolated from both Europe and Asia.

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The Permian World

The Earth 290 to 250 million years ago

The Permian period is named after the region around the town of Perm in Russia, where the sequence was first recognized. The coming together of the continents into the great landmass, or supercontinent, of Pangaea culminated during the Permian. The lowest known sea levels occurred at the end of the Permian – perhaps as much as 100 metres (330 ft) below present levels. At the end of the period there was a series of mass extinctions of marine life forms. This marks the end of the Paleozoic era, and the beginning of a new phase in the history of life on Earth – the Mesozoic or ‘middle life’ era.

Climates were more strongly zoned than during the Carboniferous. As new mountain chains were formed, differing climatic regions were created within continents, and regions bordered those lying under the rain-shadows of upland areas. In equatorial regions the Variscan, Appalachian and Mauritanian

mountains blocked the easterly wet equatorial winds, casting a rain shadow over much of central Pangaea. Some tropical regions are known to have been subject to monsoonal conditions as continental areas emerged above sea level. Desert conditions were widespread in the tropical regions. As northern Europe and mid-North America moved northwards, the equatorial coal swamps of the Carboniferous were replaced by deserts and salt inland seas.

As the new supercontinent of Pangaea moved steadily northwards, parts of it remained in south polar latitudes, so that glaciation in the southern continents continued into the Permian. The Gondwana ice cap reached its peak in the early Permian, but then gradually retreated to be replaced by bogs and peat swamps.

The Permian World
At the start of the Permian period the major continental blocks were edging closer, and during the Permian the final piece was put in place in the make-up of the supercontinent of Pangaea. The continent of Angaraland, having rotated through 180°, collided with the eastern margin of Laurentia and Baltica, creating the continent of Laurasia. The continent of Gondwana collided with Angaraland during the late Carboniferous or early Permian. The result of this collision

The two halves of Pangaea, Gondwanaland and Laurasia, were joined in mid-Europe, with the Tethys Ocean stretching away towards the east. The eastern part of Pangaea, which eventually went to make up the continent of Asia, may have comprised as many as 11 separate continental plates. The small continent of Tarn collided with Angaraland during the late Carboniferous or early Permian.

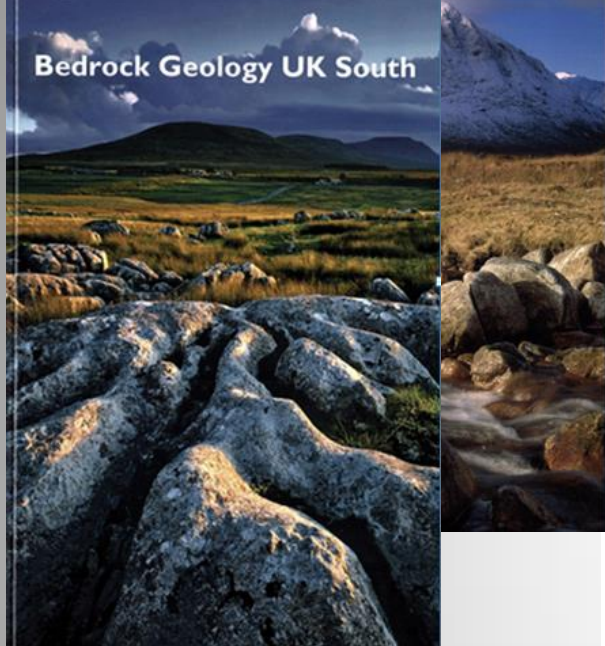
Permian rock types
The Permian period is characterized by the continued enlargement of the land area of the Earth. This led to a diminishing of marine sediments and an increase in other types of sediments. The great rock formation of the Permian in the northern hemisphere is known as New Red Sandstone. This was originally thought to be a strong indicator of desert conditions, but it is now known that red sandstone can be formed in a variety of environments. Nevertheless, hot, arid climatic conditions certainly prevailed over large areas of the continent of Pangaea. The Upper Permian contains more marine formations. Extensive limestone – consisting of magnesium as well as calcium carbonate – and evaporites were formed during repeated excursions of a shallow sea known as the Zechstein Sea across most of Europe. The evaporites are important economic deposits, and were prevalent in the Triassic.

THE PERMIAN WORLD

- ancient continents
- young continental shelf
- ancient mountain chains
- warm ocean
- cold ocean currents
- mountain plate tectonics
- modern coastlines
- modern plate tectonics
- continental movements

Glossophaga
This seed fern, found in South America, Australia, Africa and India, was the dominant flora of the southern continents 290 million years ago. Skilled tracks show growth rings which indicate a seasonal climate.

Titanosaurus
A late Permian reptile with mammal-like characteristics. Probably warm blooded and with hair replacing the scaly scales. Found in southern Africa.



a Neoproterozoic c 600 Ma

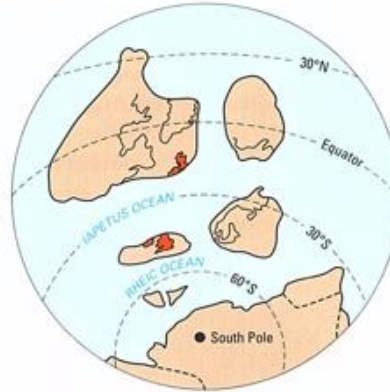


Figure 4 Moving continents: reconstruction of the position of the main landmasses from Neoproterozoic times to Cenozoic. Modern coastlines are included for reference.

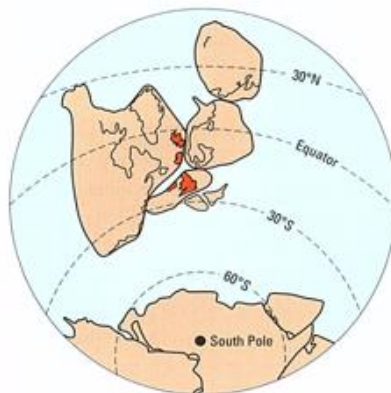
b Early Ordovician
c 480 Ma



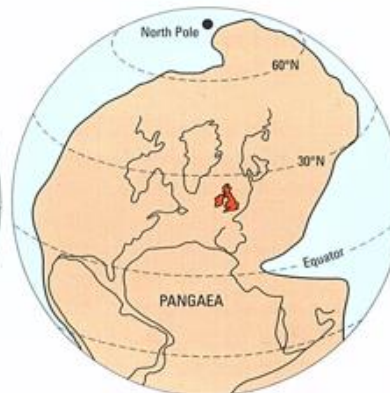
c Late Ordovician c 450 Ma

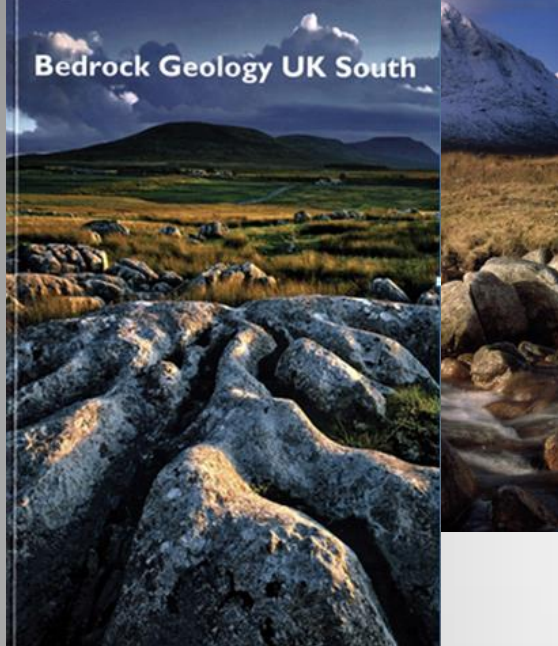


d Silurian-Devonian
c 416 Ma

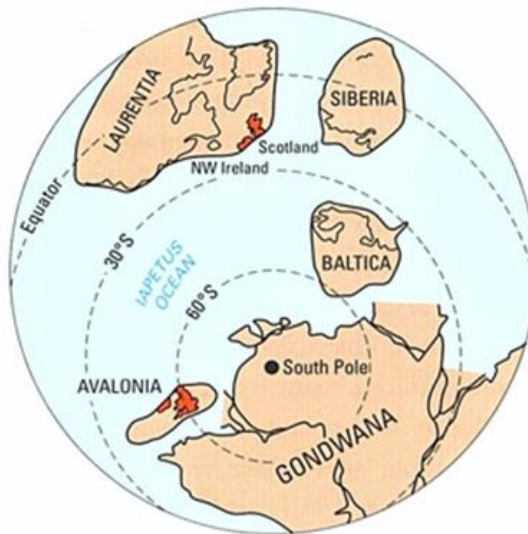


e Permian-Triassic c 250 Ma

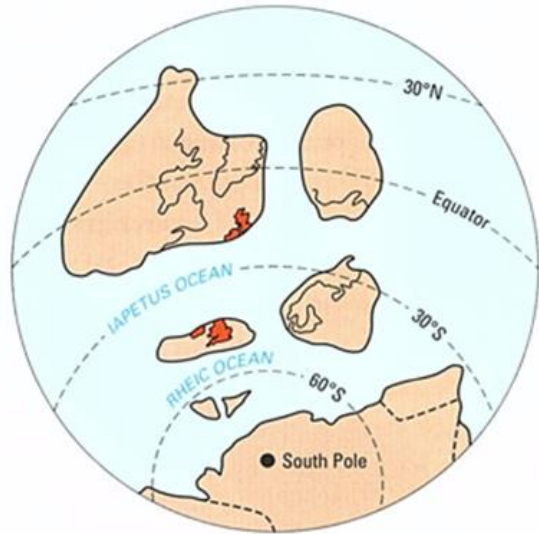




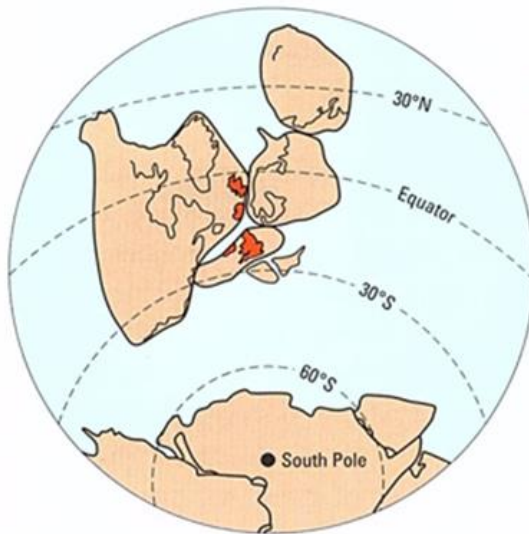
b Early Ordovician
c 480 Ma



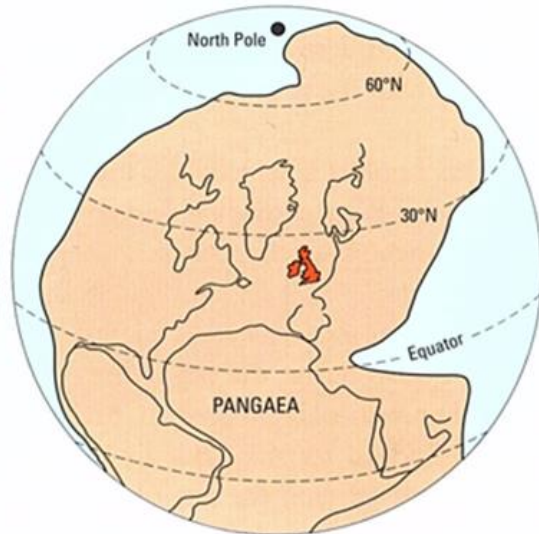
c Late Ordovician c 450 Ma



d Silurian–Devonian
c 416 Ma



e Permian–Triassic c 250 Ma





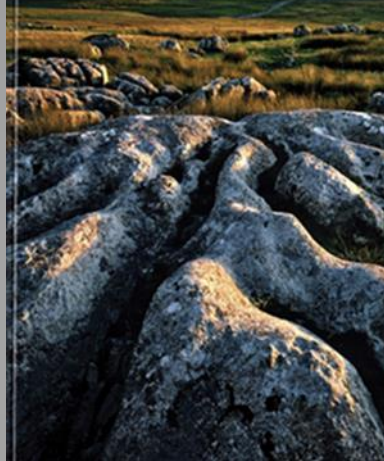
British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL



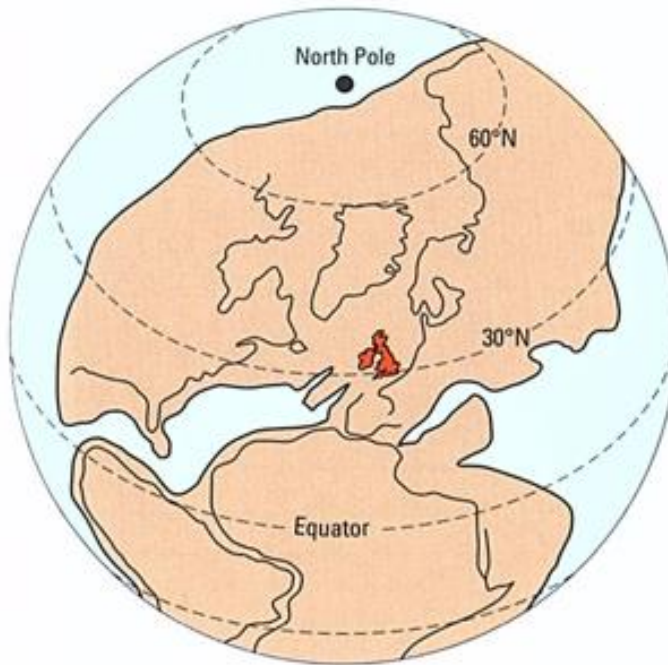
British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

UK North

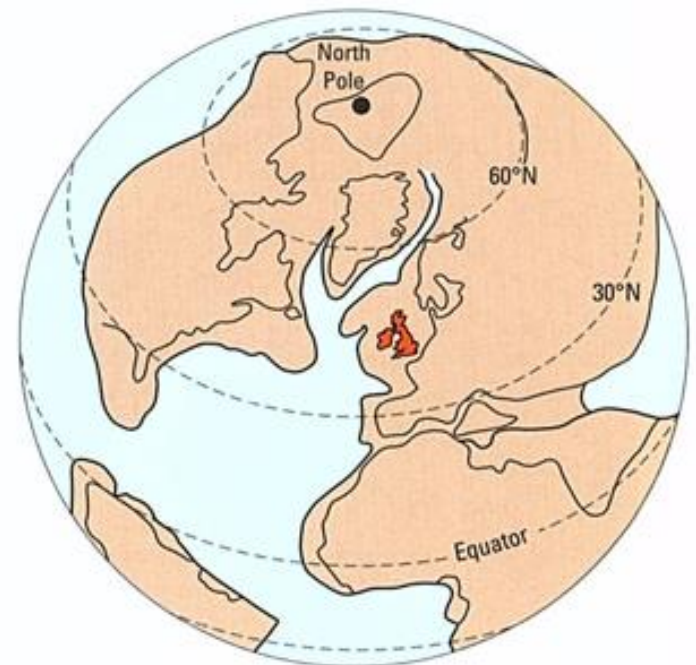
Bedrock Geology UK South



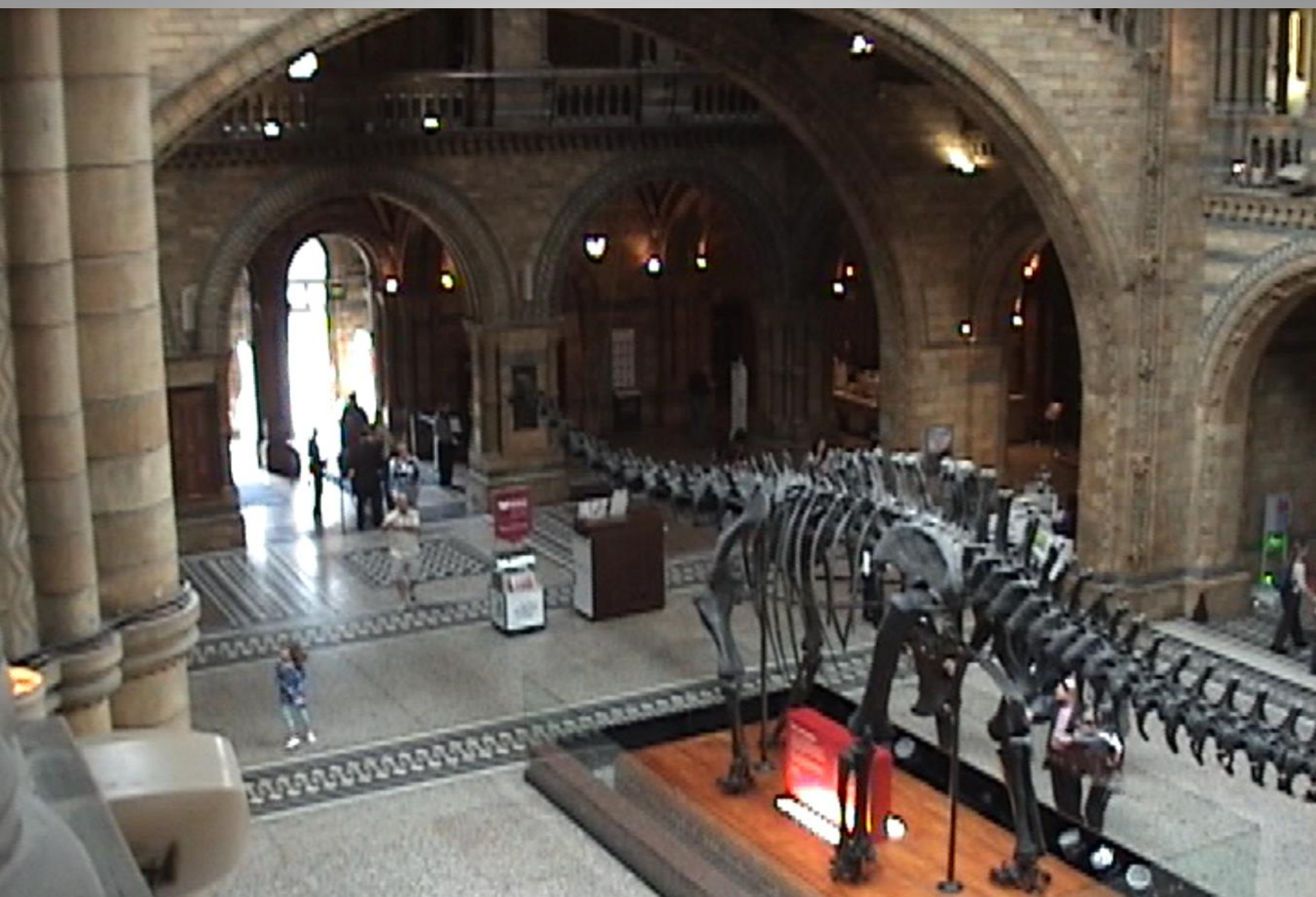
f Jurassic c 150 Ma



g Palaeogene c 50 Ma







Back to the beginning of Britain

a journey from the youngest to the oldest rocks in Britain

P 3
of York

● STOP 4
Derbyshire Pennines

● STOP 1
Hampshire basin

● STOP 2
Dorset coast



Building Britain

This exhibition traces the history of the Earth from its formation to today. Now travel back to the beginning of Britain – about 3,000 million years ago. During this time Britain has been flooded by tropical seas, landlocked in hot dry desert, submerged under steaming swamp forests and frozen beneath thick ice as it has drifted from near the South Pole to northern latitudes.

Follow this journey back in time, from the youngest rocks in southeastern Britain to the oldest rocks in the northwest. Open the cases to see typical rocks and fossils from each geological time period collected along the way.

To find out more about Britain's geology visit *Earth lab* in Gallery 66.

This is a geological map of Britain. The different

KEY

Quaternary

1.75 million years ago to now

Much of Britain's landscape has been shaped by the current ice age.

Tertiary

65–1.75 million years ago

Cretaceous

144–65 million years ago

Jurassic

206–144 million years ago

Triassic

248–206 million years ago

Permian

290–248 million years ago

Carboniferous

362–290 million years ago

Devonian

417–362 million years ago

Silurian

443–417 million years ago

Ordovician

495–443 million years ago

Cambrian

545–495 million years ago

PreCambrian

4,586–545 million years ago

Metamorphic

500–1000 million years ago

1500–3000 million years ago

Igneous

Volcanic rocks

Intrusive rocks



Map produced by Clive and British Geological Survey

The Geological Timetable—the Earth's History

Eons		Eras		Periods / Systems		Epochs / Series		
Phanerozoic	Cainozoic	Quaternary		Holocene	10000			
				Pleistocene	2			
		Neogene	Tertiary	Pliocene				
				Miocene	24			
				Oligocene Eocene Palaeocene		65		
		Mesozoic	Cretaceous		Upper Lower	146		
			Jurassic		Upper Middle Lower	208		
			Triassic		Upper Middle Lower	245		
			Permian		Upper Lower	290		
	Palaeozoic	Upper	Carboniferous		Stephanian Westphalian Namurian Dinantian	363		
			Devonian		Upper Middle Lower	409		
		Lower	Silurian		Pridoli Ludlow Wenlock Llandovery	439		
			Ordovician		Ashgill Caradoc Llandeilo Llanvirn Arenig Tremadoc	510		
			Cambrian		Merioneth St David's Caerfai	544		
	Precambrian (Cryptozoic)	Proterozoic	Neo					Dates in millions of years ago, Ma.
Meso			1000	Precambrian				
Palaeo			1600					
Archaean		Late	2500					
		Middle	3000					
		Early	3400					
Pre-Archaean		3800						
			4600 Ma	Formation of Earth				

FIG. 6. Geological time scale.

a journey

● STOP 3
Vale of York

● STOP 4
Derbyshire Pennines

● STOP 5
Scottish Borders

● STOP 6
Lake District



Vale of York
Permian 290-248 million years ago

Pangea began to break up and new oceans started to form. Britain lay just north of the equator in the middle of a hot, dry desert after buckling landmasses created mountains in southern Britain.

Seas repeatedly flooded and drained low lying areas, depositing layers of salt, shale and limestone. By the end of the period hot, dry desert covered all of Britain.



STOP 3 Vale of York
Triassic 248-206 million years ago

Britain was fairly flat, covered by a series of plateaux and basins. There were several valleys in the dry upland areas. The climate gradually became wetter towards the end of the period and tidal seas lapped over the southern areas of Britain.



STOP 4 Derbyshire Pennines
Carboniferous 362-290 million years ago

Britain drifted across the equator and continued to cross Northwards as part of the supercontinent of Pangea. Swampy wetland covered the northwestern side of England. By the end of the Carboniferous a warm shallow sea flooded all but the highest of land. The Pennines that were deposited here have characteristic steep, jagged and crags of the southern Pennines.

Large logs over 100m formed of sand and mud gradually eroded to form. Beneath the surface they became flat, creating a large reservoir and mud on which dense tropical forest thrived. Swampy drainage and local weathering formed peat bogs that eventually became coal seams.



STOP 5 Scottish Borders
Mesozoic 252-66 million years ago

The landscape of Britain, and the surrounding seas, were fairly flat and covered by a shallow sea. Britain was separated from the rest of Europe by a narrow channel and was a part of the supercontinent of Pangea.



STOP 6 Lake District
Permian 290-248 million years ago

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STOP 6 Lake District
Permian 290-248 million years ago

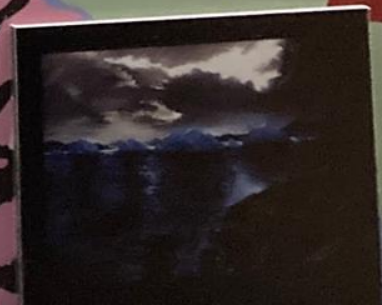
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any more examples of the rich
over Britain.



● **STOP 8**
Northwest
Highlands

● **STOP 7**
Northwest
Highlands





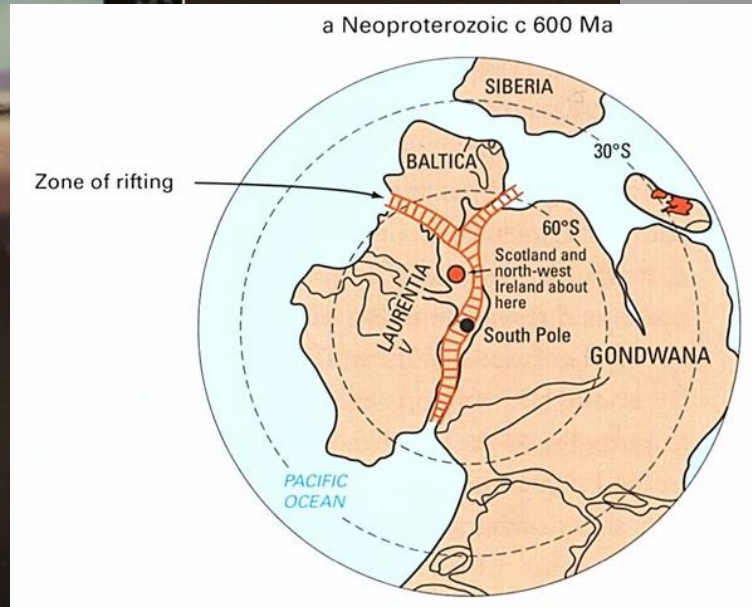
STOP 8

Northwest Highlands

Precambrian 4,560–545 million years ago

The oldest rocks in Britain date back to nearly 3,000 million years ago. Around this time, volcanic eruptions spilled lava and ash over northwest Scotland producing rocks that were repeatedly buried, squeezed and heated during the next 2,000 million years.

Around 1,000 million years ago thick sandstone deposits accumulated when rivers and shallow seas washed over northern Britain.





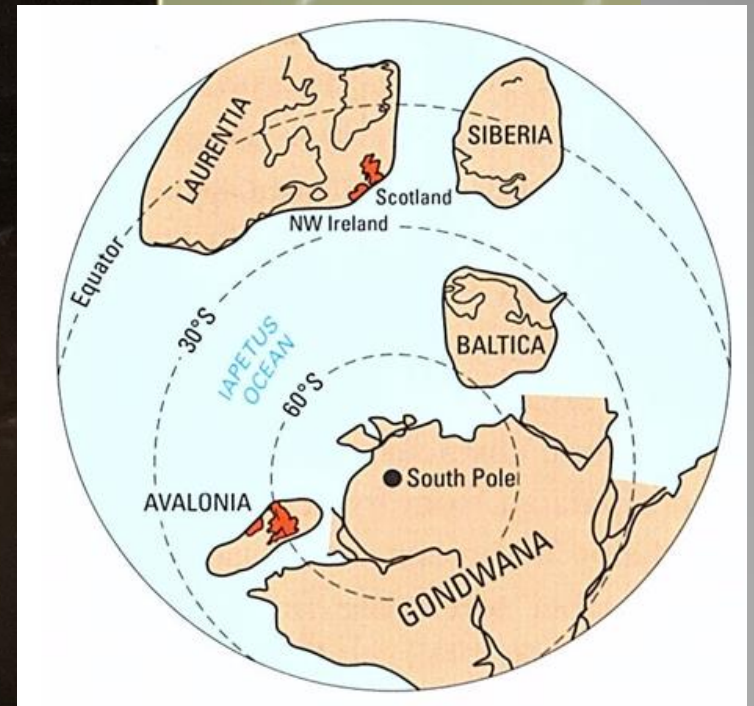
STOP 7

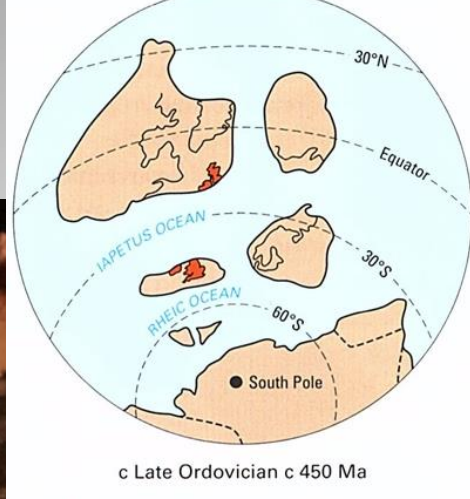
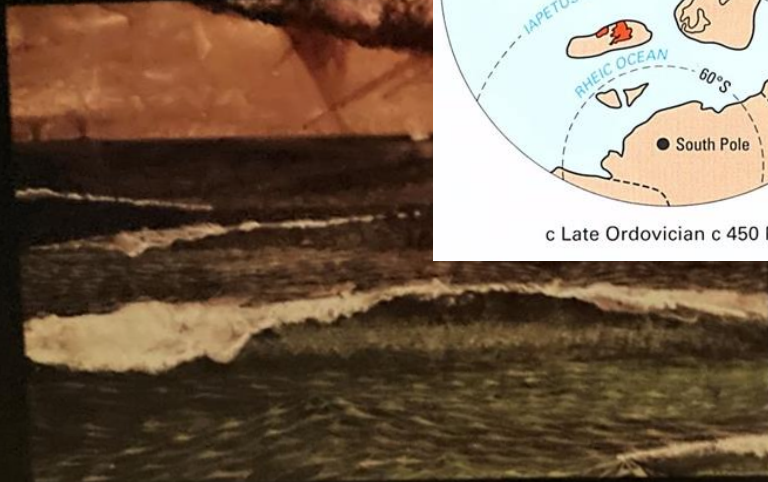
Northwest Highlands

Cambrian 545–495 million years ago

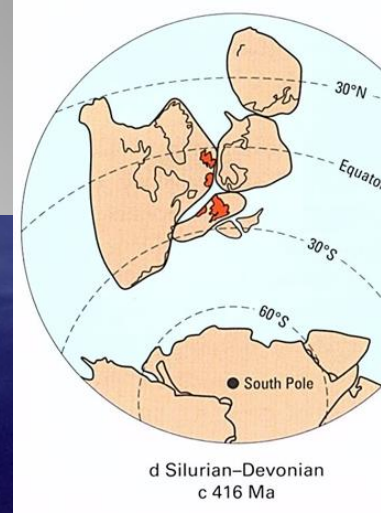
The northern half of Britain formed part of Laurentia and the southern half formed part of Gondwana.

The two landmasses, mostly covered by seas, lay south of the equator and were separated by a wide ocean called Iapetus. A thick layer of sediments was deposited over the two halves of Britain.





c Late Ordovician c 450 Ma



d Silurian-Devonian
c 416 Ma

Lake District

Ordovician 495–443 million years ago

The two halves of Britain were gradually moving together. Southern Britain began to break away from the rest of Gondwana and drift northwards, triggering volcanic eruptions that formed the foundations of the Lake District and Snowdonia.

Large volumes of muddy sediments continued to be deposited by the warm tropical seas that covered Britain. Cooler seas from the South Pole flowed around the edges of southern Britain.

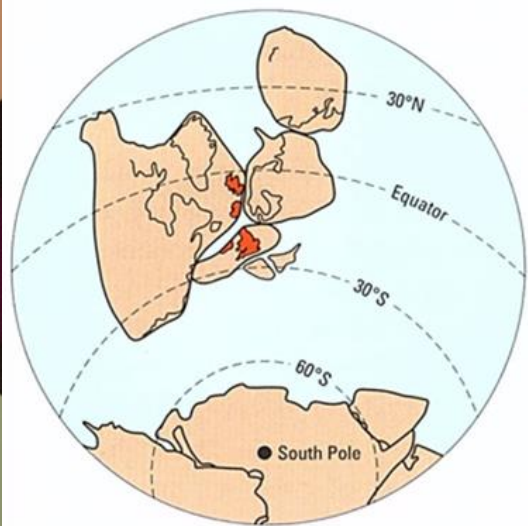
STOP 6 Lake District

Silurian 443–417 million years ago

Large areas of the two halves of Britain were covered by deep water. Thick muddy and sandy sediments were still being deposited in northern Britain, while coral reefs thrived in warm, clear seas across the Welsh borders and southern England.

● STOP 5
Scottish Borders

● STOP 6
Lake District



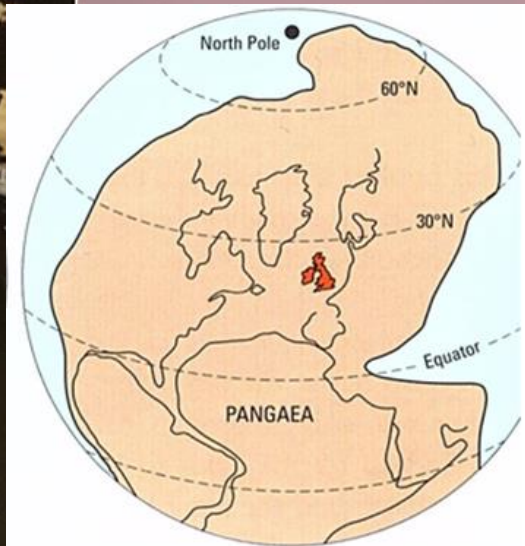
d Silurian-Devonian
c 416 Ma

STOP 5 Scottish Borders

Devonian 417–362 million years ago

The two halves of Britain, and their surrounding landmasses finally joined, creating mountains across Europe and northeast America. Britain was positioned just south of the equator, producing a hot and wet climate.

Most of Britain formed part of the Old Red Sandstone continent. Mountains in the north merged southwards into a large area of coastal plain threaded with rivers that flowed into southern seas. The southwestern tip of England was submerged under a deep sea. Large volumes of pebbles, sands and silts were deposited in the north, while muds, sands and limestones accumulated under water in the south.



e Permian-Triassic c 250 Ma



STOP 4

Derbyshire Pennines

Carboniferous 362–290 million years ago

Britain drifted across the equator and continued to move northwards as part of the supercontinent of Pangaea. Deep sea continued to cover the southwestern tip of England. By the end of the Carboniferous a warm shallow sea flooded all but the highest areas of land. The limestones that were deposited now form characteristic scarps, gorges and caves of the southern Pennines.

Later large river deltas formed of sand and mud repeatedly invaded this area. Eventually the shallow basins became choked, creating large swamps and mudflats on which dense tropical forests flourished. Repeated drowning and burial of the swamp forests produced peat layers that eventually became coal seams



Vale of York

Permian 290–248 million years ago

Pangaea began to break up and new oceans started to form. Britain lay just north of the equator in the middle of a hot, dry desert after buckling landmasses created mountains in southern Britain.

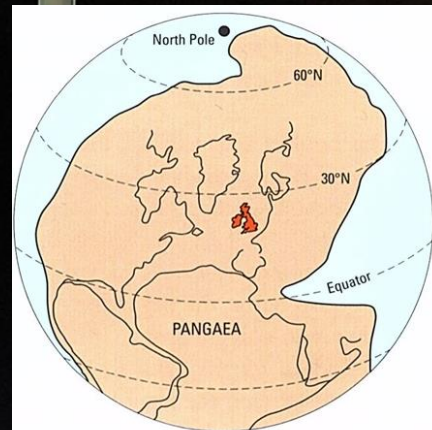
Seas repeatedly flooded and drained low-lying areas, depositing layers of salt, shale and limestone. By the end of the period hot, dry desert covered all of Britain.



STOP 3 Vale of York

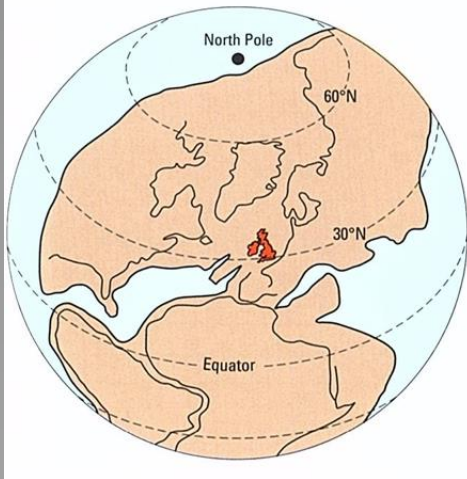
Triassic 248–206 million years ago

Britain was fairly flat, covered by a series of plateaux and basins. There were several valleys in the dry upland areas. The climate gradually became wetter towards the end of the period and tidal seas lapped over the southern areas of Britain.



e Permian–Triassic c 250 Ma

f Jurassic c 150 Ma



Dorset coast

Jurassic 206–144 million years ago

Britain lay in the tropics. Low-lying areas were flooded by warm shallow seas, exposing islands covered with thick vegetation. Limestones and shales were deposited over most of southern England and the south and east Midlands, where they now form characteristic scarp and vale scenery, such as the Cotswolds.

Seasonal planktonic blooms became buried in stagnant mud and later formed oil and gas reservoirs in the North Sea. As the North Atlantic began to open up, Britain gradually tilted upwards in the northwest draining most of the land area and producing salt-lakes, lagoons and mud-swamps in the south.



STOP 2 Dorset coast

Cretaceous 144–65 million years ago

Britain drifted back towards the equator, and the resulting climate became warm and seasonally wet.

At the start of the Cretaceous a large lake spread across southern England. By the time sea level had risen to its highest level in the Late Cretaceous, a warm shallow sea covered almost all of Britain, smothering the land with chalk sediments in the south, and muds and sands in the north.



STOP 1 ●
Hampshire basin

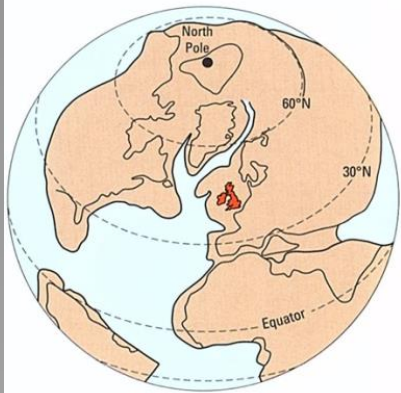
STOP 2 ●
Dorset coast

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g Palaeogene c 50 Ma

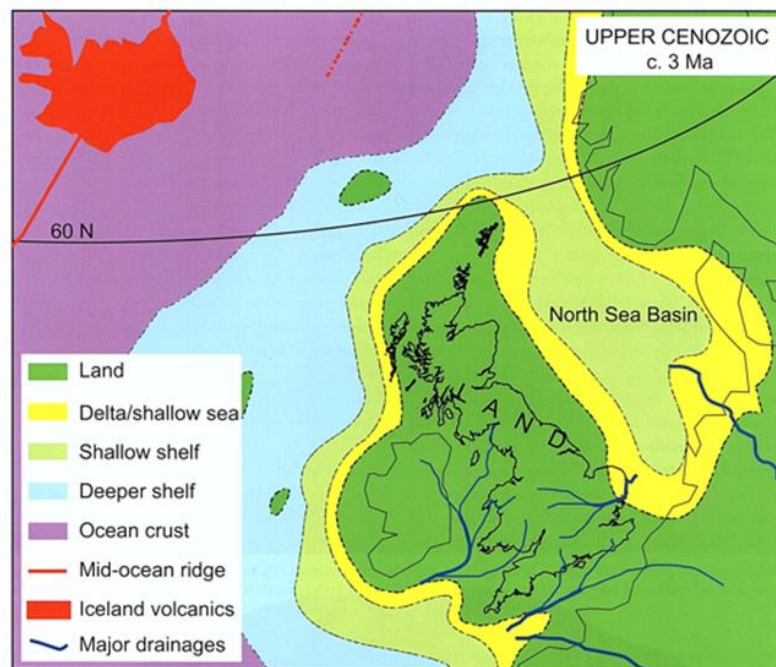


Hampshire basin

Tertiary 65–1.75 million years ago

Triggered by the continued opening of the Atlantic, vast lava flows covered large areas of land in western Scotland and Northern Ireland. A deep marine gulf flooded the southeast depositing a thick layer of sedimentary rocks containing the remains of subtropical plants and animals.

Britain began to drift north again. Uplift in the west and sinking around the North Sea tilted Britain gently to the east. Weaker, more recent rocks on the upland areas were rapidly weathered exposing the older rocks below.



Upper Cenozoic world (Miocene c. 20 Ma)



Figure 7.12 For much of the later Cenozoic period the Island is an uplifted neck of land, a promontory of NW Europe, legacy from Palaeocene rifting 30 million years earlier. Only East Anglia has late-Cenozoic deposits. Data from many sources, chiefly Anderton et al. (1979), Woodcock and Strachan (2000), Torsvik et al. (2002), Trewin (2002), Brenchlev and Rawson (2005).



STOP 1 Hampshire basin

Quaternary 1.75 million years ago to now

The last ice age began 2.5 million years ago but only reached Britain 700,000 years ago. Ice sheets up to 1,000 metres thick spread from the Arctic covering Britain as far as North London in the coldest glacial stages.

Layer upon layer of ice has scraped and scoured the upland areas of Scotland, North Wales and the Lake District, producing craggy sculpted scenery. In lowland areas, such as the English Midlands, moving ice sheets left thick deposits creating smooth, rounded landscape. Melting water at the edges of the ice sheets deposited gravels, sands and clays in lakes and rivers.

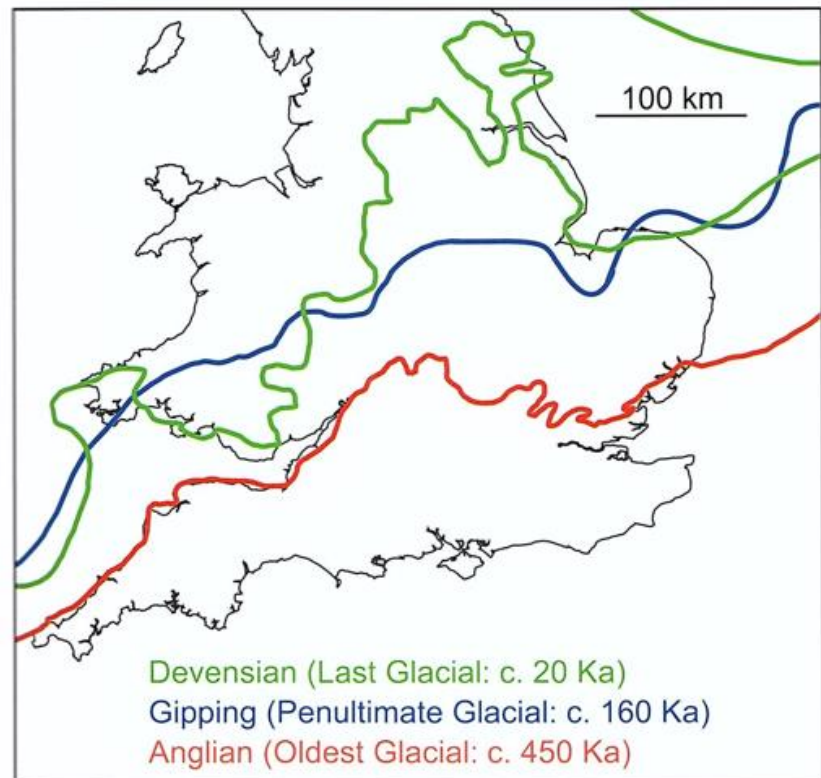


Figure 7.15 At least three major ice advances have overwhelmed the north and midland parts of the Island over the past half million or so years (data after Gibbard and Clark 2011). Each time the ice retreated from a more-or-less well-defined southern limit, shown on this map as coloured lines. The parts of England below the red line have never been glaciated.

QUATERNARY TIMES

THE MOST SIGNIFICANT GEOLOGICAL FORCE IN RECENT TIMES has been the climate. The Quaternary period, from 1.8 million years ago to the present, has been a long ice age. This does not mean that temperatures have remained constantly colder than average. Instead, fluctuating global temperatures have promoted the growth and retreat of polar icecaps, continental ice sheets, and mountain glaciers, with dramatic effects on the landscape. In the coldest periods, so much water was frozen that sea levels dropped by 330 feet (100 meters), turning shallow seas into extensions of the land.

8. GLACIATION IN AUSTRALASIA

The high mountains of Tasmania, New Zealand, and southeast Australia show signs of intense glacial sculpting. Features include U-shaped valleys, cirques (deep semicircular basins), arêtes (sharp ridges of erosion-resistant rock), and horns (peaks formed from the intersection of the walls of three cirques). These provide clear evidence of glaciation during the coldest periods of the last ice age.

1. NORTH AMERICAN ICECAP

The North American ice sheet covered 5 million square miles (13 million square kilometers). Its slow, grinding movement scoured the landscapes of northern Canada down to the bedrock created in the Paleozoic and Precambrian eras. The ice and meltwater ploughed the debris southward, dumping it in formations around the Great Lakes.

2. SCANDINAVIA

The icecap over Scandinavia reached depths of 2.5 miles (4 kilometers), compressing the land beneath. Coasts now lifted clear of the sea show that Scandinavia has "rebounded" upward since the ice melted.

3. EURASIAN ICECAP

The interior of the Eurasian landmass had a climate that was too dry to support a large build-up of ice. Icecaps and sheets were restricted to the coasts and mountains of northwest Europe and a strip along the Arctic coast of Siberia. The total volume of ice and snow is estimated to have been about 4 cubic miles (17 cubic kilometers).

WHOLE WORLD PROJECTION



4. MAMMOTH TUNDRA

The vast interior of northern Asia was permanently frozen, but largely free of thick layers of snow and ice. Summer surface melts allowed vegetation to flourish, feeding large migratory herds of mammoth.



7. BERING LAND BRIDGE

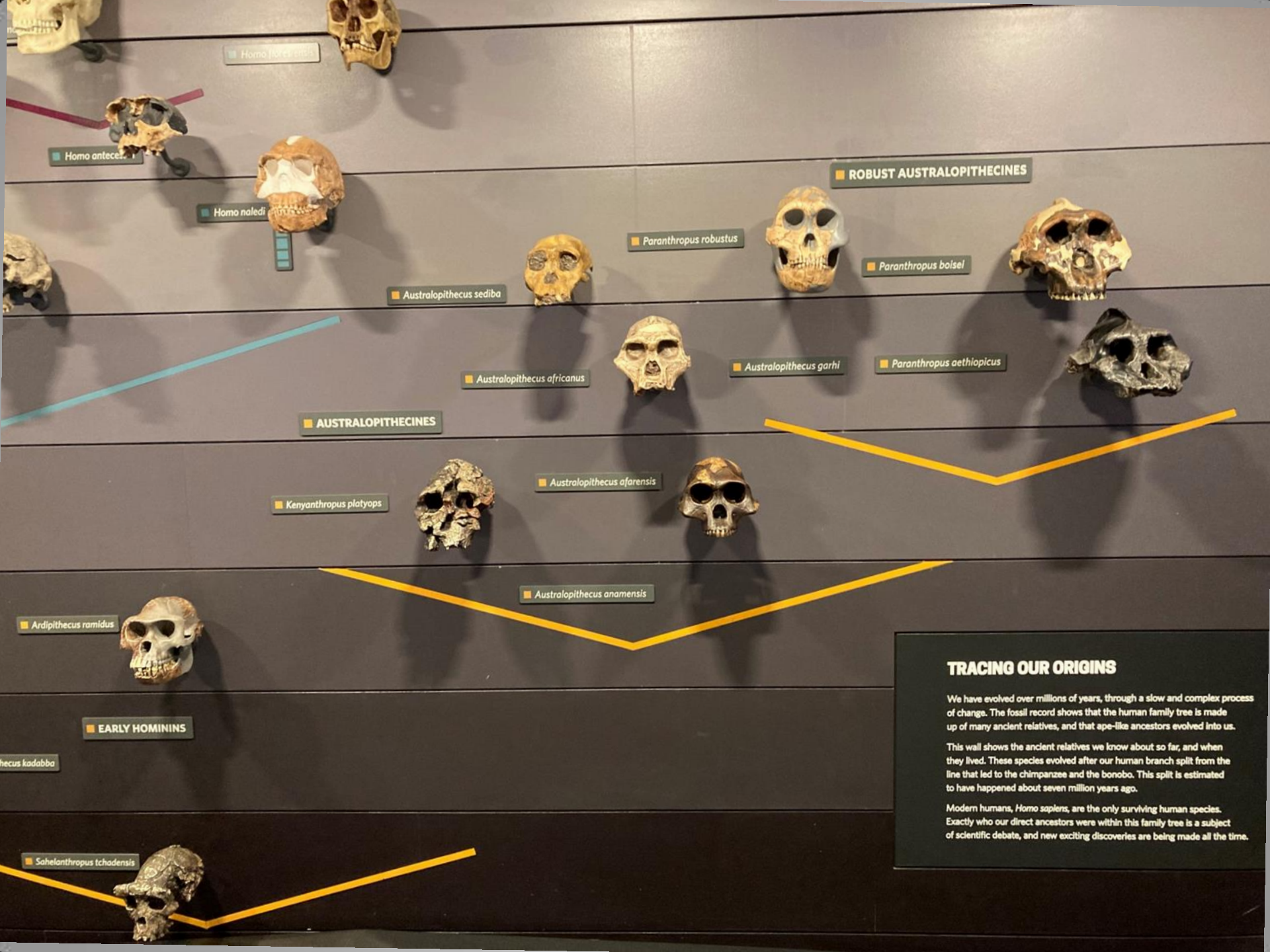
With lowered sea levels, Eurasia and America were interconnected by a long, narrow isthmus of land. The opening of this "Beringian freeway" enabled land animals to migrate in both directions. However, the land bridge also prevented the exchange of marine organisms between the Arctic and Pacific Oceans.

6. GLACIATION IN SOUTH AMERICA

Even today, the mountains of the Andes are high enough for glaciers to form on their slopes. At the height of the last ice age, these glaciers carved some of the most spectacular peaks in the world. In southern Chile and Argentina, the glaciers flowed down the mountains to cover much of the southern tip of the continent.

5. LOESS

Fine sand and dust blown from cold, dry plains that fringed areas of permafrost accumulated in parts of Central Europe, Tunisia, Pakistan, Tibet, Central Asia, Patagonia, New Zealand, and the Mississippi valley in America. Called loess, the dust covered the original landscapes and is now shaped into cliffs, which have sometimes been excavated for human dwellings.



TRACING OUR ORIGINS

We have evolved over millions of years, through a slow and complex process of change. The fossil record shows that the human family tree is made up of many ancient relatives, and that ape-like ancestors evolved into us.

This wall shows the ancient relatives we know about so far, and when they lived. These species evolved after our human branch split from the line that led to the chimpanzee and the bonobo. This split is estimated to have happened about seven million years ago.

Modern humans, *Homo sapiens*, are the only surviving human species. Exactly who our direct ancestors were within this family tree is a subject of scientific debate, and new exciting discoveries are being made all the time.

Today

1
million years ago

2
million years ago

3
million years ago

4
million years ago

■ Denisovans

■ *Homo neanderthalensis*

■ *Homo heidelbergensis*

■ *Homo antecessor*

■ *Homo floresiensis*

■ *Homo erectus*

■ *Homo naledi*

■ *Homo rudolfensis*

■ *Homo habilis*

■ *Australopithecus*

■ HUMANS

■ AUSTRALOPITHECINES

■ *Kenyanthropus platyops*

■ *Ardipithecus ramidus*



THE FIRST BRITONS

The story of humans in Britain stretches back nearly one million years. During this time, at least four different human species have attempted to colonise this island, through many waves of occupation. The climate has fluctuated, often dramatically, from a warm Mediterranean-like environment, to long stages of cold with large ice sheets covering much of the land. Landscapes have changed accordingly, with coastlines and rivers shaped by water and ice. Britain's inhabitants had to adapt too, but sometimes they vanished altogether.





Ancient tools

Our ancient relatives made the most of the resources available to them wherever they were in the world, creating tools for hunting, digging and cutting in order to survive. This display shows some of the diverse materials and tools they used.

1. Pebble tools possibly made and used by *Homo habilis*, *Homo rudolfensis* or early *Homo erectus*

Olduvai Gorge, Tanzania, around 1.8 million years old. E3368, E1153

2. Acheulean handaxes probably used by *Homo erectus*

Olduvai Gorge in Tanzania, near Nsongezi in Uganda and Kariandusi in Kenya, around 700,000 to 1.4 million years old. E1157, E3760, PAE_1147

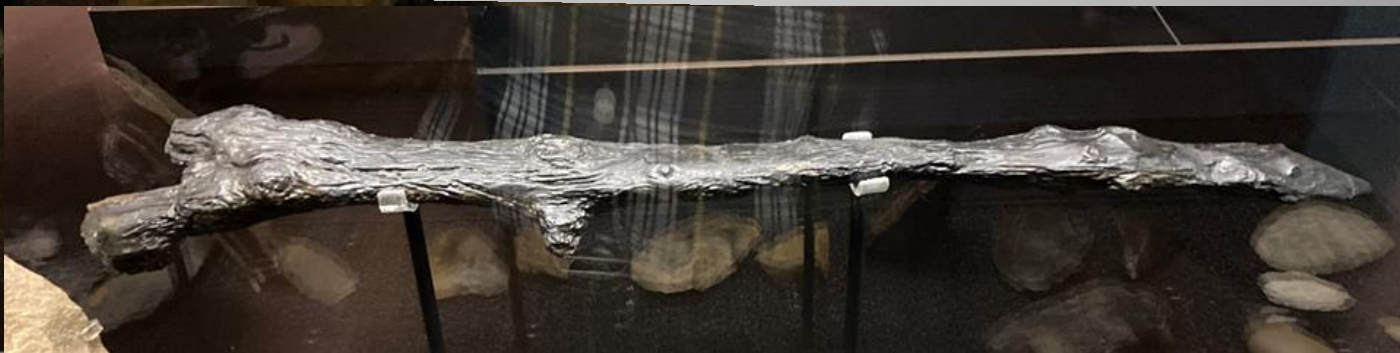
3. Quartzite cleaver probably used by *Homo heidelbergensis*

3. Quartzite cleaver probably used by *Homo heidelbergensis*
Kalambo Falls, Tanzania/Zambia border, around 300,000 to 500,000 years old. E3652



4. Wooden digging stick probably used by *Homo heidelbergensis*

Kalambo Falls, Tanzania/Zambia border, 300,000 to 500,000 years old.
Cast. Original in the Natural History Museum, England. E4547



4



6



7



4. Wooden digging stick probably used by *Homo heidelbergensis*

Kalambo Falls, Tanzania/Zambia border, 300,000 to 500,000 years old.
Cast. Original in the Natural History Museum, England. E4547

5. Lupemban-style flake used as scraping tool by *Homo heidelbergensis* or early *Homo sapiens*

Kalambo Falls, Tanzania/Zambia border, 200,000 to 300,000 years old. E3647

6. Clactonian stone tools, possibly used by *Homo heidelbergensis*

Swanscombe, Kent, England, around 420,000 years old. E1817, E3267

7. Acheulean handaxes probably used by early Neanderthals

Swanscombe, Kent, England, around 400,000 years old. E5441, E5444, E4190

8. Levallois core, flake and point used by Neanderthals

Crayford, Kent, England, around 200,000 years old. E1430, E5986, E1004

9. Bout-coupé handaxe used by Neanderthals

Kent's Cavern, Devon, England, around 60,000 years old. E95



1. Bifacial handaxe probably used by early Neanderthals
 Boxcombe, Kent, England, around 400,000 years old. E5441, E5444, E4190

2. Levallois core, flake and point used by Neanderthals
 Boxcombe, Kent, England, around 200,000 years old. E1430, E5986, E1004

3. Out-coupe handaxe used by Neanderthals
 Kent's Cavern, Devon, England, around 60,000 years old. E95

4. Hammerstone pebble, point and racloir tool used by Neanderthals
 Le Moustier and Charente, France, around 50,000 years old. E2003, E4857, E1446

5. Leaf point stone tool, probably used by Neanderthals
 Kent's Cavern, Devon, England, around 43,000 years old. E116

8

10

11

9

ROBUST ANCIENT HUMANS

Some of our ancient human relatives, and possible ancestors, had legs shaped like ours. Fossilised *Homo heidelbergensis* remains show that these people tended to be tall, strongly built and with relatively long legs similar to their predecessor *Homo erectus*.

Longer legs were an adaptation to tropical conditions as they provide a larger skin surface through which to help cool the body. Neanderthals, who were adapted to colder environments, had shorter legs and a more compact body shape.

Intense physical activities such as hunting large animals would have encouraged the growth of a stronger, tougher build in *Homo heidelbergensis*, in response to the stress placed on bones through their active lifestyles.



1. Broken Hill tibia

Although similar in size to the bone on the right, this leg bone is not as robust. It belonged to someone who was adapted to the subtropical environment of Zambia 300,000 years ago, rather than the colder environment of Boxgrove, England, 500,000 years ago.

Homo heidelbergensis. Broken Hill, Zambia, possibly 300,000 years old.
E691

2. Boxgrove tibia

This shinbone has been chewed at each end by an ancient carnivore, but scientists can still decipher it belonged to someone large and more robust than a modern human. This person would have been about 1.8 metres tall, strongly built and probably male.

Homo heidelbergensis. Boxgrove, West Sussex, England, around 500,000 years old.
Cast. Original at the Natural History Museum, London, UK.
EM3566

Boxgrove-style handaxe

Handaxes such as this were used to strip animal carcasses of meat, often cutting the bone in the process. Microscopic analysis of cut marks shows they were made before gnawing marks from scavenging wolves and hyenas, suggesting that people probably had to defend their kills from scavenging predators. Tools were razor sharp, but this one has been blunted for your safety.

Made by a modern flint-knapper. **Please touch with care.**

AQ PEG 2015 822



2. SCANDINAVIA

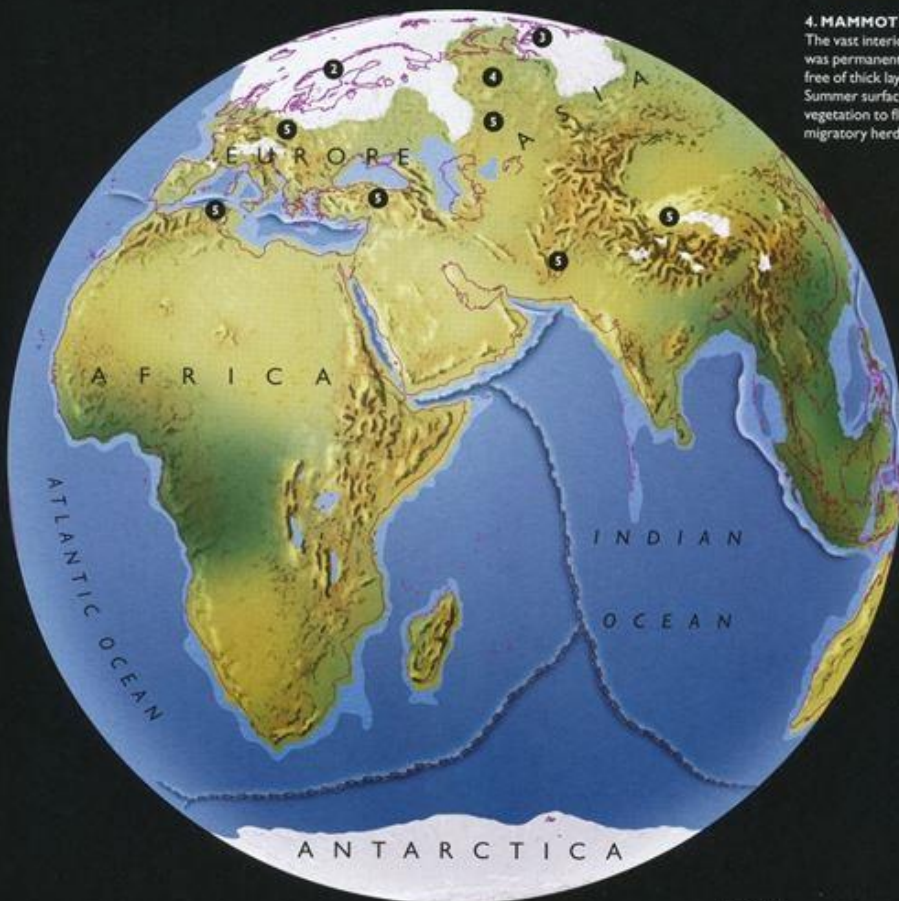
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8. GLACIATION IN AUSTRALASIA

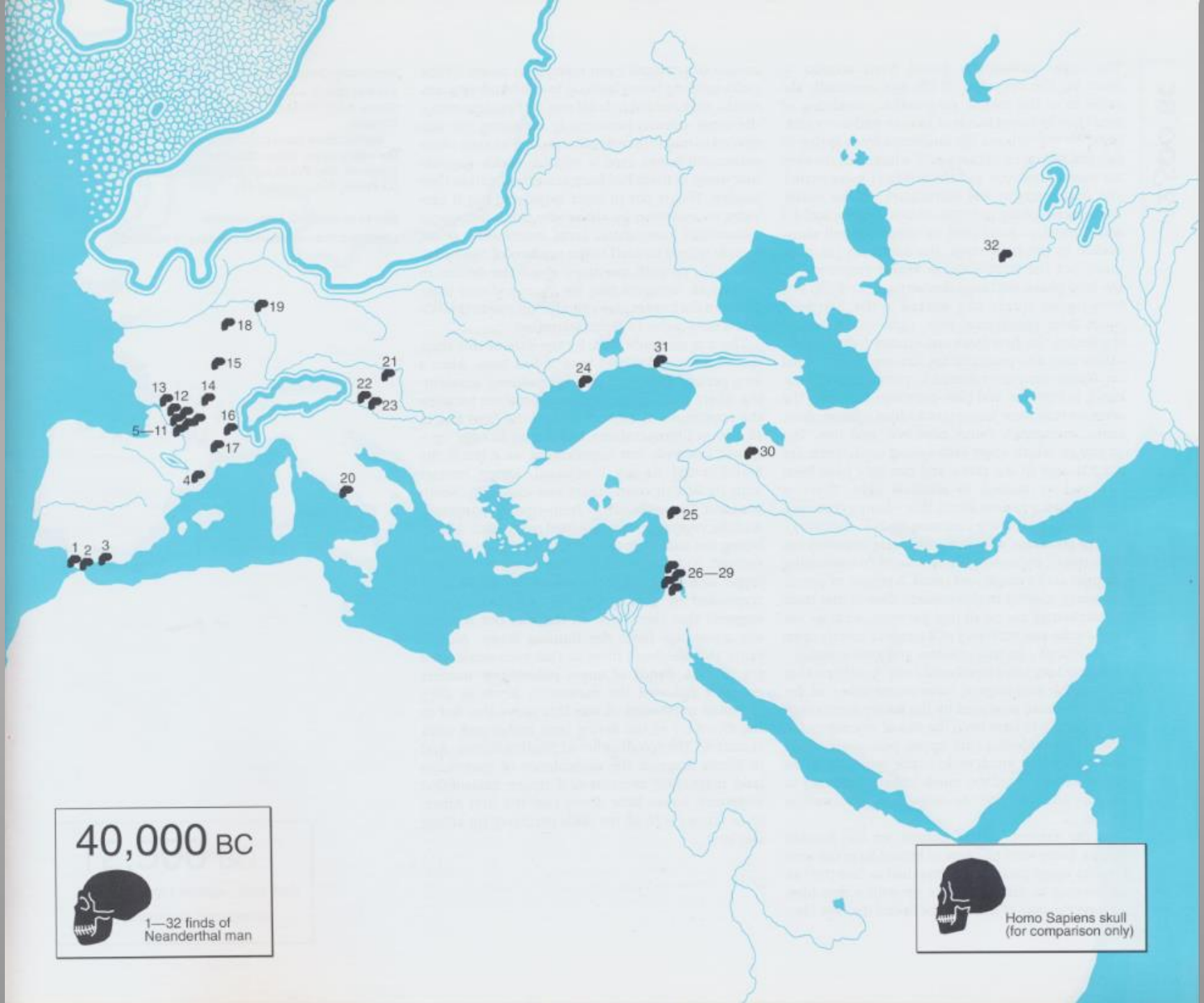
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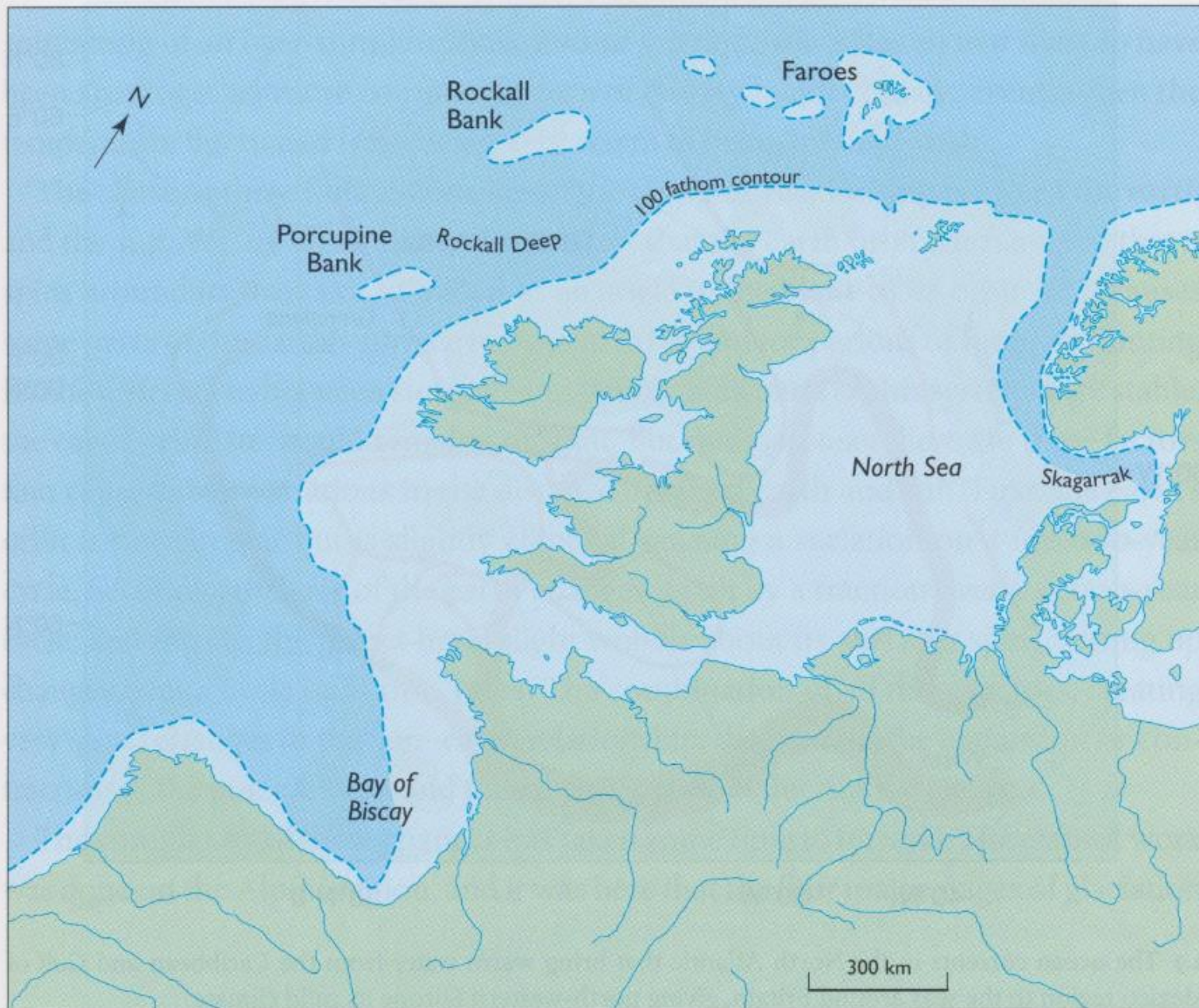
40,000 BC



1—32 finds of Neanderthal man



Homo Sapiens skull (for comparison only)



2.2 Britain and the Continental Shelf, showing the main topographical features



2.1 This spectacular satellite photograph of western Europe shows, with great clarity, the extent of the Continental Shelf binding Britain and Ireland to mainland Europe. The sharp edge of the shelf where it plunges to the ocean depths is particularly clear

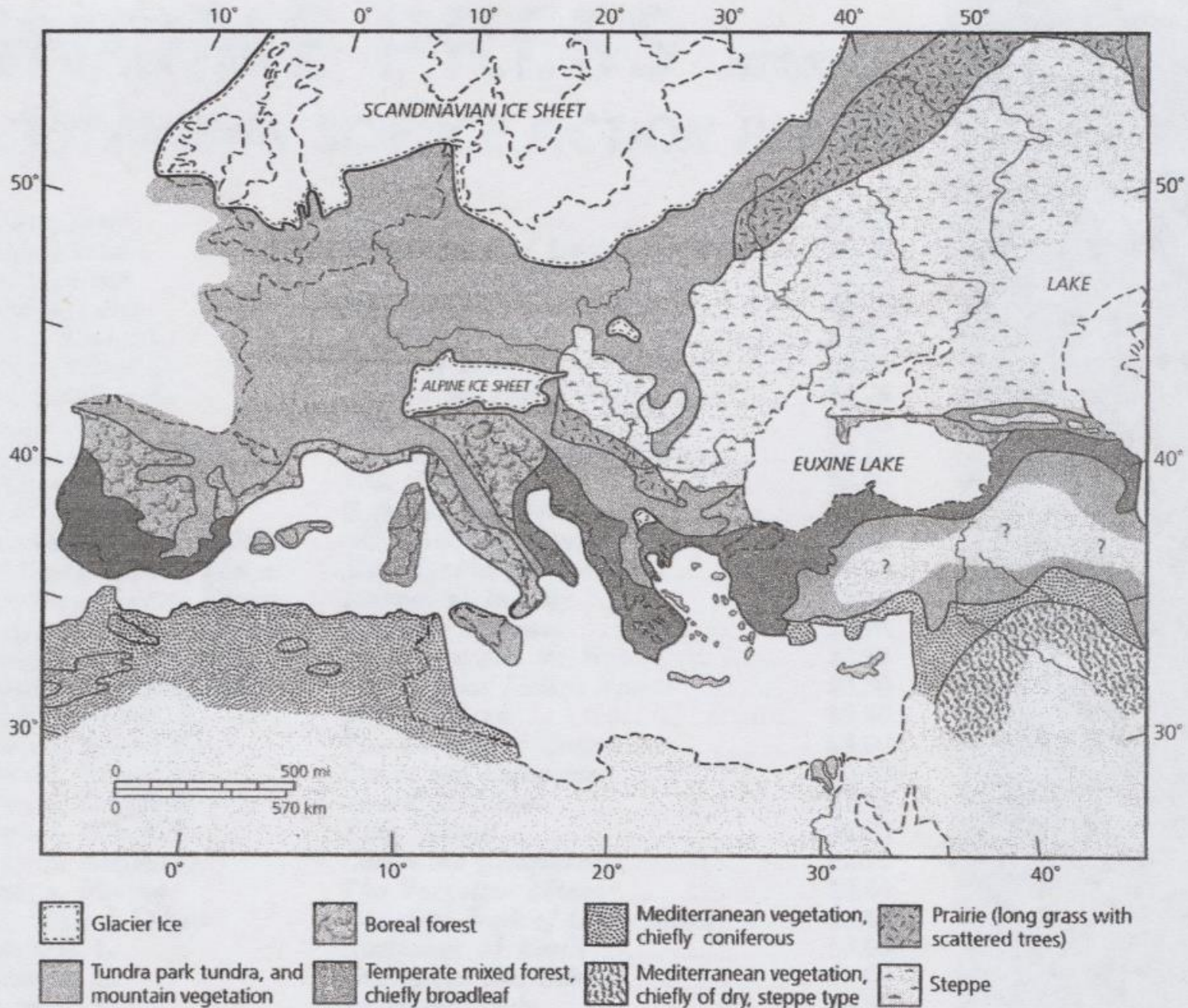
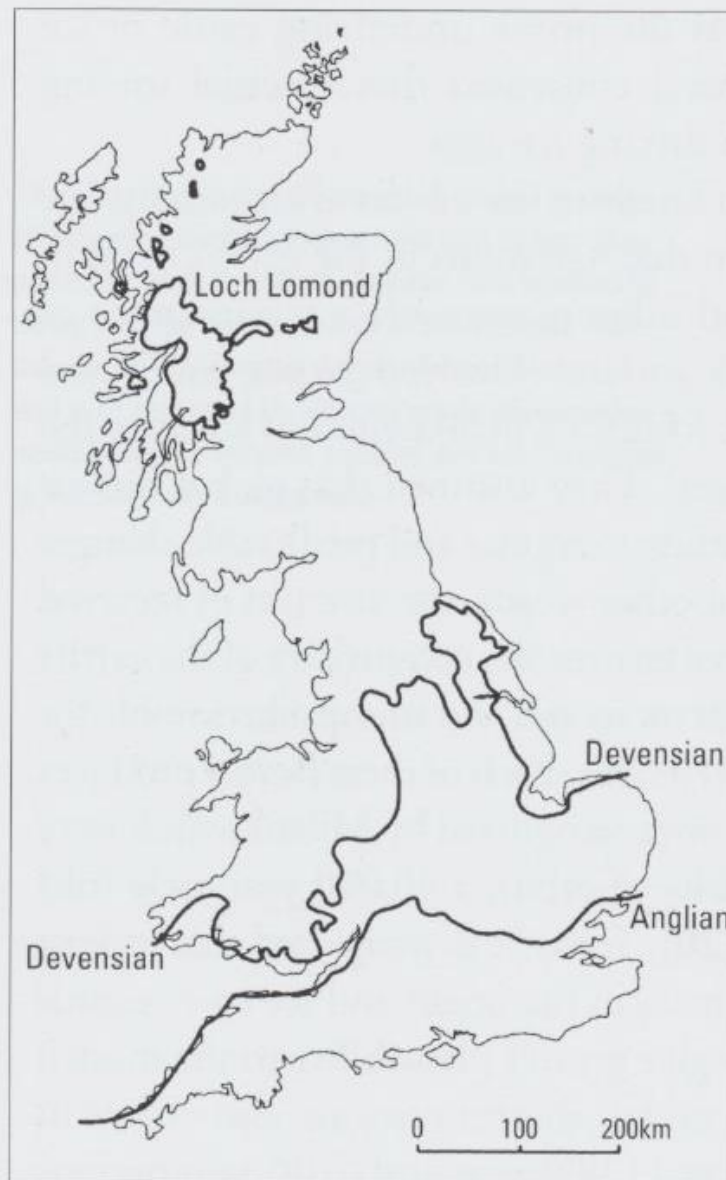


Figure 8.1 *Europe during the Last Glacial Maximum.*



25 (above) Map of Britain showing maximum ice advances for the Anglian and Devensian cold stages.

PALAEOLITHIC & MESOLITHIC AGES

c.800,000BC to c.4000BC

The Palaeolithic (800,000BC to 9500BC)

In the time scale of the Palaeolithic, which stretches from the appearance of the earliest humans in Africa some 2.5 million years ago through to the end of the last Ice Age around 12,000 years ago, the human occupation of Britain is relatively brief, though recent discoveries have extended it greatly. For much of this time the area we know as Britain was still connected to continental Europe. As the ice sheets retreated, hunter-gatherer communities, pursuing a nomadic existence, would have followed their prey north and west across the area that is now the North Sea.

The harsh environment of the Pleistocene Ice Ages, with a succession of cold glacial periods and warmer interglacials, has left few visible traces of human activity in Britain. Occupation sites were short-lived and have rarely survived the erosive power of subsequent glaciations. Instead the earliest evidence for human activity comprises simple stone tools found in ancient gravel deposits, only in exceptional cases within intact occupation sites, the best known of which is Boxgrove in Sussex. Fossilised bones and plant remains provide evidence of the foods available at the time.

Stone tool technologies evolved throughout the Palaeolithic. Handaxes were the predominant form for hundreds of thousands of years but after about 40,000 years ago, the time when modern humans first appeared in Europe, more sophisticated implements appeared. Evidence for occupation during this period is sometimes found within caves (such as Kent's Cavern and Creswell Crags in England, and Paviland Cave in Wales), very occasionally with evidence of ritual or ceremony, such as a rich burial from Paviland and engraved art at Creswell. However, there is no evidence for human activity in Britain during the coldest parts of the last Ice Age, between about 26,000 and 13,000 years ago.

The Mesolithic (9500BC to 4000BC)

Mesolithic communities continued the hunter-gatherer existence of their predecessors after the last Ice Age. However, stone tool technologies included tiny flint objects called microliths (used to create composite tools) and more bone artefacts survive from the period.

In addition to cave sites, archaeological excavations are revealing evidence for open occupation sites, comprising flint scatters, occasional structural remains and minute traces of food remains. This has enabled archaeologists to reconstruct a fuller picture of Mesolithic economies, to place a greater emphasis on gathering plant foods over the traditional ideas of hunting societies and to identify seasonal occupation sites.

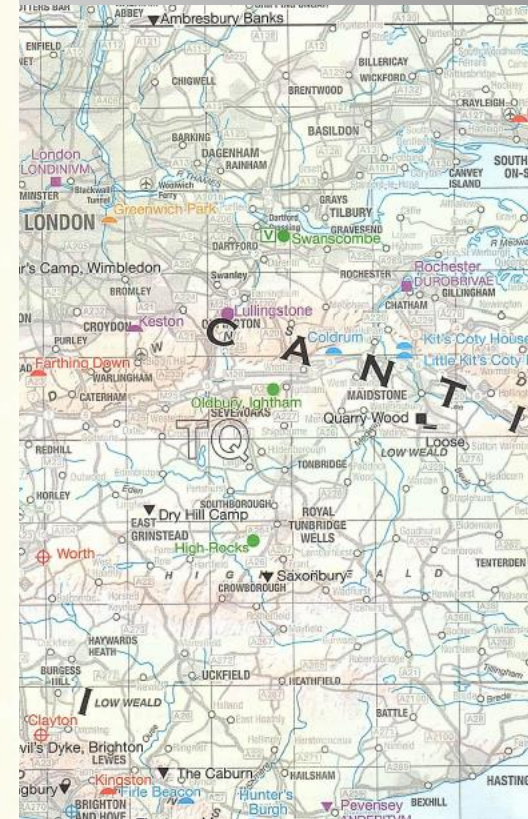
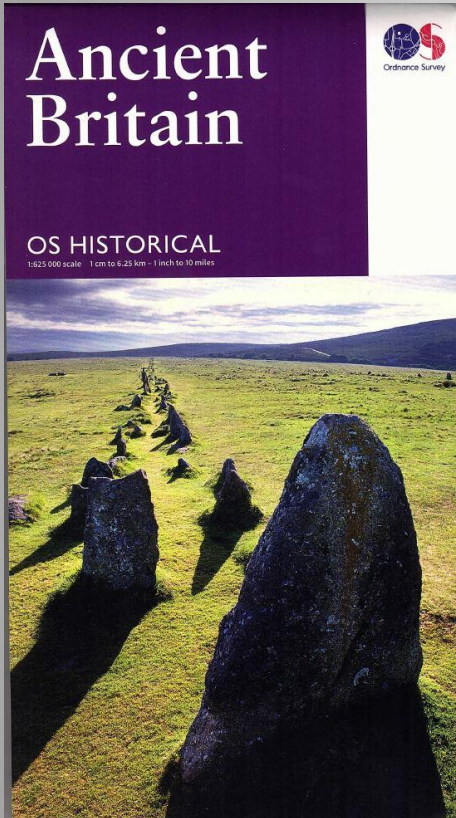
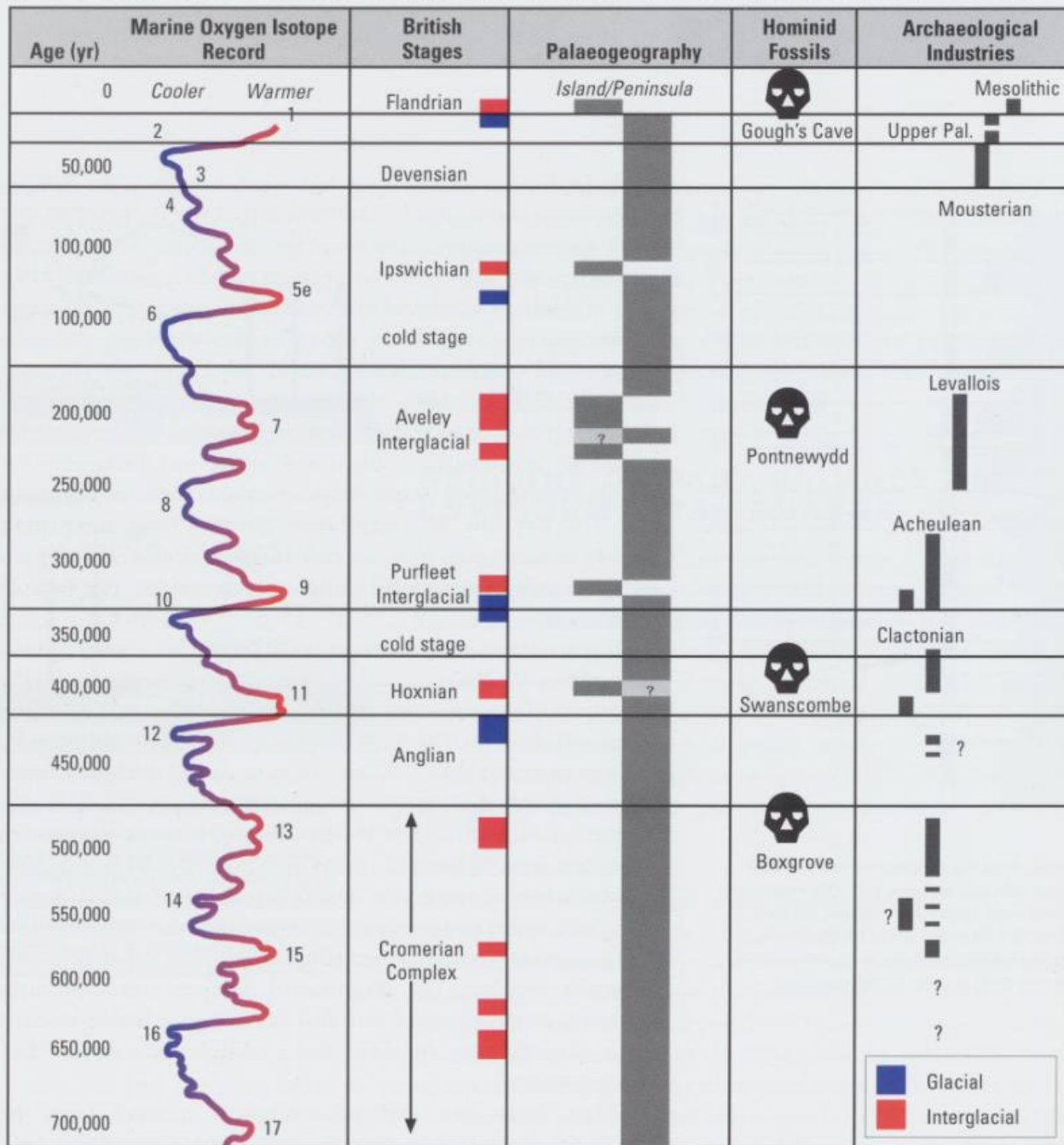
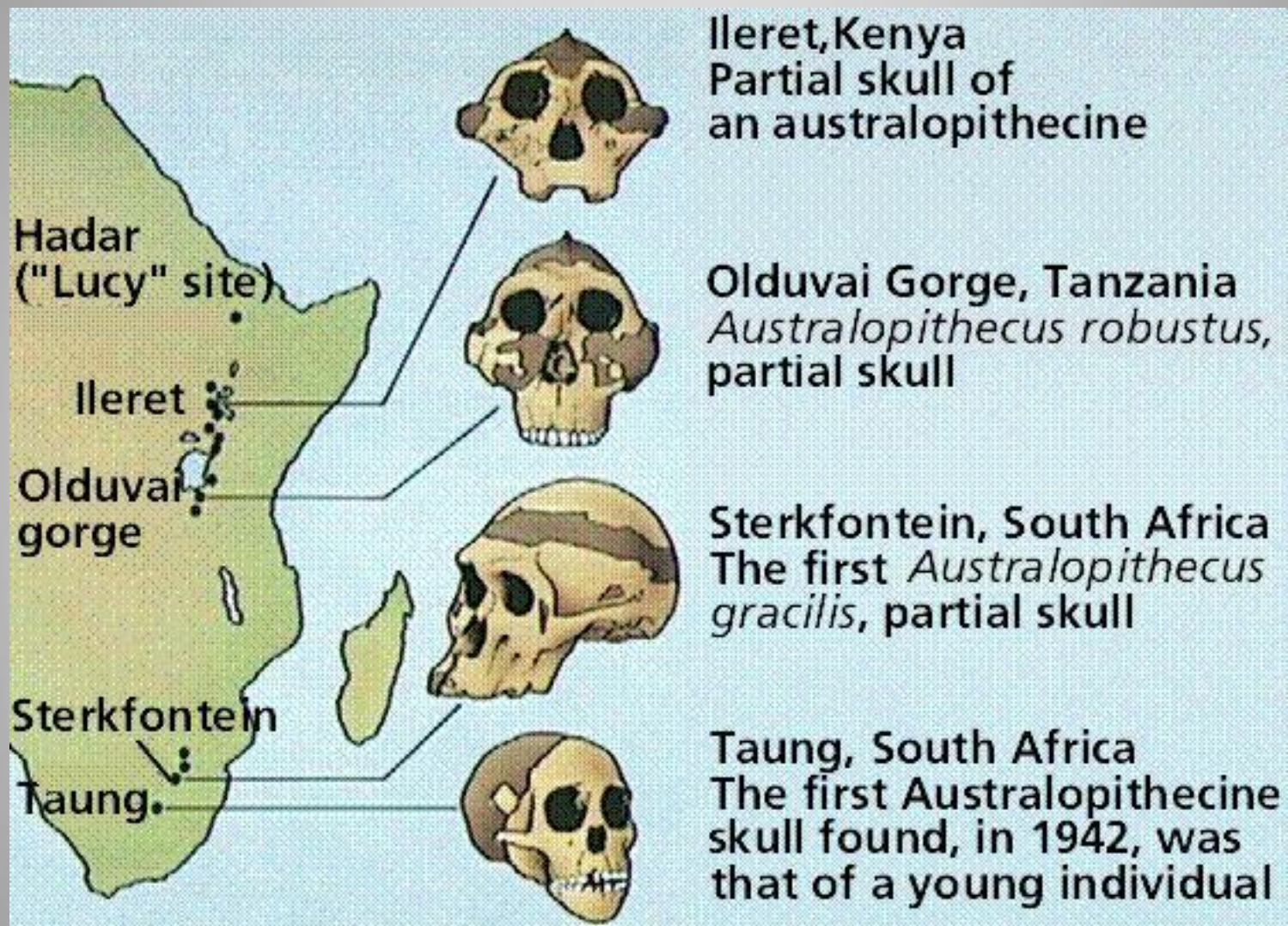
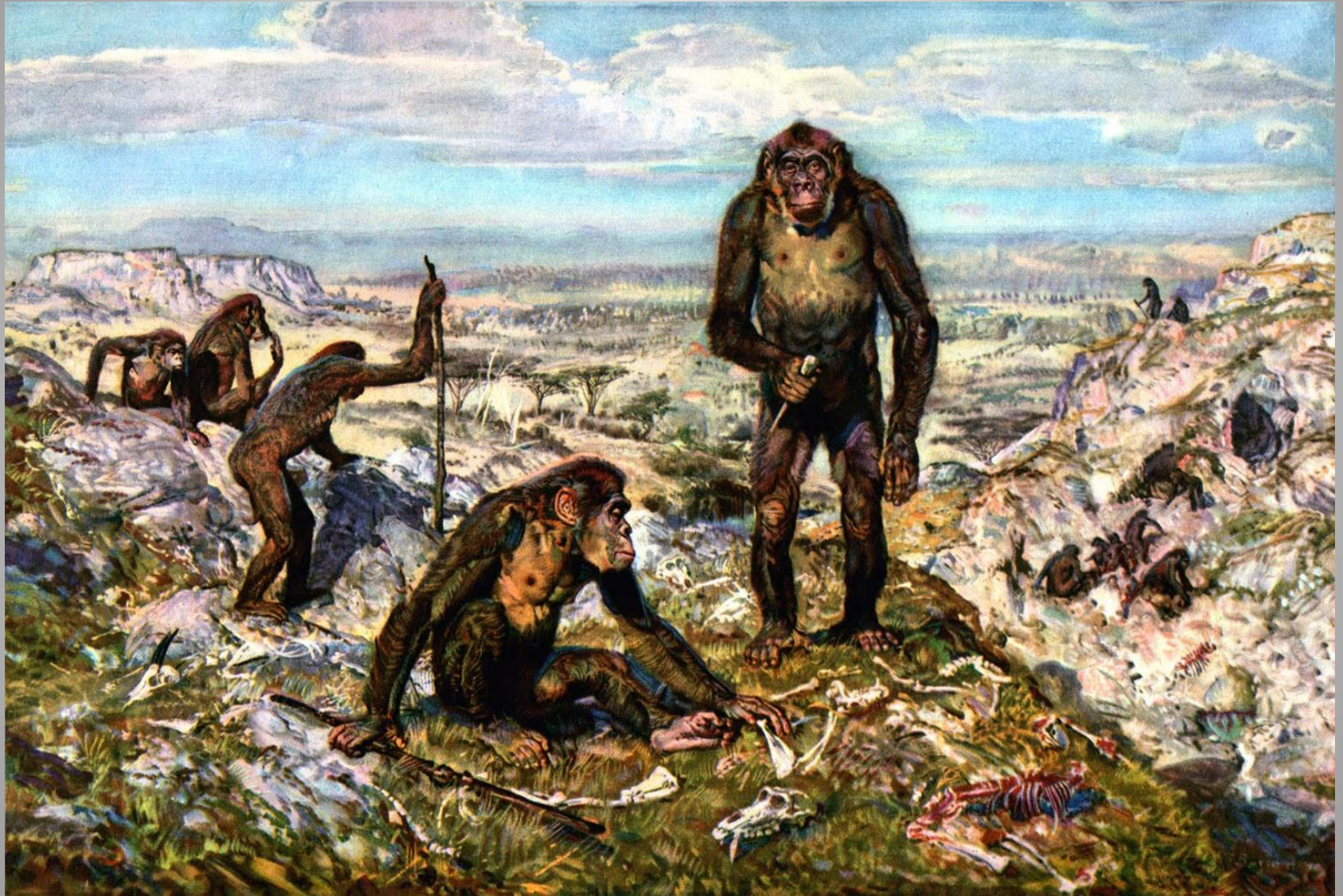
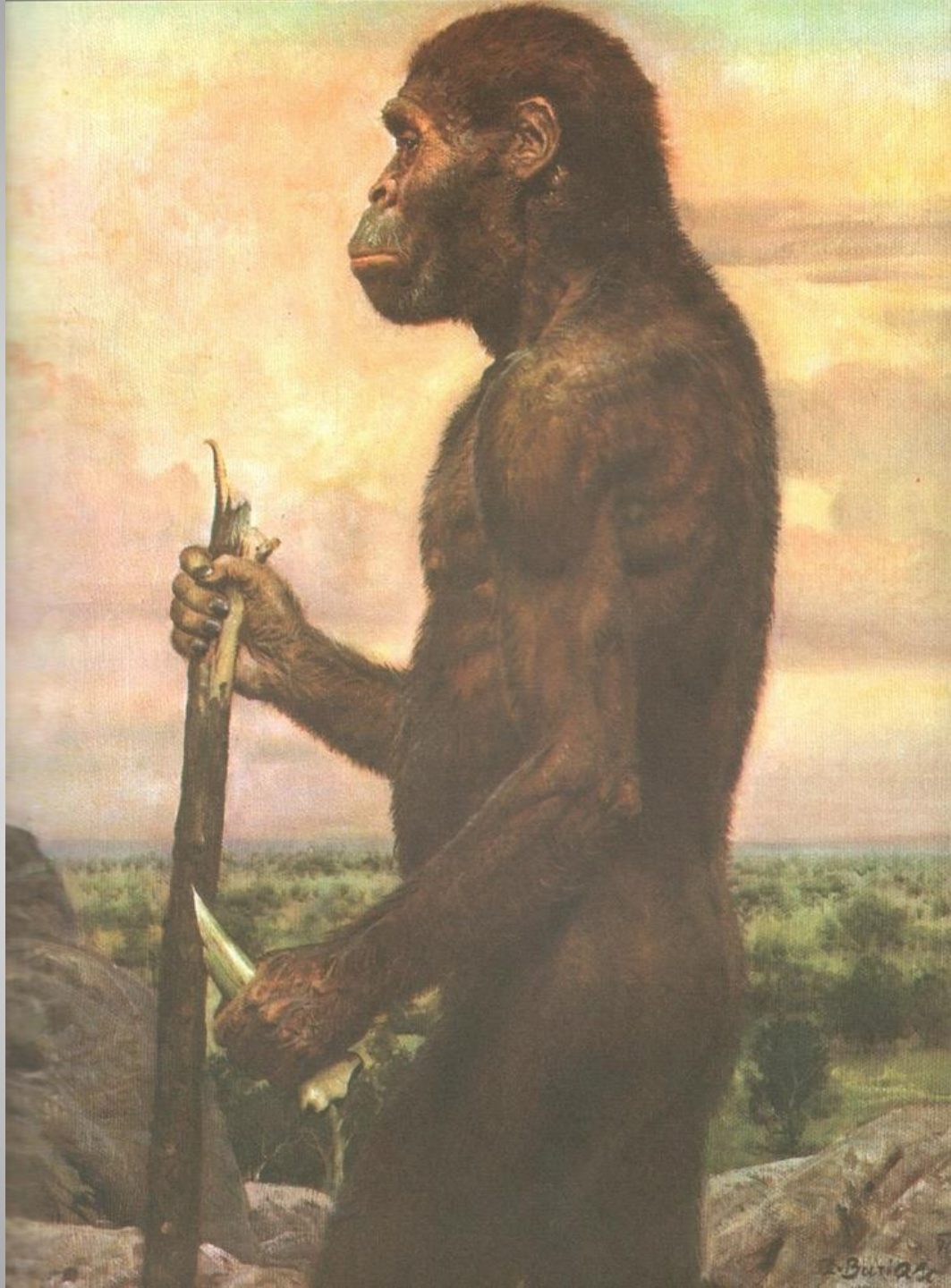


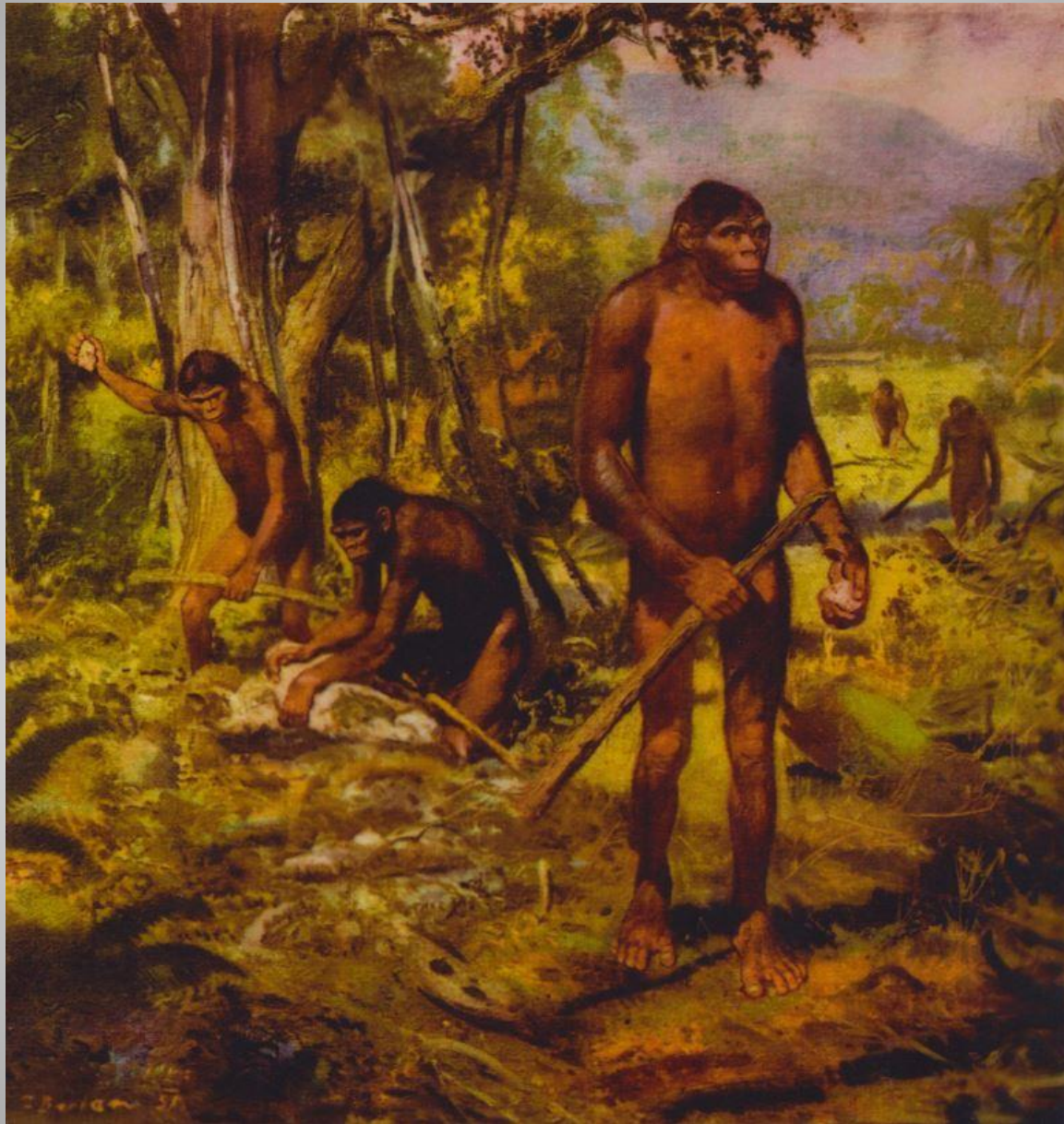
TABLE 2: Sequence of marine cold and warm stages (OIS) and possible correlation with land-based records













Boxgrove
Hand ax
ca 500,000
years old



Gran Dolina
Chopper
ca 800,000
years old



Ceprano
Chopper
ca 800,000
years old



Bilzingsleben
Bone tool
ca 320,000
years old



Homotherium
3 million to
500,000 years ago

Pachycrocuta
1.6 million to
500,000 years ago

ATLANTIC OCEAN

North Sea

Black Sea

Mediterranean Sea

EUROPE

A F R I C A

ROME, ITALY

MADRID, SPAIN

SICILY

Malta

Route from
continental
Europe

Route
from
Africa

Route
from
Asia

Strait of
Gibraltar

Route
from
Africa

● Selected site

Scale varies in this perspective.

NATIONAL GEOGRAPHIC MAPS

Pontnewydd
Swanscombe
Boxgrove

Clacton
Schöningen
Bilzingsleben

Mauer
Steinheim

Vértesszöllös

Fontéchevade and
La Chaise

Lazaret

Montmaurin

Arago

Gran Dolina and
La Sima de los Huesos

Rome, ITALY

Ceprano


Petralona


Venta Micena
(Orce)


Tighenif


Salé and
Kebibat


Human fossils in Europe


 *Homo erectus* and *Homo heidelbergensis*,
c.800,000–300,000 years ago


 Pre-Neanderthals,
300,000–150,000 years ago

 *Homo neanderthalensis*,
c.150,000–28,000 years ago

 Modern *Homo sapiens*

 Conjectural spread of
physically modern humans

 Glaciation 18,000 years ago

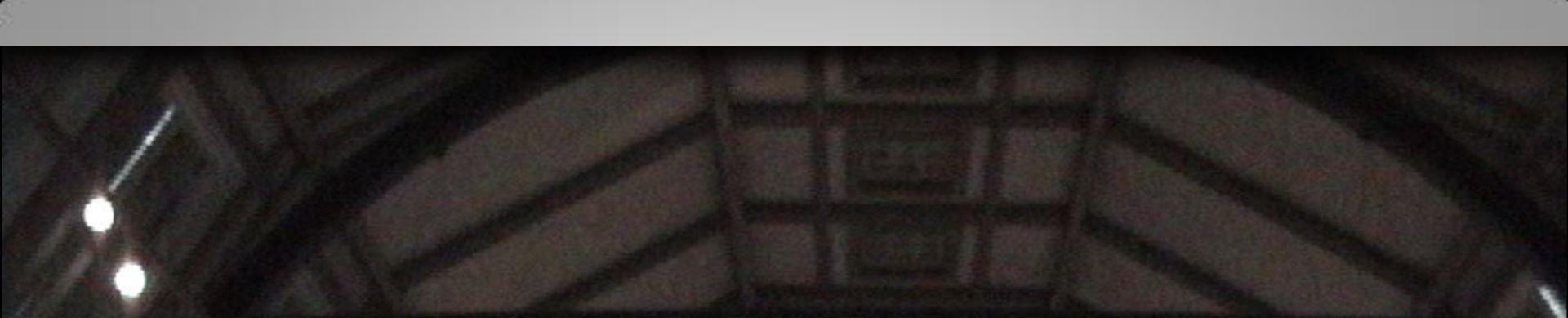
 Coastline 18,000 years ago





BRITAIN

ONE MILLION YEARS
OF THE HUMAN STORY



Scattered across Britain are lost worlds of human lives,
people who over thousands of years have come and
gone in their attempts to colonise this land.

You are about to take a journey to meet them.

Britain, with its often-told history of monarchies, architecture and culture, has a lesser known story of its past. It's the story of how people came to be here at all, how they discovered an uninhabited Britain, which periodically changed over the years from cold and treeless prairie to warm and wooded forest. It's a story of at least four human species attempting to colonise the land over many waves of occupation. Over thousands of years, they were wiped out or pushed south several times.

Many
earlies
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Occup
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Many have investigated the lives of the earliest people in Britain, including the researchers of the Ancient Human Occupation of Britain project, a multidisciplinary collaboration between several research institutions, led by the Natural History Museum. This exhibition celebrates their work, and displays the most significant finds together, for the first time. This is the story they tell, and it begins almost one million years ago.

Enjoy your journey.

1,000,000 years ago



Southwest Gate

Southwest Gate

The changing shape of Britain

The familiar outline of Britain, the Island in the northern corner of Europe, is nothing but a brief snapshot of a continuous cycle of change.

During the time people have come to occupy this land, from the pioneers nearly one million years ago, there has been constant upheaval.

At first, a natural land bridge connected Britain to the continent, and later on, when it had eroded and sea levels were high, Britain became an island.

Ice sheets have covered the land many times, sometimes reaching as far south as north London. These multiple glaciations shaped the

to the continent, and later on, when it had eroded and sea levels were high, Britain became an island.

Ice sheets have covered the land many times, sometimes reaching as far south as north London. These multiple glaciations shaped the British landscape. They also eroded evidence of any very early human activity in the north, and as a result the majority of what we know about the earliest occupants is based on finds from the southern parts of Britain.

950,000 years ago



The first arrivals

950,000–700,000 years ago

A co
and
wat
an
a s
The
han
too
bu
ne

Th
an

Warmer



Climate



Cooler



Stone tool
found at
Happisburgh,
Norfolk.

Star
four
Pake
Suffe

1 million
years ago

900,000
years ago

800,000
years ago

700,000
years ago

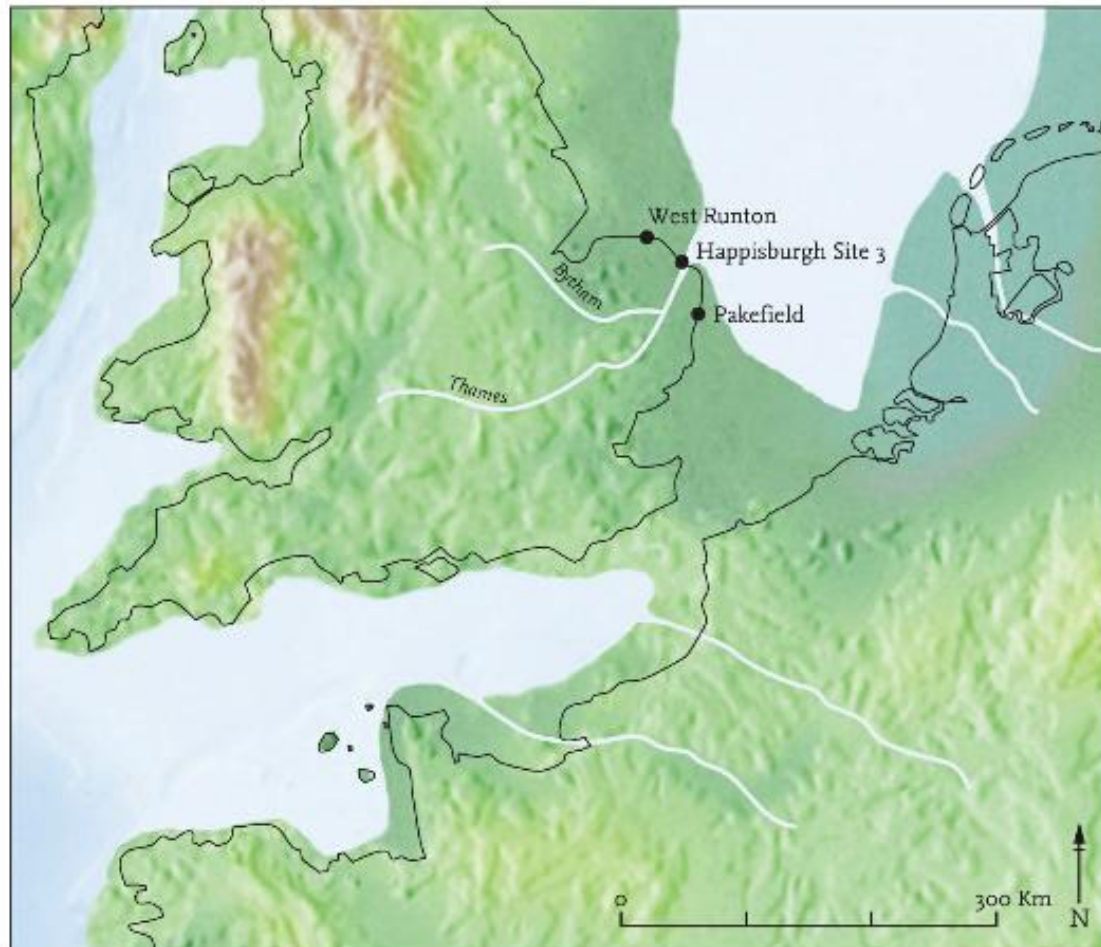
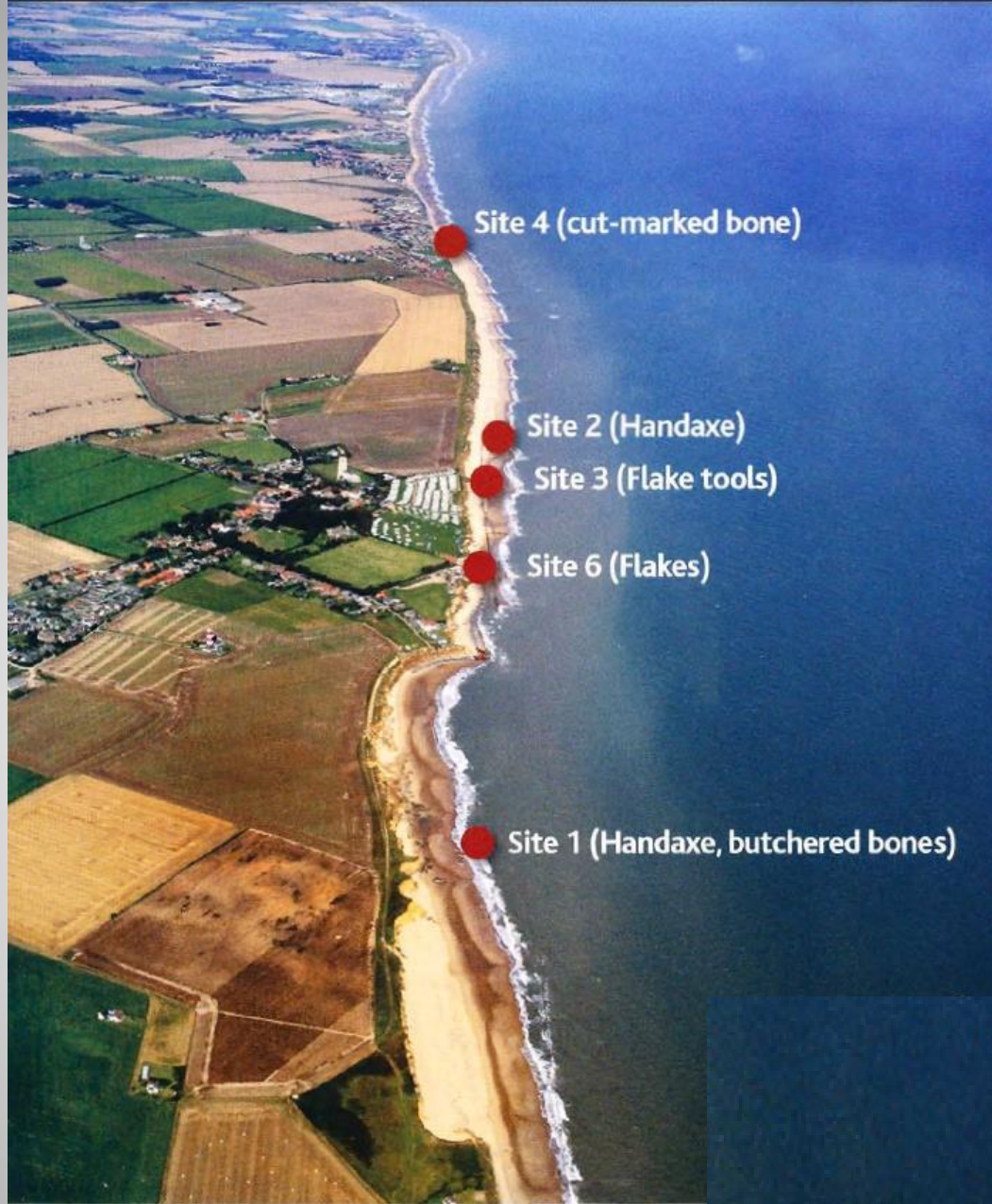


FIG 36. Map of southern Britain showing palaeogeography about 800,000 years ago with sites mentioned in the chapter. (Craig Williams)



ABOVE Dramatic coastal erosion has exposed a wealth of Palaeolithic archaeology at Happisburgh, on the Norfolk coast. Six sites have been earmarked for investigation so far (Site 5, not pictured, will be investigated off shore).





FIG 63. Excavation at Happisburgh Site 1. (Nigel Larkin)





Cone from pine or spruce tree, Happisburgh, Norfolk, 950,000 years old

A cold wind sweeps across the grasslands and stirs the dense pine forest. Along the waterway that cuts through the terrain, an ancient route of the River Thames, a small group of humans look for shelter. They have not been here before. In their hands they carry chunks of meat and stone tools, covered in blood from the recent butchery of a deer. Bears and hyenas are near so they must be on constant guard.

This is Norfolk, nearly one million years ago, and these are the earliest humans known to

tools, covered in blood from the recent butchery of a deer. Bears and hyenas are near so they must be on constant guard.

This is Norfolk, nearly one million years ago, and these are the earliest humans known to have come to Britain. These pioneers managed to survive in an often harsh climate at the edge of the habitable world. Leaving behind only faint traces of their existence in the form of stone tools, we know very little about them.



The oldest known flints

These flints, found at Happisburgh in Norfolk, are the oldest tools ever found in Britain and evidence that humans came here close to one million years ago. The shape is clearly not natural, but modified deliberately by hand. With sharp edges these are tools that could have been used for slicing meat, scraping skin and shaping wood. Lent by the Trustees of the British Museum.





Homo antecessor

Homo antecessor young male

Atapuerca, Spain
About 800,000 years old

The identity of the very first men, women and children to venture into Britain remains a mystery. Human remains have not been found, but stone tools reveal a human presence between 950,000 and 700,000 years ago. The age of the finds means this could have been *Homo antecessor*, a human species so far only found in Spain.



FIG 49. Reconstruction of Happisburgh Site 3. (Illustration: John Sibbick; © John Sibbick and AHOB Project)

Warmer



Climate



Cooler



Stone tool found at Happisburgh, Norfolk.

Star four Pale Suff

1 million years ago

900,000 years ago

800,000 years ago

700,000 years ago

Stone tools
found at
Pakefield,
Suffolk.



1,000,000
years ago

700,000
years ago

600,000
years ago

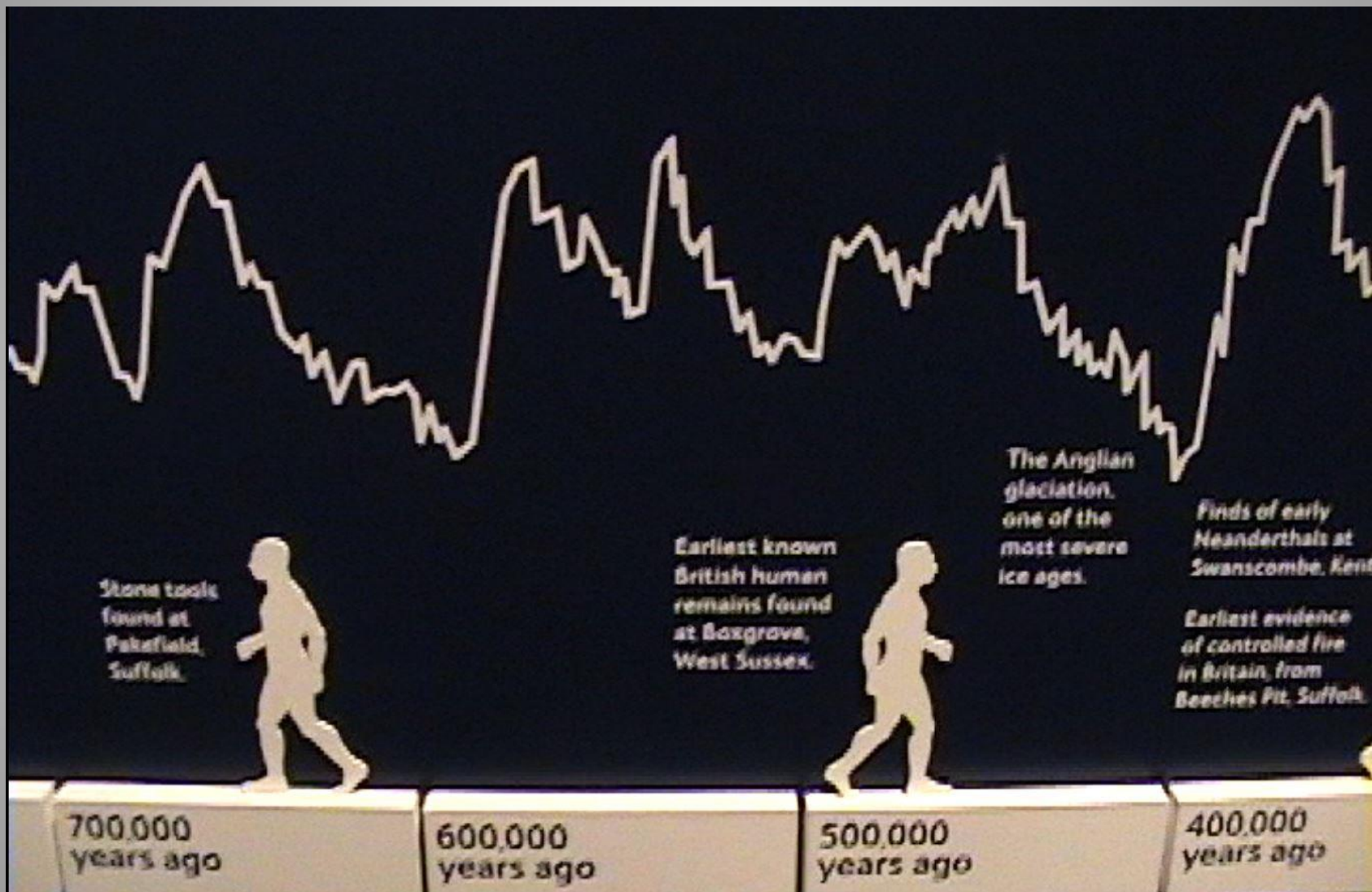
Human remains
found at
Pakefield, Suffolk.
Evidence for one of
the earliest human
occupants of Britain.



ABOVE To-date, around 32 worked flints have been excavated at Pakefield in Suffolk. Dating back 700,000 years, they provided tantalising hints that early human activity in Britain could pre-date the celebrated Boxgrove bones.

as the last ice-sheet receded c.12,500 years ago, a new wave of migrants recolonised Britain, and this time they were able to cling on. Compared to Africa, Australia, and our Continental neighbours, Britain's modern inhabitants are therefore descended from relative newcomers – but what can be said of the earliest chapters of our human story?

Between 1993 and 1996, excavation at a quarry in Boxgrove, Sussex, uncovered a tibia and two teeth that were dated to c.500,000 years ago and



Stone tools found at Pakefield, Suffolk.

Earliest known British human remains found at Boxgrove, West Sussex.

The Anglian glaciation, one of the most severe ice ages.

Finds of early Neanderthals at Swanscombe, Kent.

Earliest evidence of controlled fire in Britain, from Beeches Pit, Suffolk.

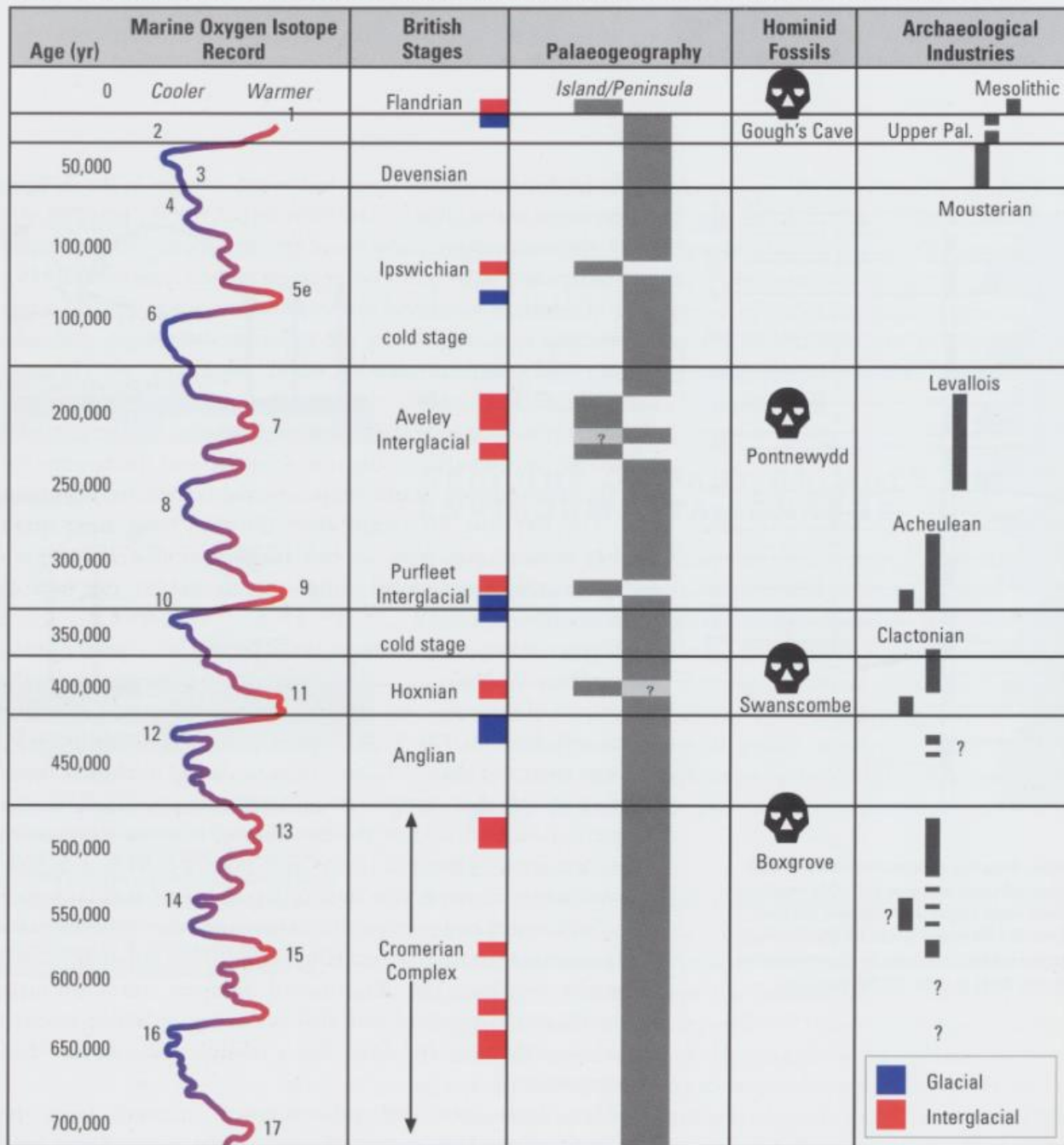
700,000 years ago

600,000 years ago

500,000 years ago

400,000 years ago

TABLE 2: Sequence of marine cold and warm stages (OIS) and possible correlation with land-based records



Earliest known
British human
remains found
at Boxgrove,
West Sussex.



The Anglian
glaciation,
one of the
most severe
ice ages.

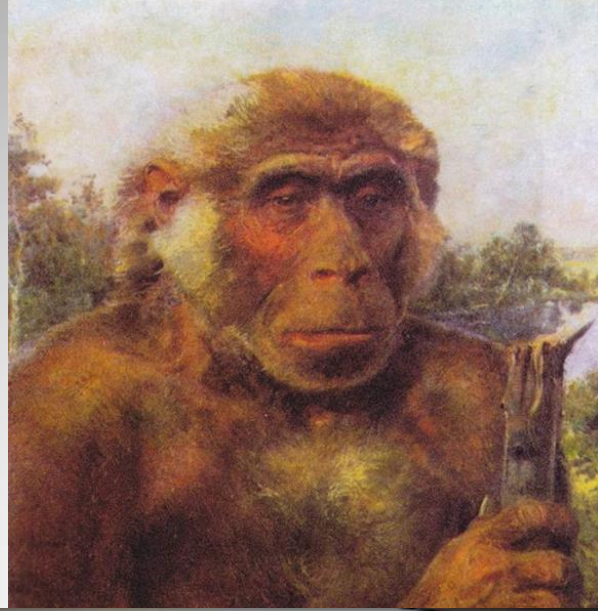
Find
Near
Swan

Earliest
of co
in Brit
Beech

600,000
years ago

500,000
years ago

400
year



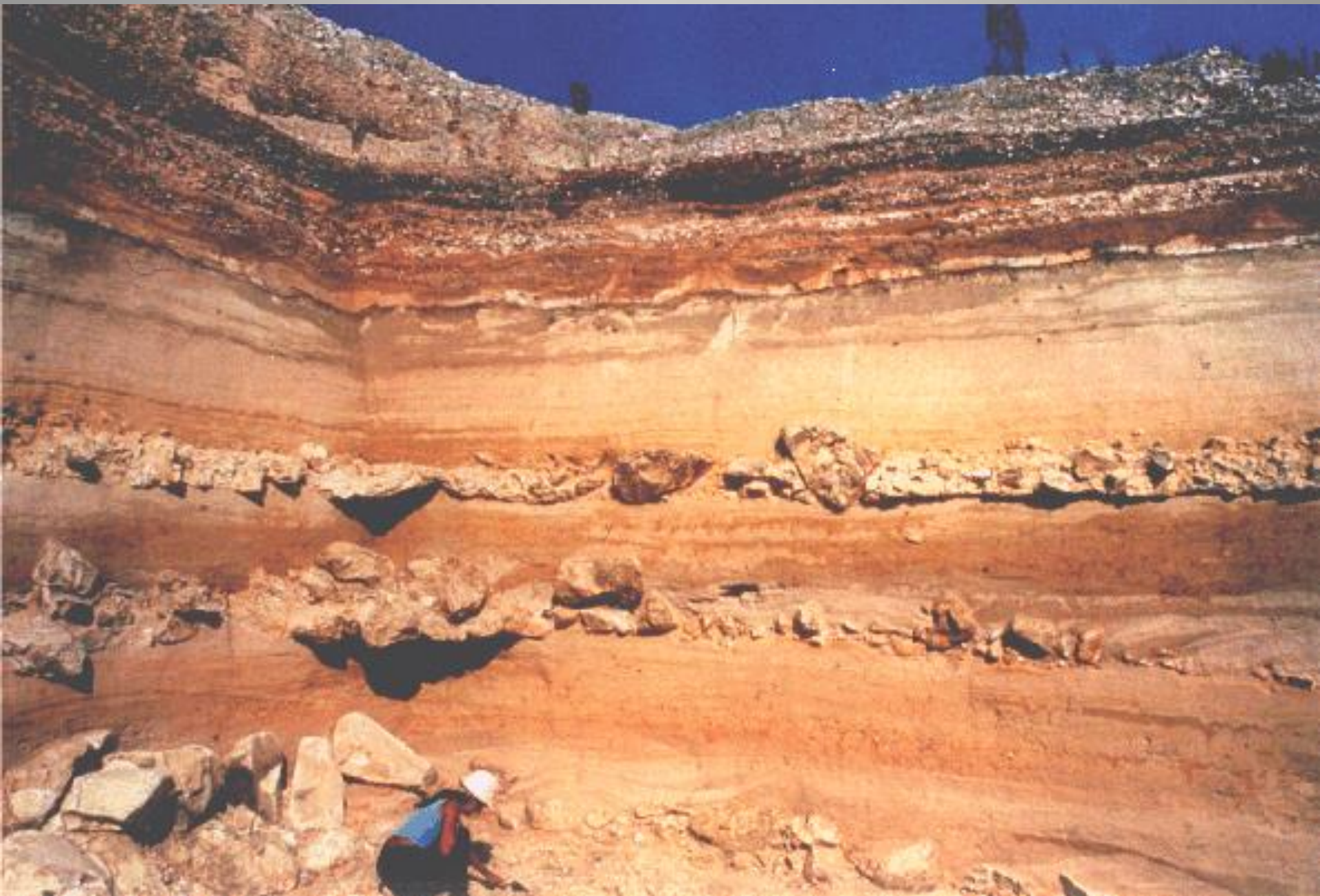
***Homo heidelbergensis* adult man**

Petralona, Greece

Between 250,000 and 600,000 years old

Imposing, tall and strong, *Homo heidelbergensis* is the earliest human species for which we have fossil evidence in Britain. They were here 500,000 years ago and butchered large animals, such as rhinoceros and horse. Believed to be ancestors of both modern humans and Neanderthals, *Homo heidelbergensis* emerged around 600,000 years ago and spread across Africa, Asia and Europe.





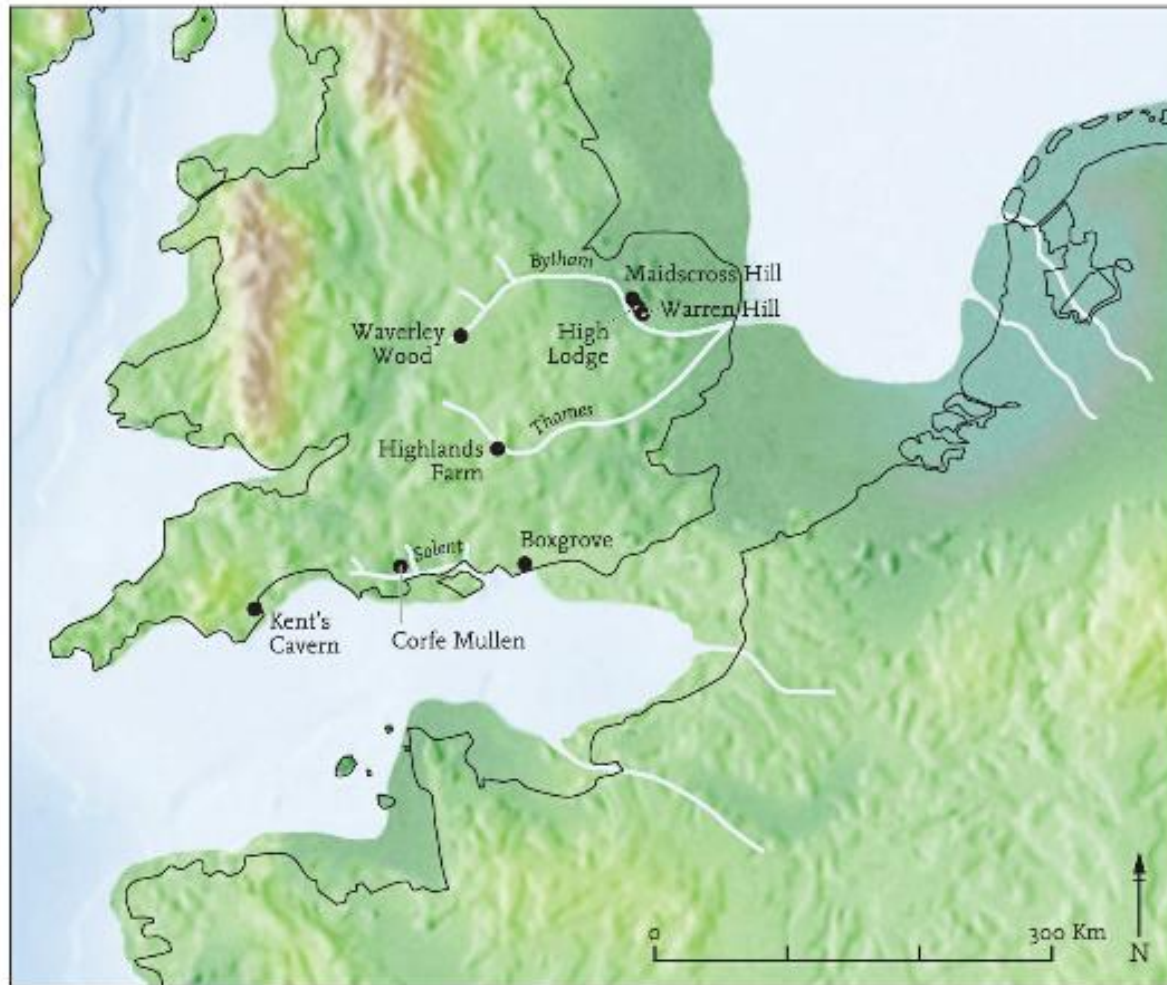


FIG 53. Map of southern Britain showing palaeogeography about 500,000 years ago with sites mentioned in the chapter. (Craig Williams)



The Boxgrove tibia and reconstruction of Boxgrove Man by John Sibbick.



FIG 71. Human tooth from Boxgrove. (Simon Parfitt; courtesy of Natural History Museum)

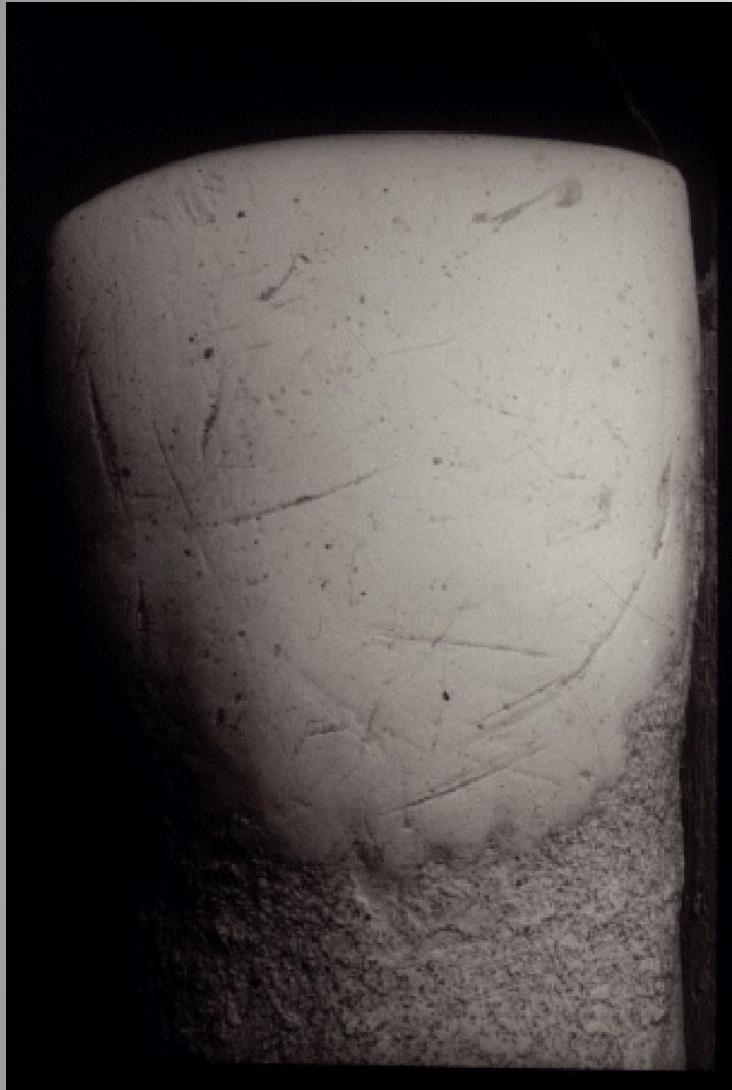


FIG 72. Detail of human teeth from Boxgrove showing cut marks from cutting meat. (Silvia Bello; courtesy of Natural History Museum)



Rhinoceros pelvis with butchery cut marks, Boxgrove, 500,000 years old





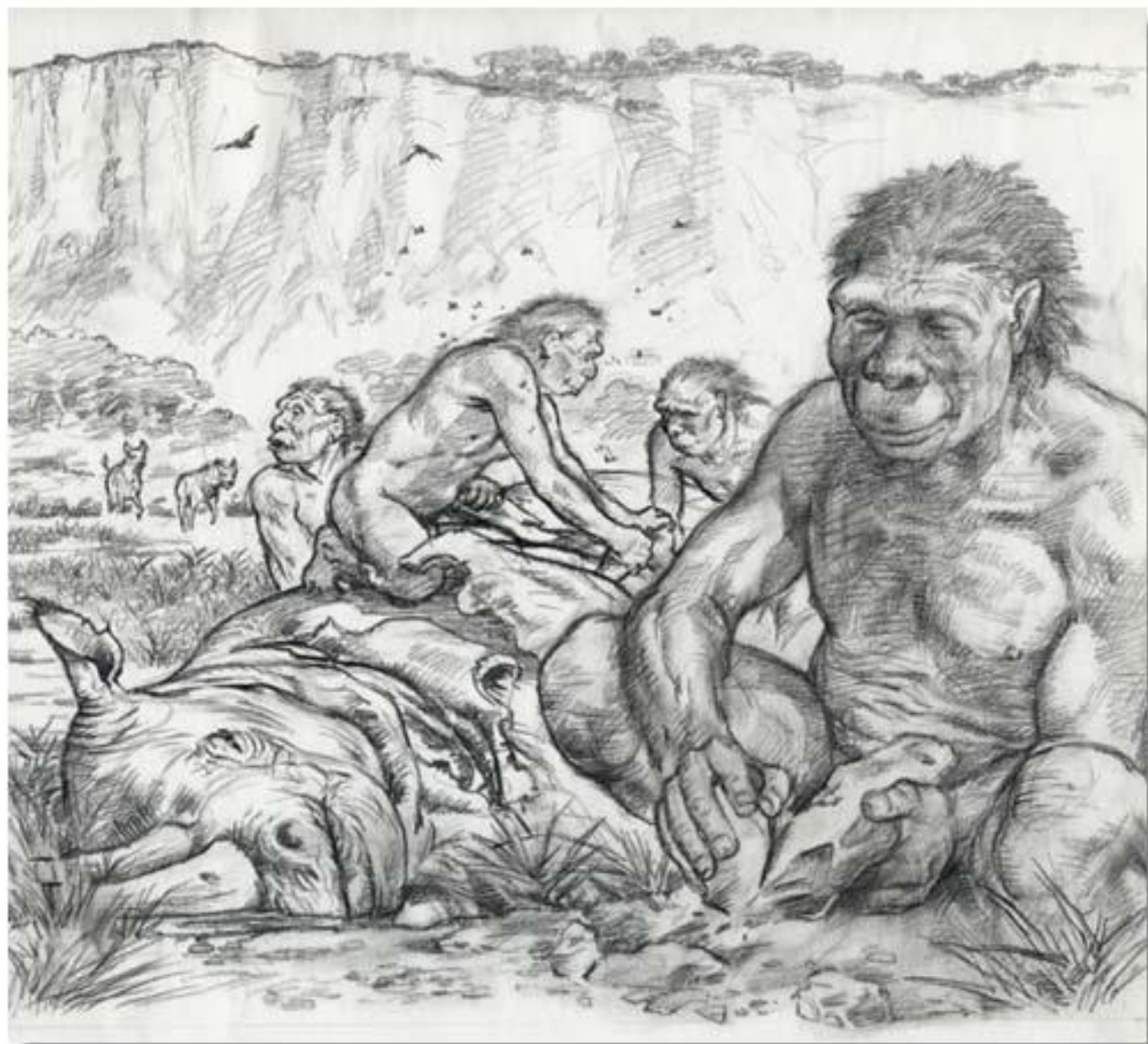
5 Three flake scrapers from the clayey silts at High Lodge (Suffolk). Tools like these were useful for preparing animal hides.

6 Butchery experiment using a handaxe. The handaxe is held between the forefinger and thumb and makes an efficient cutting and skinning tool.



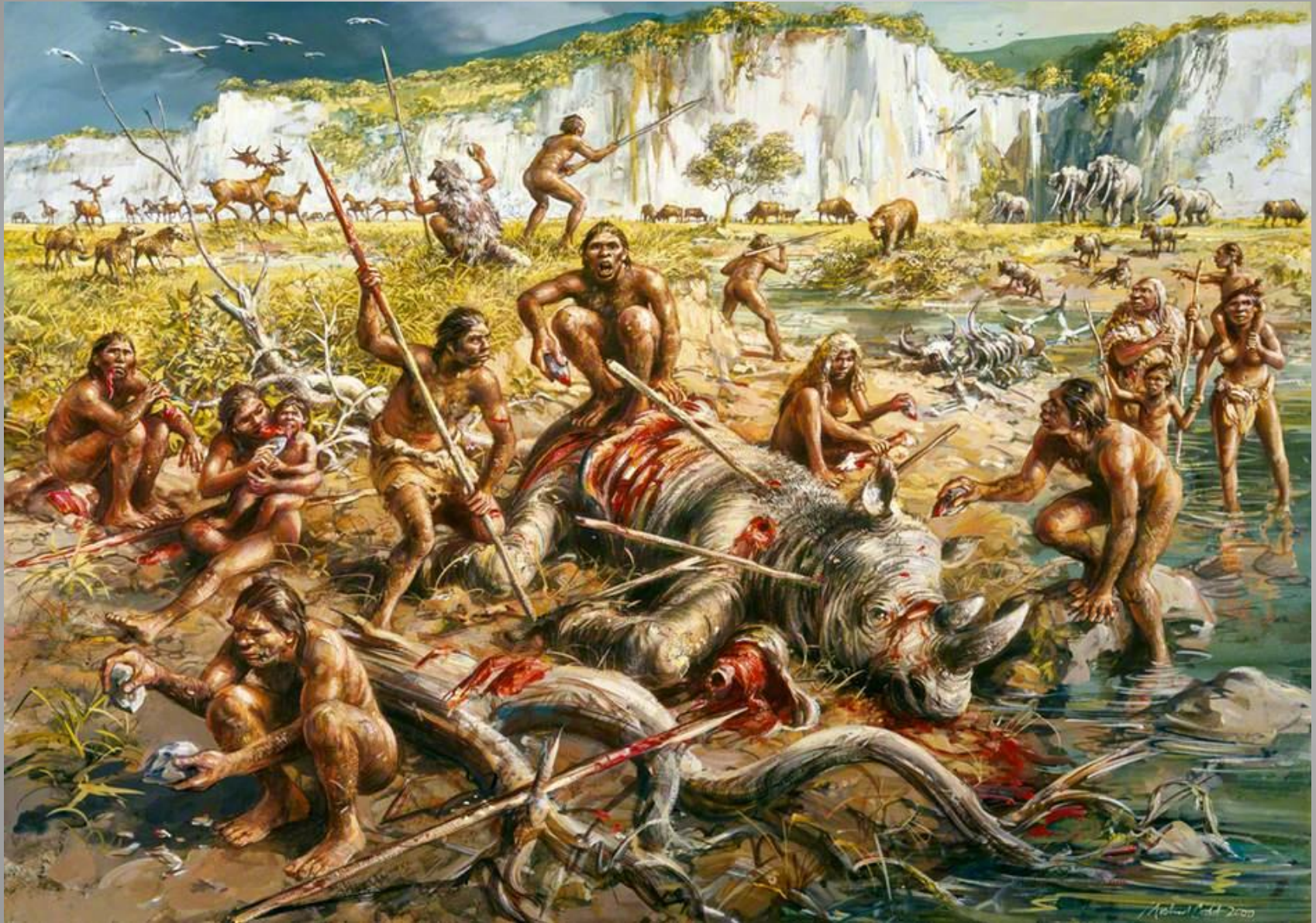


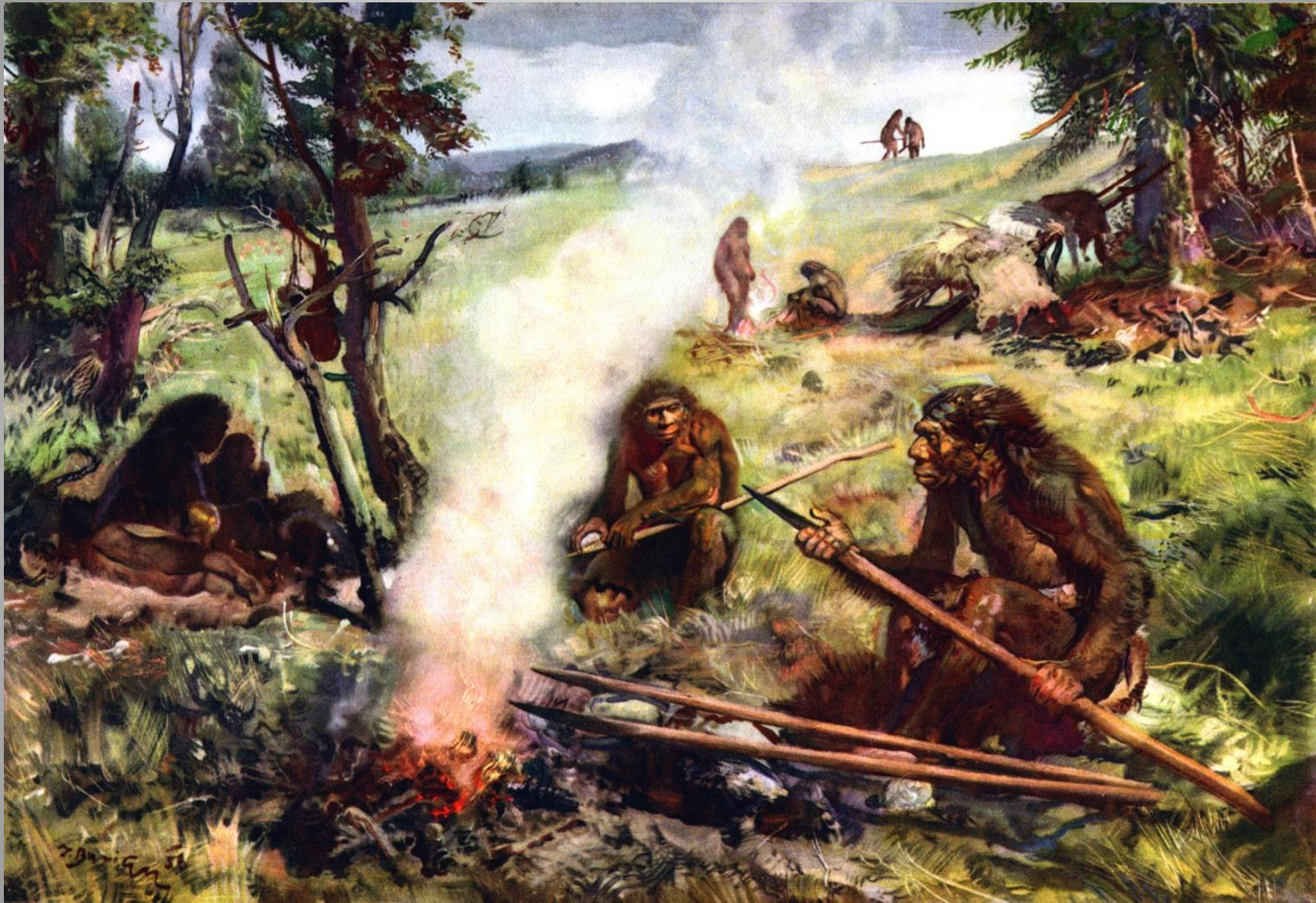
FIG 70. Experimental butchery of deer with handaxe.



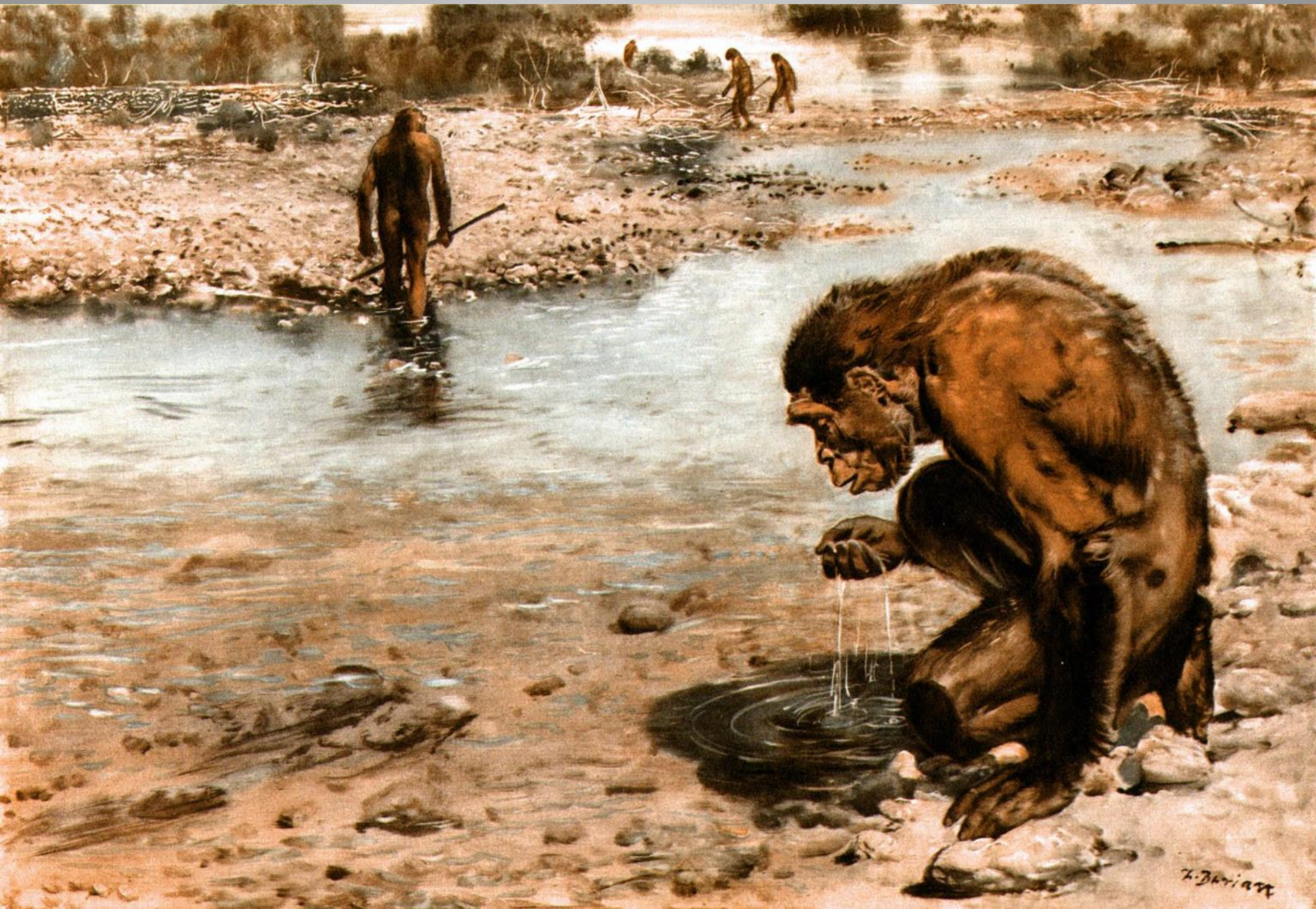


Michael C. 2000



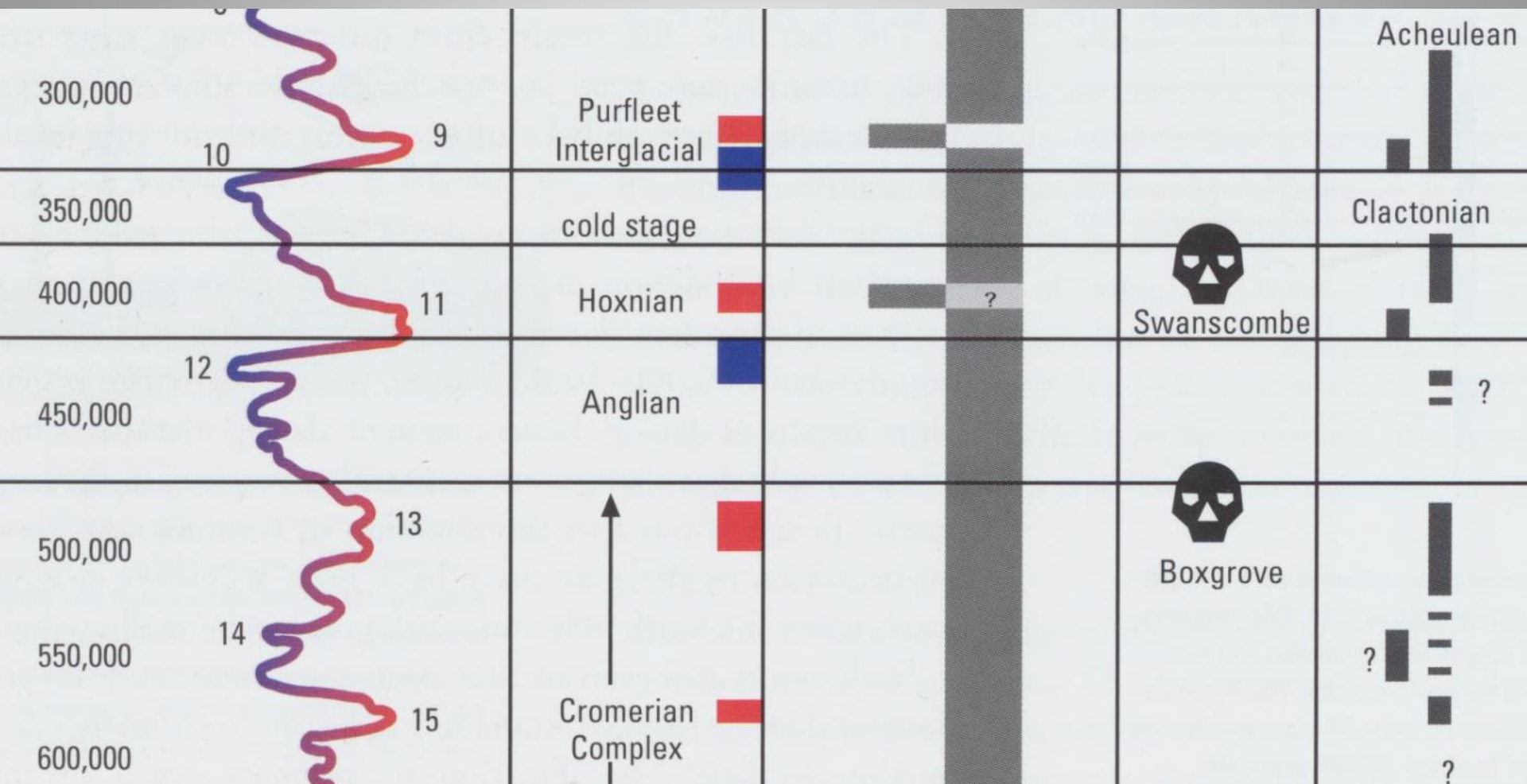






H. De la Motte





300,000

10

9

Purfleet Interglacial

350,000

cold stage

400,000

Hoxnian

11

Swanscombe

Clactonian

450,000

Anglian

12

500,000

Cromerian Complex

13

Boxgrove

550,000

14

600,000

15

?

?

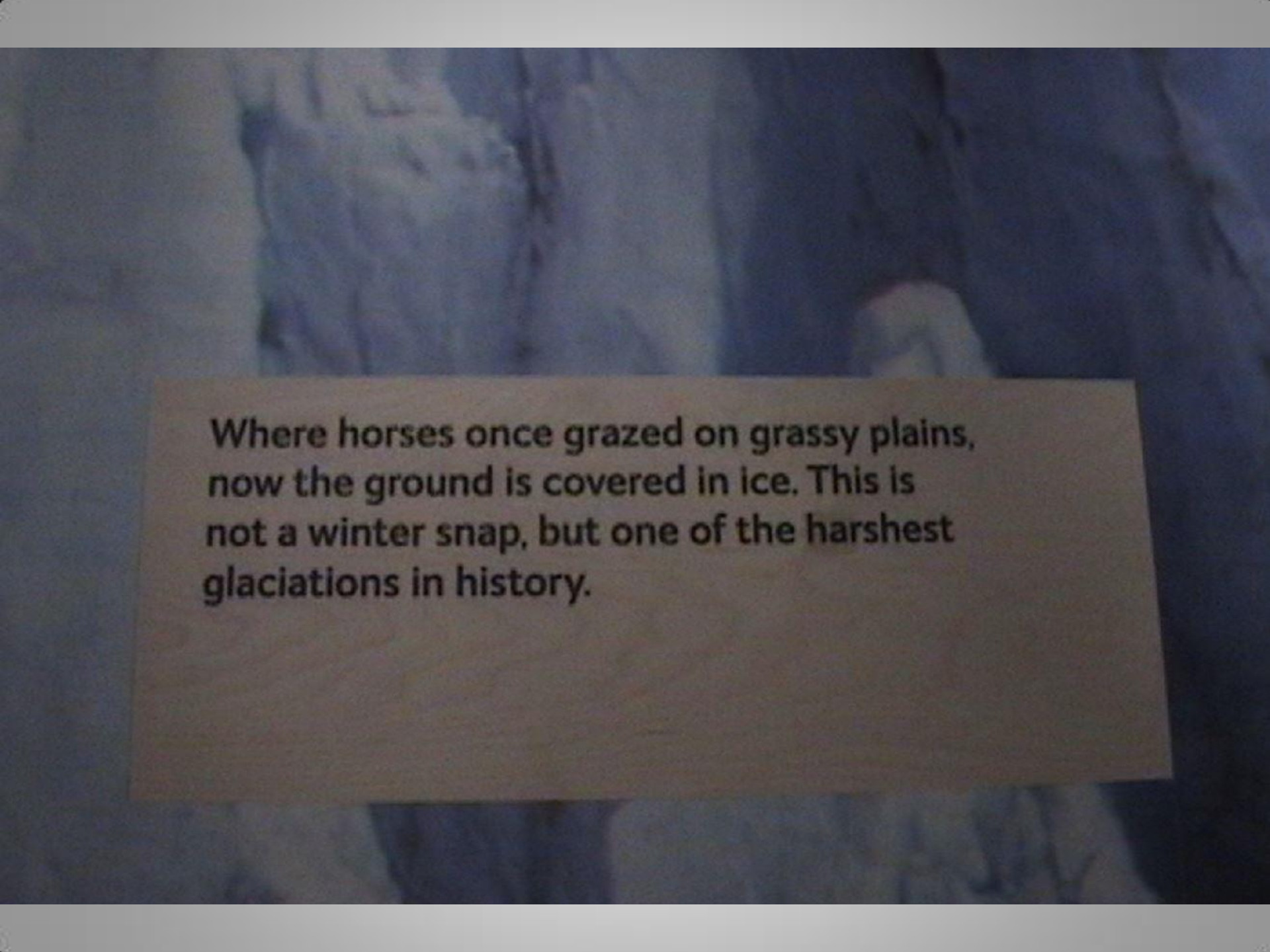
The big freeze

450,000 years ago

Where horses once
now the ground is
not a winter snap.
glaciations in histo

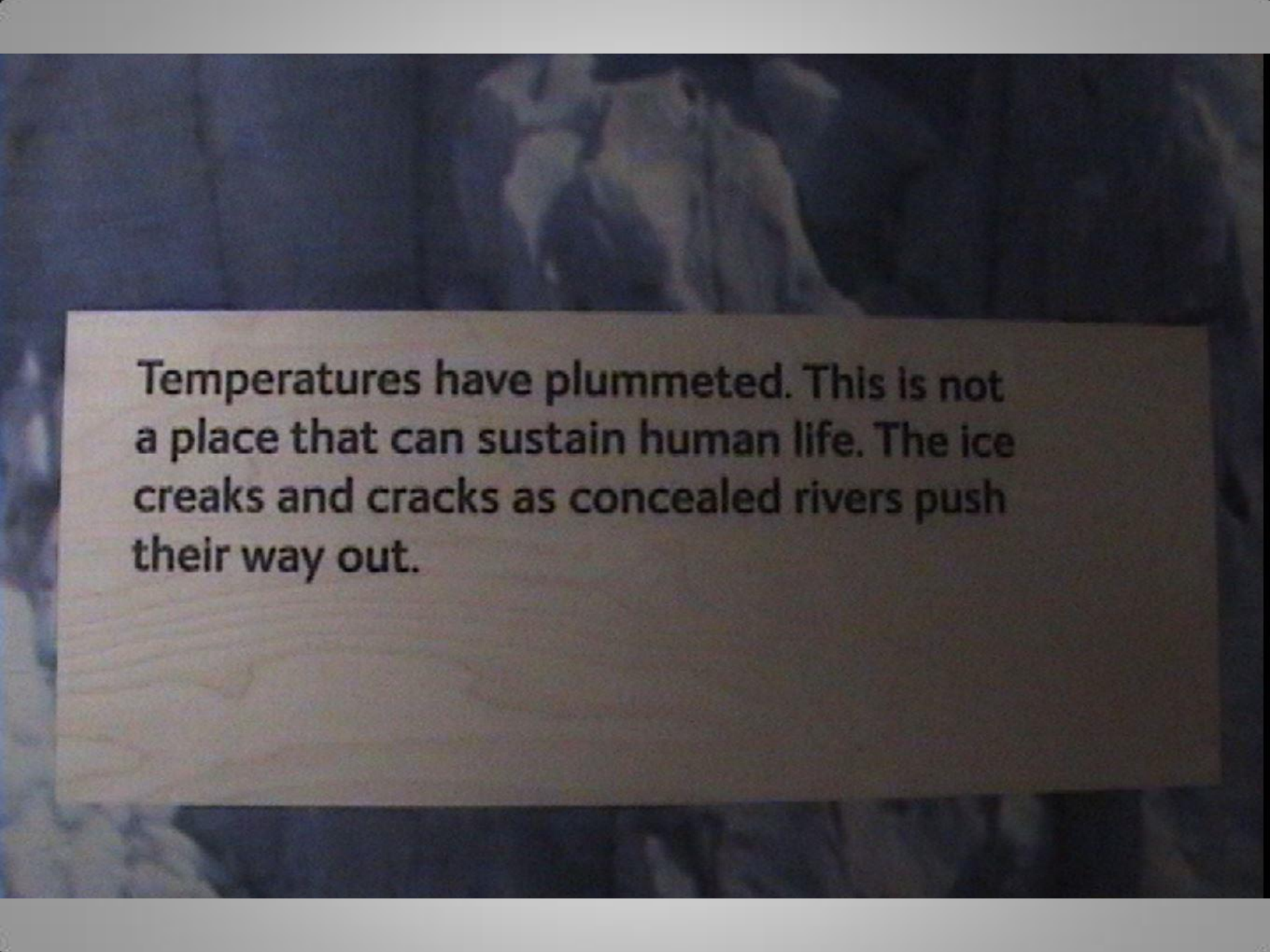
450,000 years ago



A photograph of a snowy, rocky landscape. The ground is covered in a thick layer of white snow, with dark, jagged rock formations visible in the background. The lighting is soft, suggesting an overcast day. A white rectangular text box is overlaid on the lower half of the image.

Where horses once grazed on grassy plains,
now the ground is covered in ice. This is
not a winter snap, but one of the harshest
glaciations in history.

The ice lies in thick sheets, not just here in Britain but across northern Europe. Its powerful force pushes the River Thames southwards.

A rectangular wooden sign is centered in the frame, resting on a surface of ice and snow. The sign has a natural wood grain and contains a paragraph of text. The background is a close-up of a frozen body of water, showing various textures of ice, snow, and cracks. The lighting is somewhat dim, creating a cold and desolate atmosphere.

Temperatures have plummeted. This is not a place that can sustain human life. The ice creaks and cracks as concealed rivers push their way out.

An enormous glacial lake builds up to the east of Britain, and when it finally breaks free its force cuts a gorge through the land – the beginnings of the English Channel.

THE ANGLIAN MEGAFLOOD

The lake must have been approaching the size of Belgium, some 30,000 km², with an incredible 500 billion tonnes of water. The wall of ice to the north was solid, but the comparatively lower chalk ridge to the south, perhaps 30 or 40 m high, was more vulnerable. As the lake reached the top of the chalk, it began to tip over the edge and drop to the dry floor of the Channel valley below. The soft rock of the chalk rapidly eroded and like a dam breaking, the pent-up water of the lake burst through, carving a gorge several kilometres wide. Within days or perhaps even hours the chalk had been breached to create what we now call the Strait of Dover

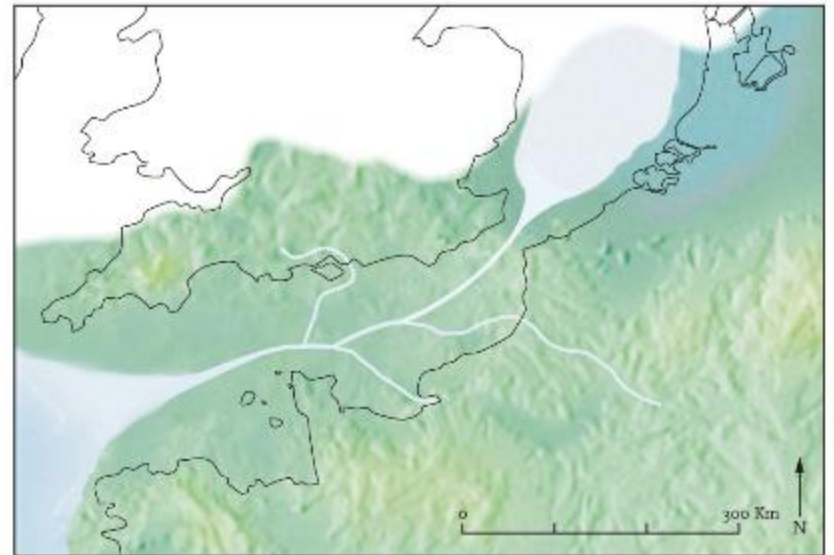
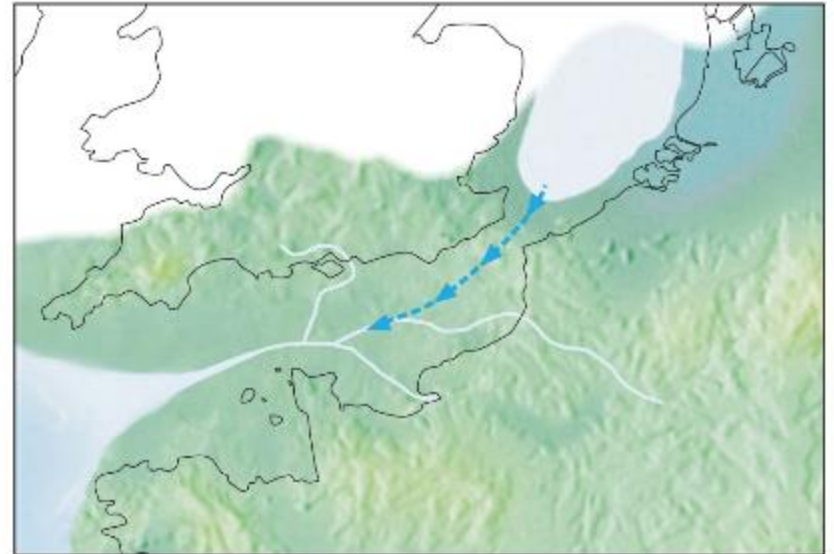
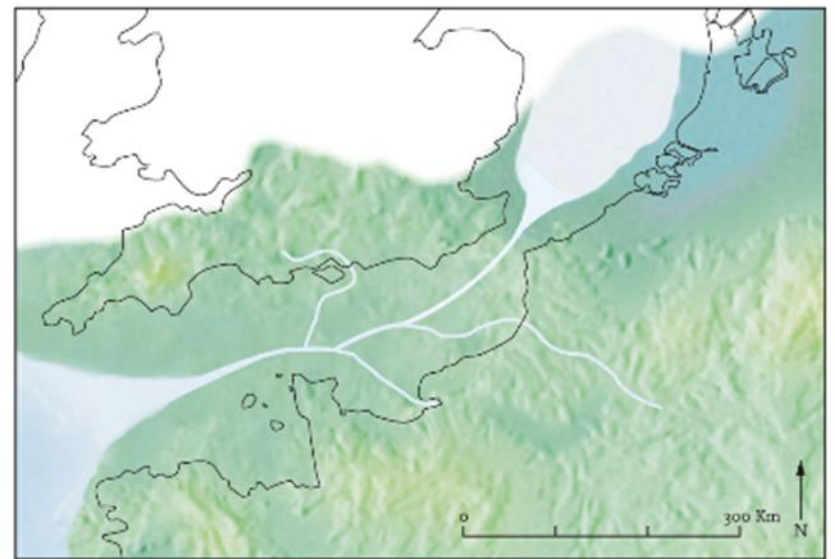
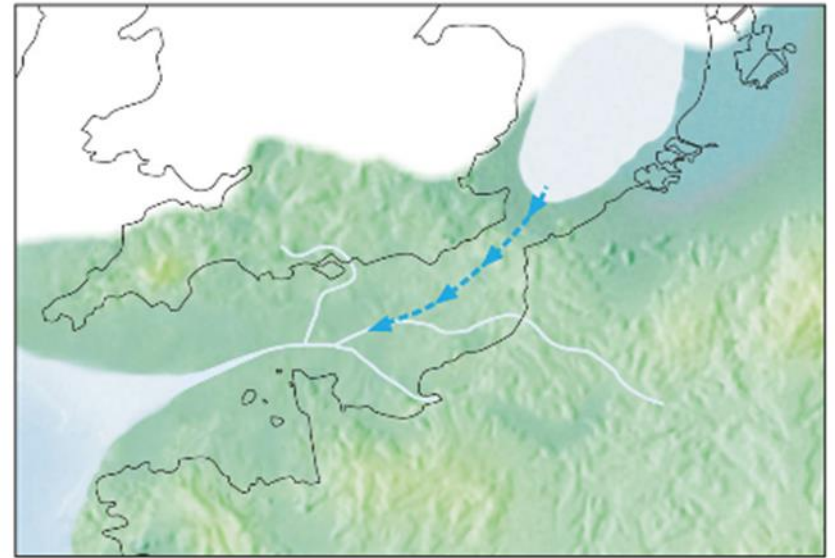


FIG 84. Map of southern Britain showing formation of the Strait of Dover. (Craig Williams)

For Britain, the megaflood was the most momentous event in its geographic history. From now on at times of high sea-level there was no longer the land link between southeast England and northwest France, and Britain was soon to become an island for the first time in its human history. As climate warmed, people were soon to return, but to a totally new landscape.

—from Nick Ashton, Early Humans (2017)



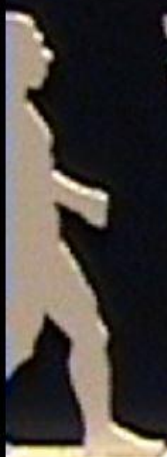


The Anglian glaciation, one of the most severe ice ages.

Finds of early Neanderthals at Swanscombe, Kent.

Earliest evidence of controlled fire in Britain, from Beeches Pit, Suffolk.

A Neanderthal child's teeth found in Pontnewydd, Wales.



500,000 years ago

400,000 years ago

300,000 years ago

200,000 years ago



The Clacton spear

Made of yew, this spear point is the oldest preserved wooden spear in the world. Its owner would probably have used this as a lethal weapon, stabbing prey at close range to generate enough force to pierce the animal's skin.

Taxus sp. Clacton, Essex, England, around 420,000 years old.

E1183



FIG 100. The Clacton spear. (© The Natural History Museum)

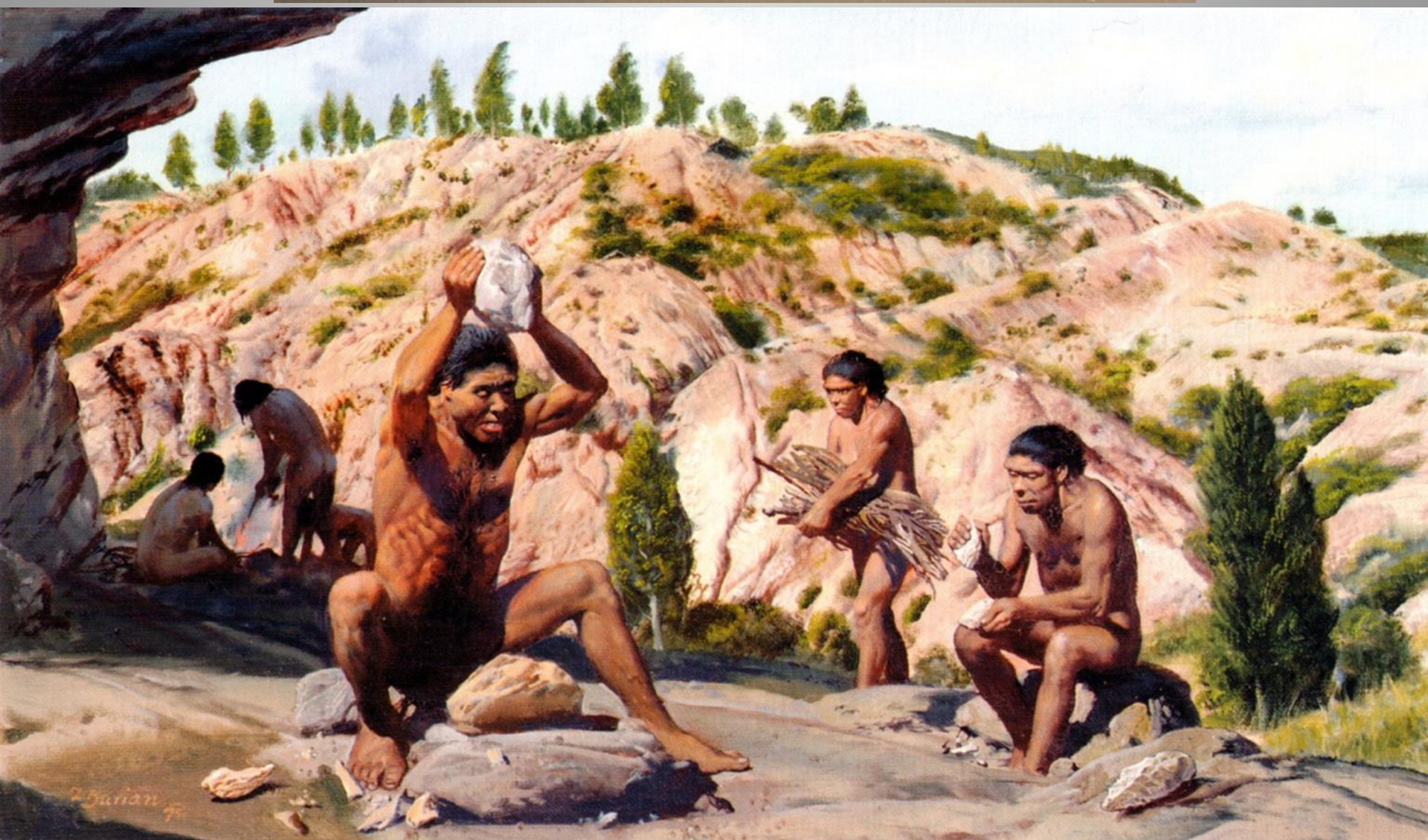
or perhaps chose not to, they did have at least one technological advantage – they had spears.

In 1911 Warren found what is still the world's oldest spear ([Figure 100](#); Warren, 1911; Oakley). Microscopic analysis does indeed show that it was carefully sharpened to a point and made from a branch of yew, but unfortunately broken at the



thicker end. If there was any doubt about humans hunting with spears at Boxgrove, then this provides direct evidence of their use at Clacton. The thickness of the piece probably suggests its use by thrusting, rather than throwing, so close-encounter hunting seems the most likely conclusion. We know little more about these people at Clacton, but more can be gleaned from upstream at Swanscombe.

Life at Swanscombe



Life at Swanscombe

These remains were all found at Swanscombe in Kent, England. The animal species living there changed as the climate switched between warmer periods and glacial episodes, and the land changed from forests to more open grasslands. Some animals may have provided a source of food and raw materials for our ancient relatives.



1. Straight-tusked elephant molar

Straight-tusked elephants browsed for food in open forests during warmer periods.

Palaeoloxodon antiquus, around 420,000 years old.
M13783



2. Deer antler

Deer provided meat to eat, a useful skin and antlers for tools. They indicate mixed deciduous woodland.

Dama dama clactoniana, around 420,000 years old.
M26884

3. Wild boar tooth

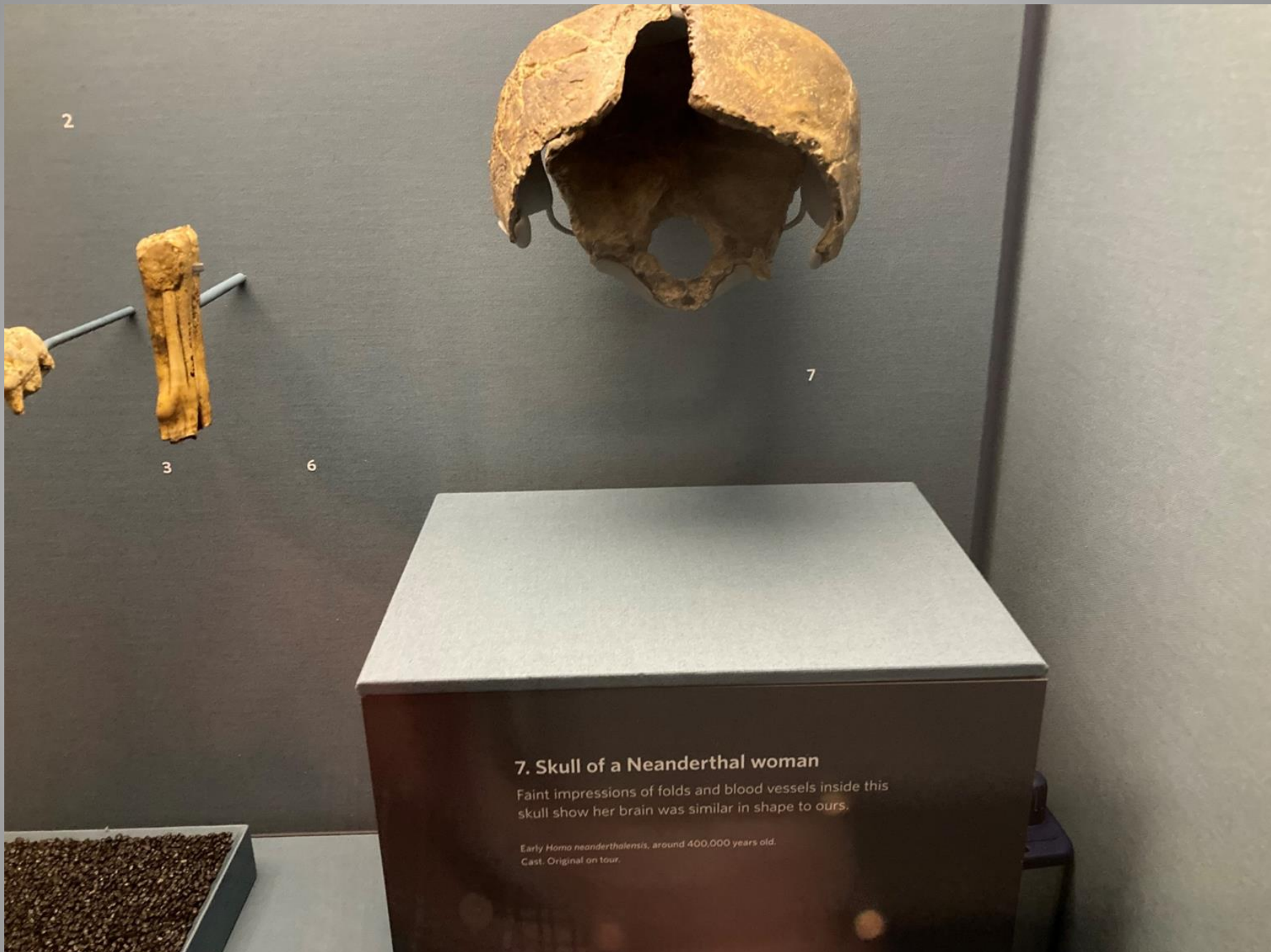
This find suggests the presence of a mixed environment made up of open areas and woodland.

Sus scrofa, around 420,000 years old.
M43940b

4. Pine marten leg bone

Adapted to life in forests and deciduous, coniferous and mixed woodland, this specimen indicates past woodland at Swanscombe.

Martes martes, around 420,000 years old.
M20256



7. Skull of a Neanderthal woman

Faint impressions of folds and blood vessels inside this skull show her brain was similar in shape to ours.

Early *Homo neanderthalensis*, around 400,000 years old.
Cast. Original on tour.

* a dent
(the supra-iniac fossa)



The three skull bones (*brown on the model below*) were discovered at separate times (1935, 1936 and 1955). But they clearly come from the same person – a young woman.

If you examine the back of the skull, you will feel the supra-iniac fossa (dent).

This is one of the special characteristics of the neandertals (described in the previous exhibit). So the Swanscombe people may have been neandertals.



Neanderthal woman, skull

This 400,000-year-old faceless skull of what was most likely an early Neanderthal woman, suggested by its light structure, was found in Swanscombe, Kent. Despite its age, it still reveals a great deal. Her brain left its mark on the surrounding bone. Faint impressions of folds and blood vessels show it was the same size as human brains today. The back of the skull has some characteristic Neanderthal features including a small pit where the neck muscles attached to the skull. Could she have been one of the first Neanderthals in Britain?



Hand axe, Swanscombe, 400,000 years old



KENT

SWANSCOMBE D

BRENFIELD PIT
middle gravels

MARSTON COLE : unreg

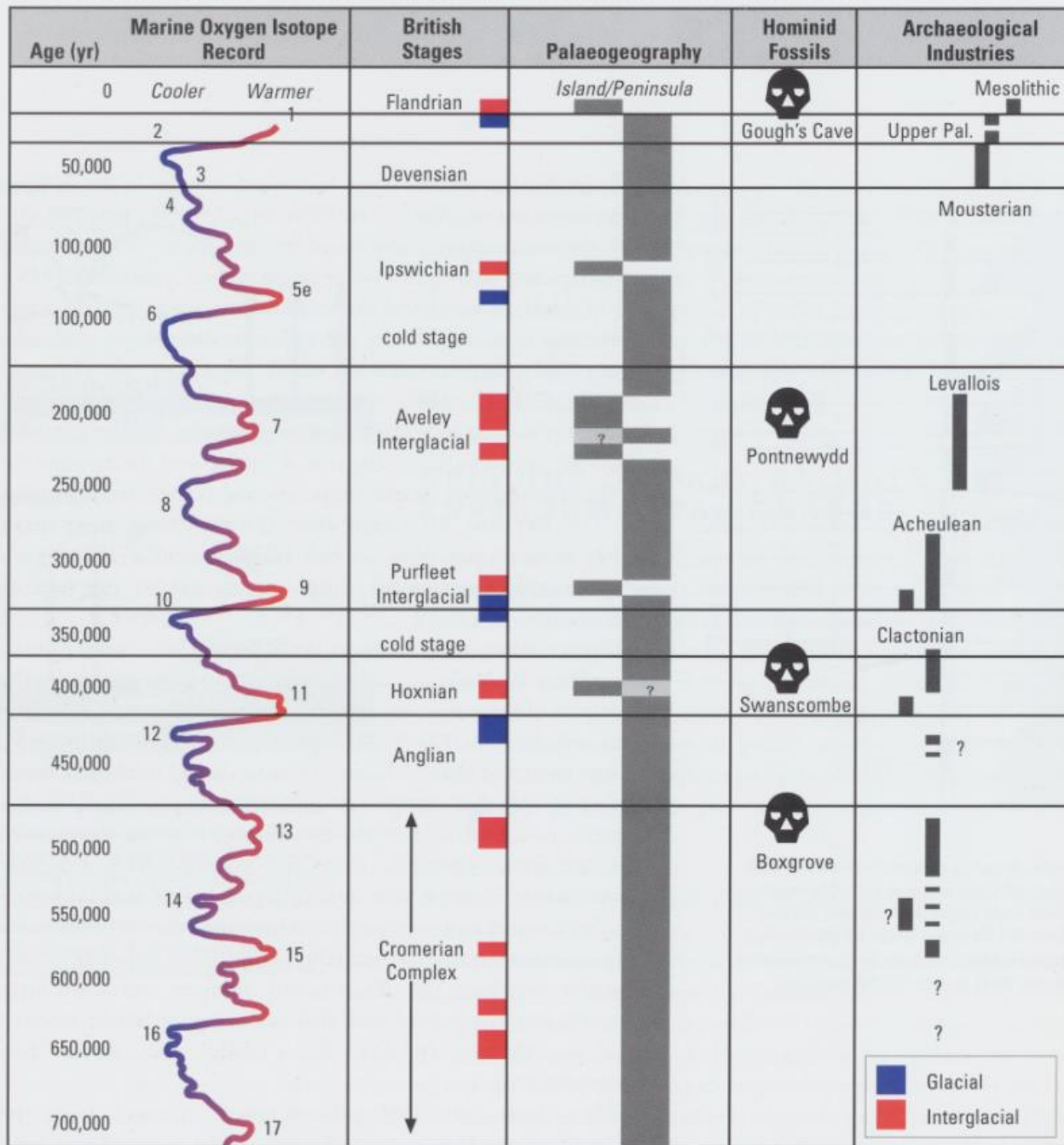
3 large hand axes

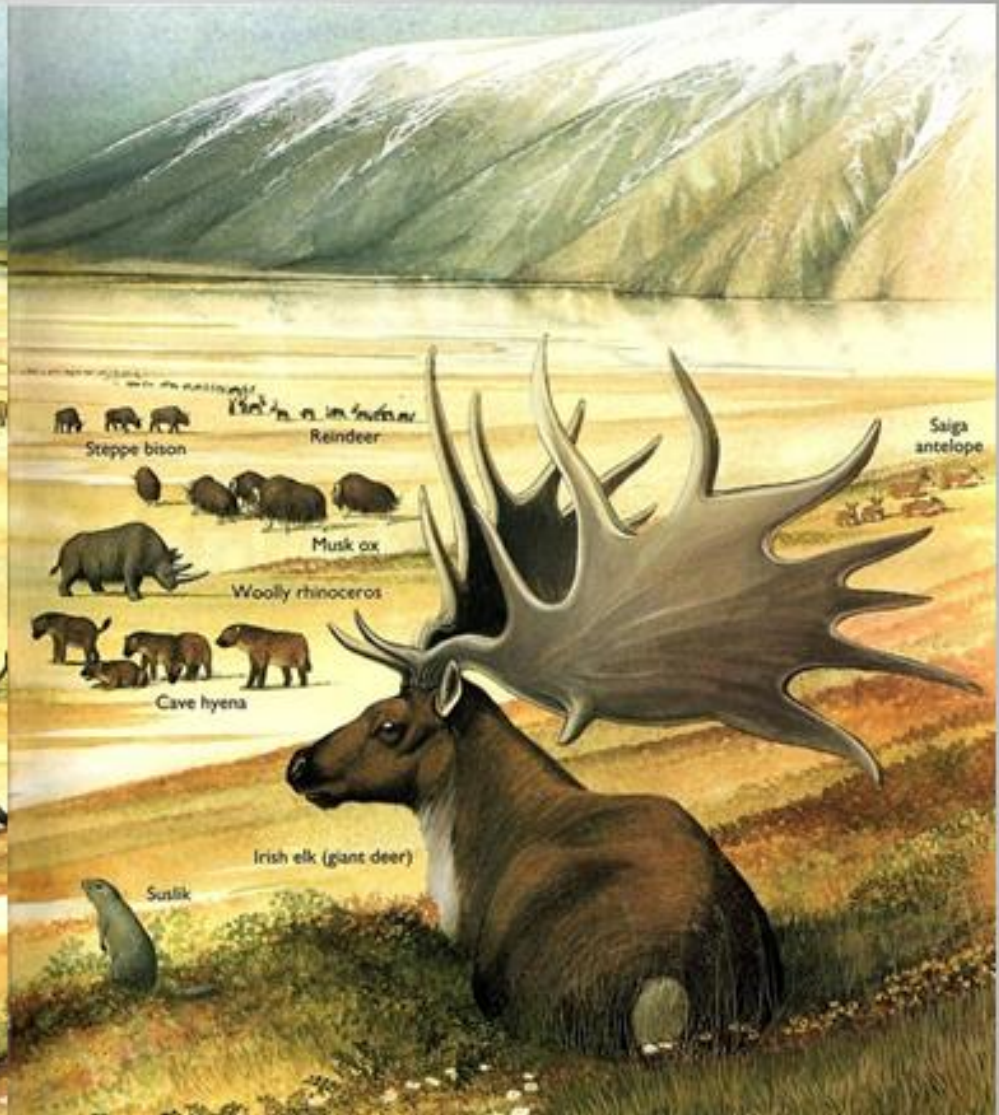
Box No 210

Box total 3



TABLE 2: Sequence of marine cold and warm stages (OIS) and possible correlation with land-based records





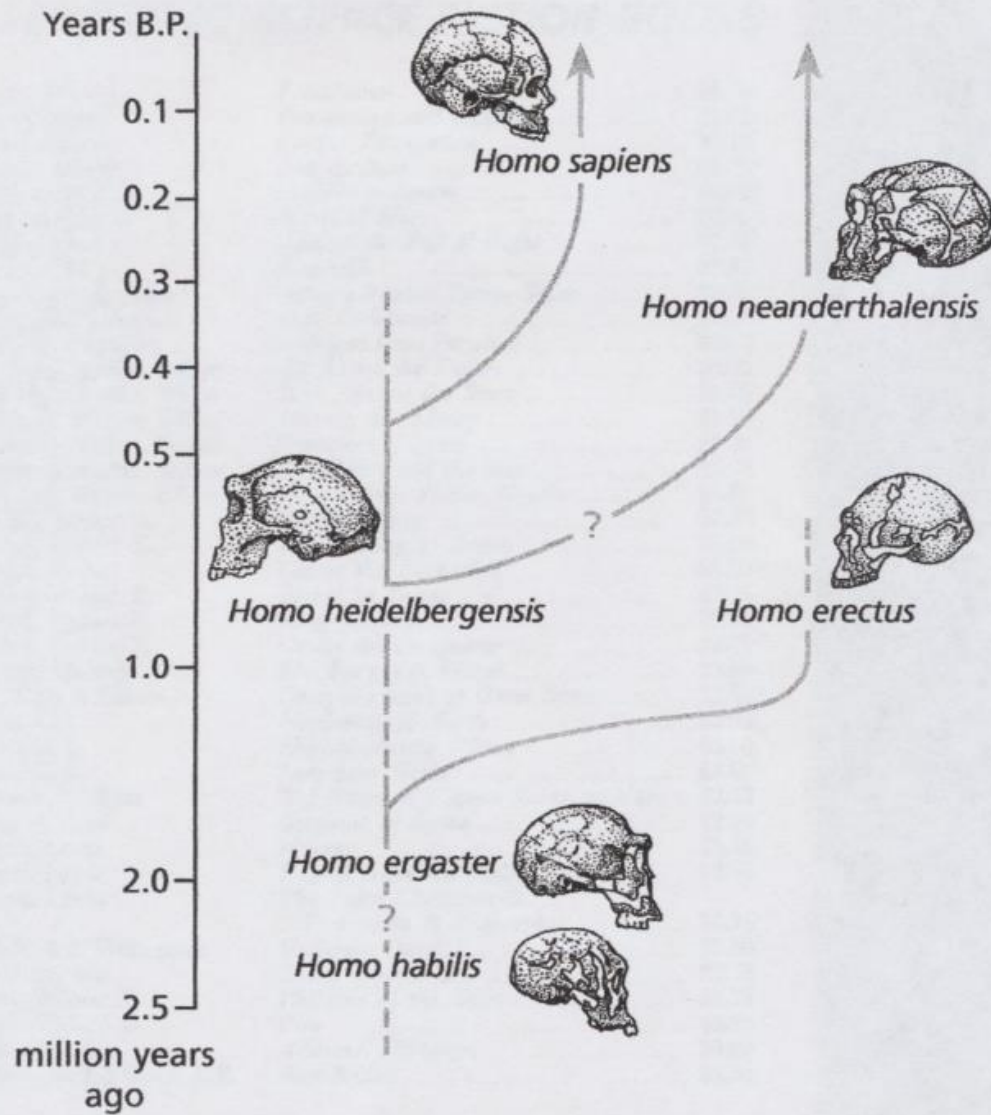



Figure 2.1 A greatly simplified diagram of human evolution after two million years ago, showing the putative relationships between *Homo ergaster* and later human forms. The ancestry of both the Neanderthals and *Homo sapiens* lie with much earlier peoples.



A Neanderthal child's teeth found in Pontnewydd Cave, Wales.

Remains of a Neanderthal child found in Pontnewydd Cave, Wales. The remains are now in the collection of the British Museum, London.



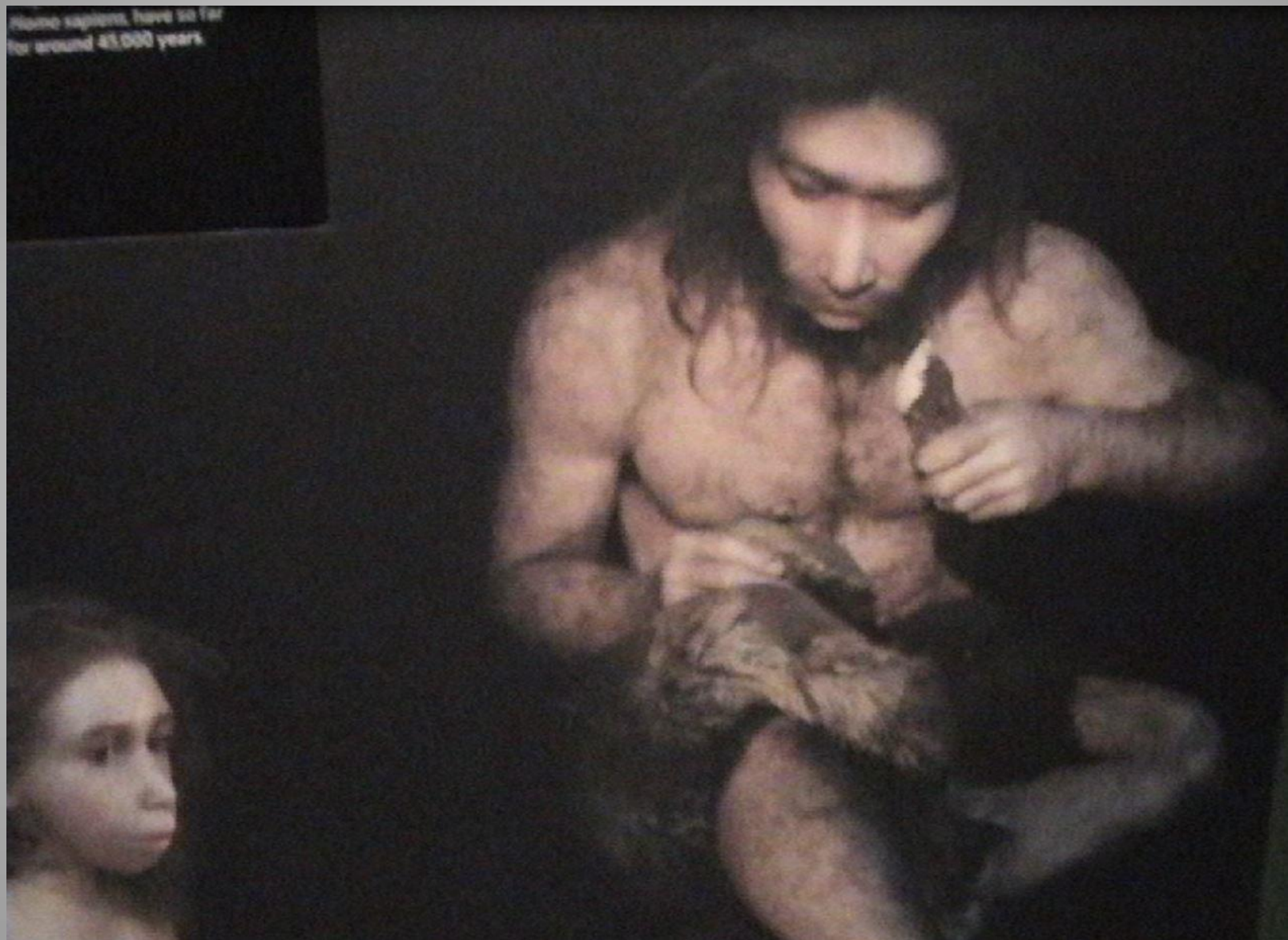
Neanderthal child, teeth

These teeth belonged to an eight-year-old child, one of the earliest humans known from Wales and who lived 230,000 years ago. Very little evidence of Neanderthals survives in Wales, but excavations in Pontnewydd Cave have revealed the remains of a number of people, suggesting Neanderthals lived there in family groups. X-rays of these molar teeth show they had fused roots and enlarged pulp cavities, characteristics of Neanderthals.

Ar fenthg gan / Lent by Amgueddfa Cymru / National Museum Wales.



Some sapiens, have so far
for around 43,000 years.





Pl. 2. Pontnewydd Cave: artefacts. Top row (left to right): handaxe, Levallois flake, handaxe; middle row: two side-scrapers, handaxe; bottom row: handaxe, discoidal core, handaxe (length of the latter 11.6cm). (By permission of the National Museum of Wales)

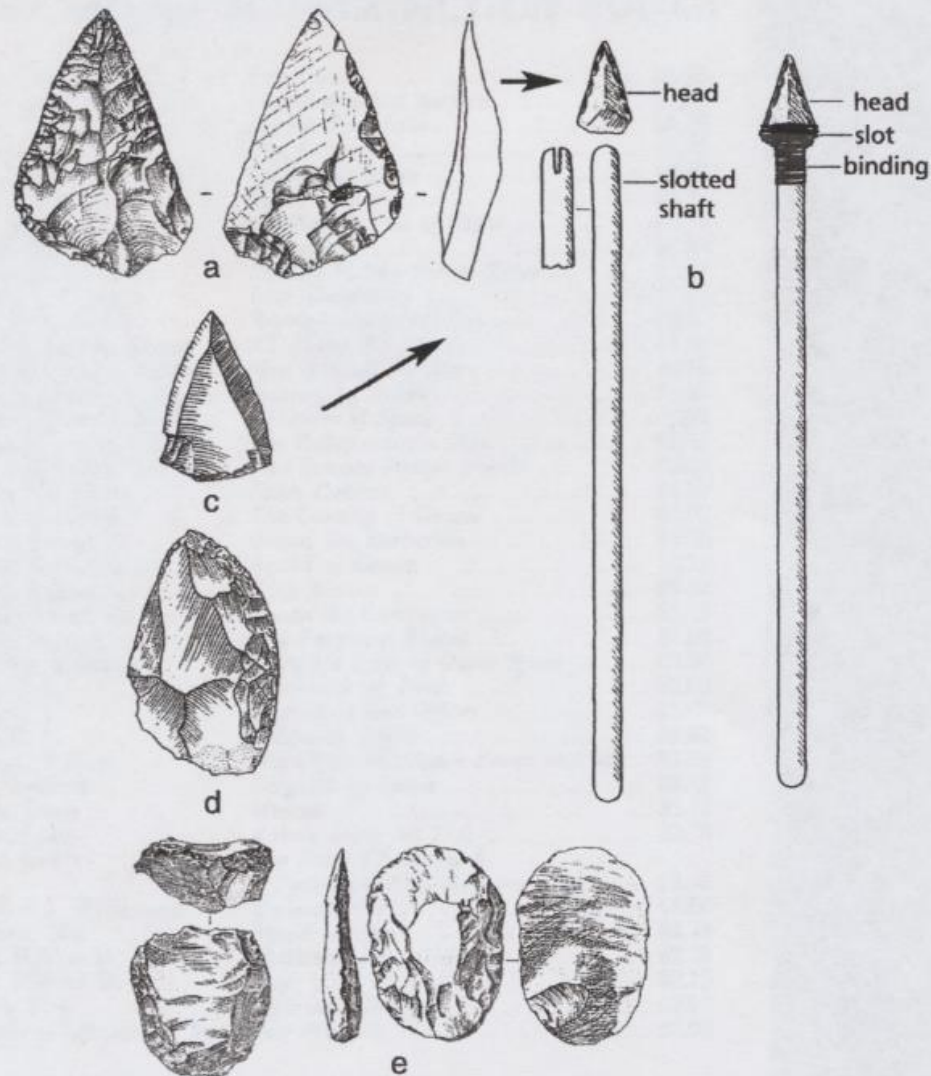


Figure 4.1 Neanderthal technology and hunting weapons. (a) Points and methods of mounting them to wooden shafts. (b) Scraper (French: racloir), probably used for scraping skins and other purposes. (c) Levallois style "tortoise shell" core (left) and the resulting large, flattish flake. This distinctive technology is named after a Paris suburb.



Neanderthal tools

The early Neanderthals used handaxes, but around 300,000 years ago a different tool technology appeared, known as the Levallois technique. Stones were pre-shaped into a core that became the basis of many tools. Compared with earlier technologies, it was a more efficient and flexible use of raw material.



5 Levallois flakes and point. Chiswick in London, Crayford in Kent, and Baker's Hole in Kent. Around 300,000 to 200,000 years old.



4 The largest handaxe in Europe. Furze Platt, Berkshire. Around 300,000 years old. Too large for practical use, it might have been symbolic, perhaps to demonstrate the skills of its maker.



4 The largest handaxe in Europe. Furze Platt, Berkshire. Around 300,000 years old. Too large for practical use, it might have been symbolic, perhaps to demonstrate the skills of its maker.

Montnewydd Cave,
Wales.

Remains of hippos
and lions found at
Trafalgar Square,
London.

200,000
years ago

Britain is deserted.
There are no people
here for more than
100,000 years.

100,000
years ago

Neanderthals
return to Britain

200,000 years ago



125,000 years ago




A deserted island

180,000–60,000 years ago



Britain
125,000 years ago

Trafalgar Square, London, 125,000 years ago.
In the cooling water of the River Thames,
hippos take refuge from the hot sun.
Trumpeting sounds fill the air before a group



Britain
125,000 years ago

Trafalgar Square, London, 125,000 years ago.
In the cooling water of the River Thames,
hippos take refuge from the hot sun.
Trumpeting sounds fill the air before a group
of female elephants crashes through the
trees. They've come to drink and so the
hippos will have to share. Further from the
river bank, lions rest in the shade.

No human remains or tools have ever been
found from this 120,000-year-long period,
even though we know Neanderthals thrived
elsewhere in Europe during this time.

trees. They've come to drink and so the hippos will have to share. Further from the river bank, lions rest in the shade.

No human remains or tools have ever been found from this 120,000-year-long period, even though we know Neanderthals thrived elsewhere in Europe during this time.

At first it was just too cold this far north. Then, when temperatures rose, so did the sea levels, cutting Britain off from the mainland. Animals were here before sea levels rose. Neanderthals were not, and so without boats they couldn't get here.

Not here or just not found?

'Absence of evidence is, of course, not evidence of absence. But archaeologists have been excavating for more than 150 years and there is no evidence of humans from this time. No tools, no human remains, no marks from butchery – no trace.'

Silvia Bello, researcher at the Natural History Museum

Just before this deserted phase, another cold period hit Britain, the beginning of one of the most severe ice ages we know about.

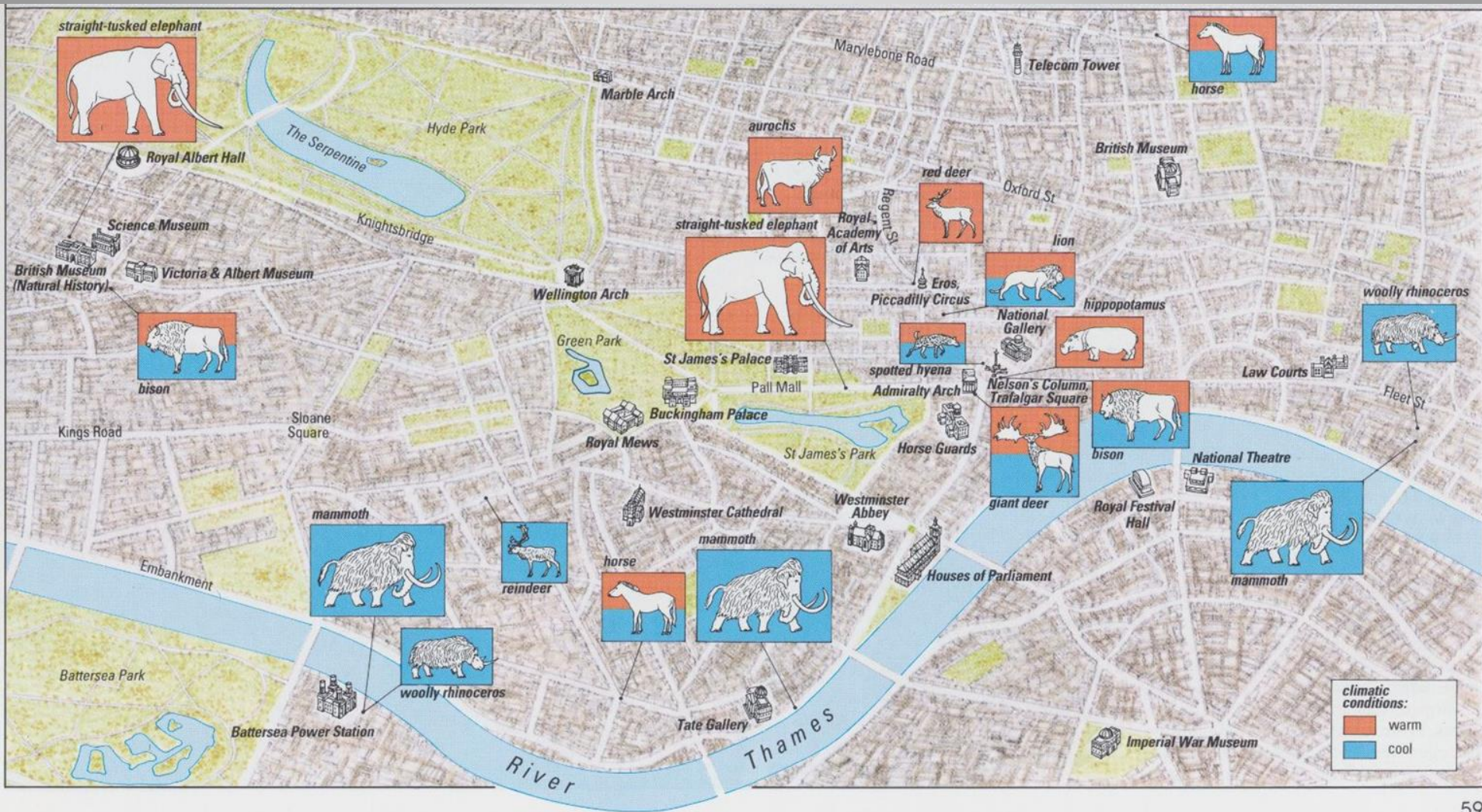
Neanderthals hung on in places like Crayford in Kent at first but abandonment soon followed, and Britain entered a period of human absence.

humans from this time. No tools, no human remains, no marks from butchery – no trace.'

Silvia Bello, researcher at the Natural History Museum

Just before this deserted phase, another cold period hit Britain, the beginning of one of the most severe ice ages we know about.

Neanderthals hung on in places like Crayford in Kent at first but abandonment soon followed, and Britain entered a period of human absence that would last more than 100,000 years. In the past, people returned when a cold period swung to warm, but not this time. Britain had become an island and the people couldn't get here.





Hippopotamus
(*Hippopotamus amphibius*)

In 1960, building works in Trafalgar Square found this hippopotamus canine from 125,000 years ago. The lower jaw is from Barrington, Cambridgeshire. Rhinoceros, elephants and lions were also found during this time when humans were absent from Britain.

Hippopotamus (*Hippopotamus amphibius*)

In 1960, building works in Trafalgar Square found this hippopotamus canine from 125,000 years ago. The lower jaw is from Barrington, Cambridgeshire. Rhinoceros, elephants and lions were also found during this time when humans were absent from Britain.



1 ICE AGE EUROPE: CHANGING ENVIRONMENTS

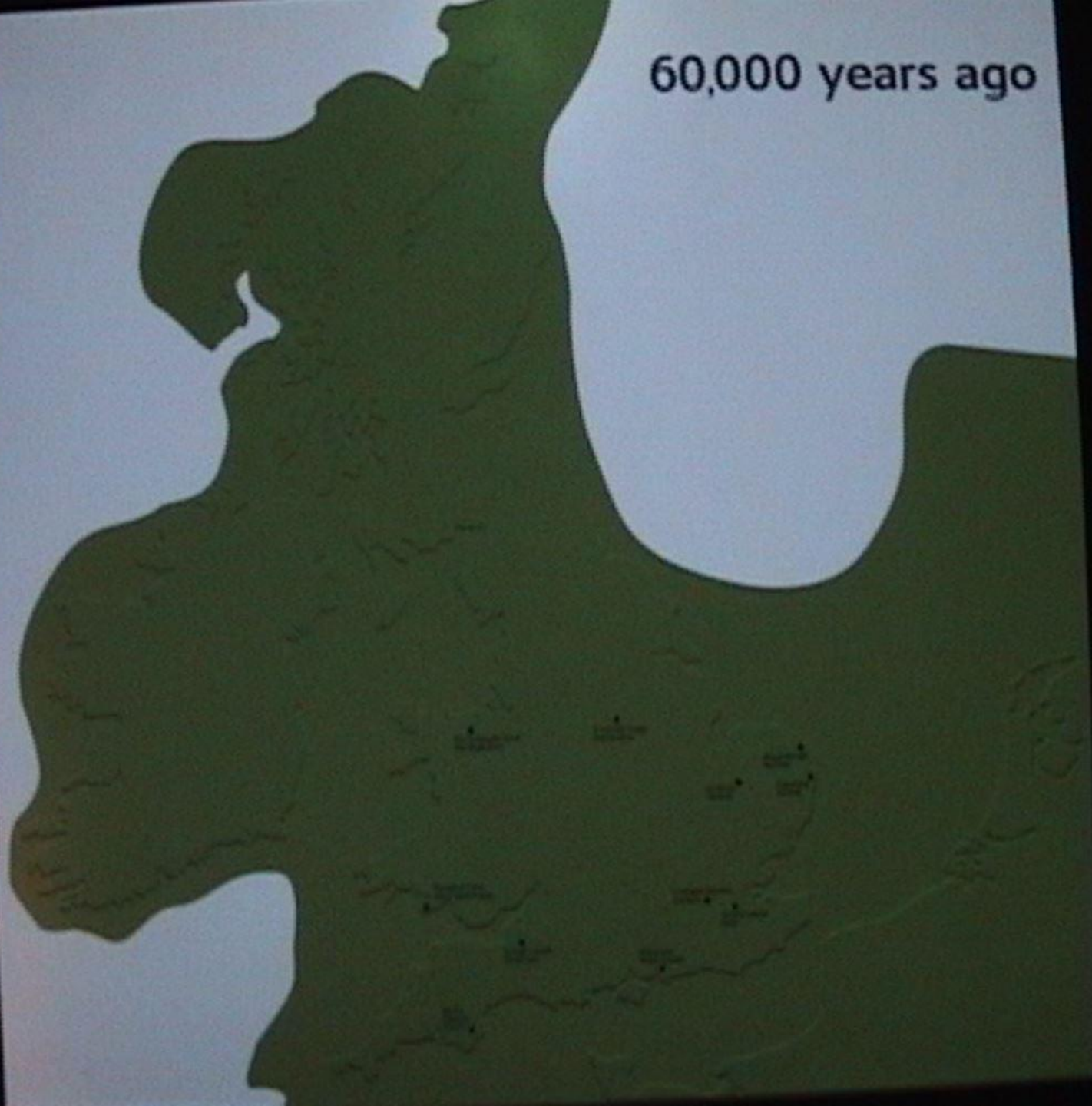
The map (left) depicts Europe in a period when the ice sheets were not at their fullest extent but when conditions were colder than those of the present day. Features to be noted are the extension of the coastal plains as a result of the lowered sea level – the British Isles, for instance, are joined to the continent. Equally, woodland is absent from northern Europe, which would have been covered by tundra and, in more sheltered parts, pine woods. Deciduous trees would have been restricted to the south of Europe although dwarf varieties of them may have survived in some northern areas. As conditions improved the vegetation zones would move north. The Baltic Sea was cut off from the North Sea and formed a deep, brackish lake. The warm waters of the Gulf Stream would have been diverted southwards during colder times, enhancing the cooling of the land in north-western Europe. Just as the vegetation zones changed to reflect the variations of climate so too did animal distribution. Present-day patterns became established only 10,000 years ago.

3 LONDON: THE ANIMAL POPULATION

Animals are frequently associated with certain environmental conditions. Animal fossils, revealed when building work was being undertaken in London (map below), show times when conditions were warmer than those of the present day – open country species like lions and elephants were present, and hippopotamus lived in marshy areas. Similarly, finds of woolly rhinoceros and mammoth fossils show times when the climate was much colder and the London area was open steppe, similar to Siberia. Creatures such as the horse, bison, lion and hyena may be found at different times in many different climatic conditions. As the climate changed, some species, such as lions and hyenas, moved to more suitable areas, and some, such as the horse, simply adjusted to their new surroundings. Others – the giant deer, mammoth and woolly rhinoceros – failed to do either and over the last 10,000 years have become extinct.



60,000 years ago



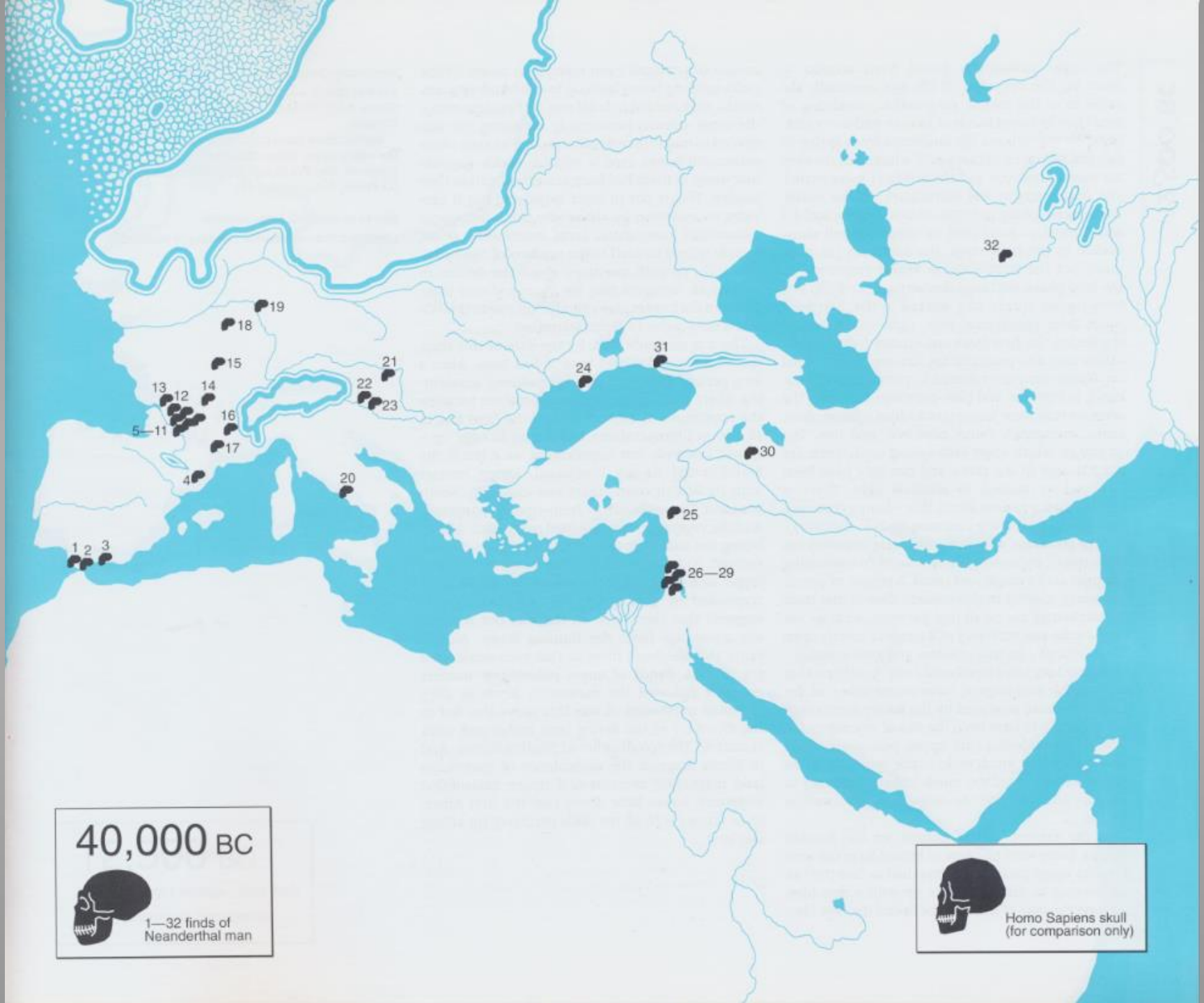
Humans return

60,000–12,000 years ago



It has been
humans wa
of Neander
across a tr
the anima
unstable.
the lives
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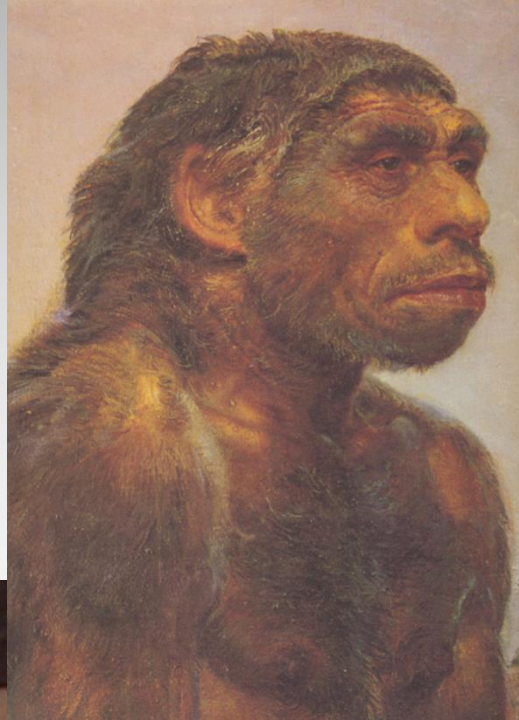
40,000 BC



1—32 finds of Neanderthal man



Homo Sapiens skull (for comparison only)



It has been many thousands of years since humans walked Britain's soil, but now a band of Neanderthal hunters stalk a reindeer herd across a treeless prairie. They have followed the animals far. The climate has been unstable. Long, hard winters have claimed the lives of loved ones. They must build their shelters well, using only the best skins, large bones and tusks.

Neanderthals finally returned to Britain around 60,000 years ago, after being absent

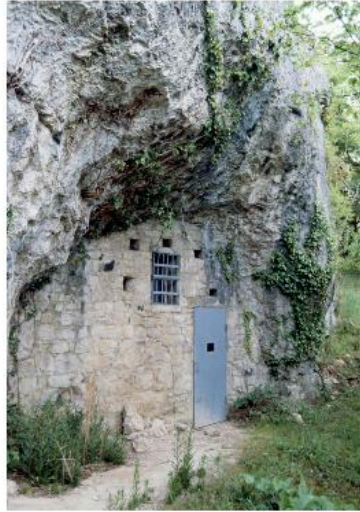


FIG 126. Entrance to Pontnewydd Cave. (© National Museum of Wales)



FIG 127. Handaxe showing opposite faces from Pontnewydd Cave. (© National Museum of Wales)



FIG 128. Human jaw from Pontnewydd Cave. (© National Museum of Wales)



12. BURTON 50







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Changing attitudes toward Neanderthals!

67 (*below*) Reconstruction (1909) of a Neanderthal based on Marcellin Boule's scientific analysis of the Chappelle-aux-Saints human fossil.

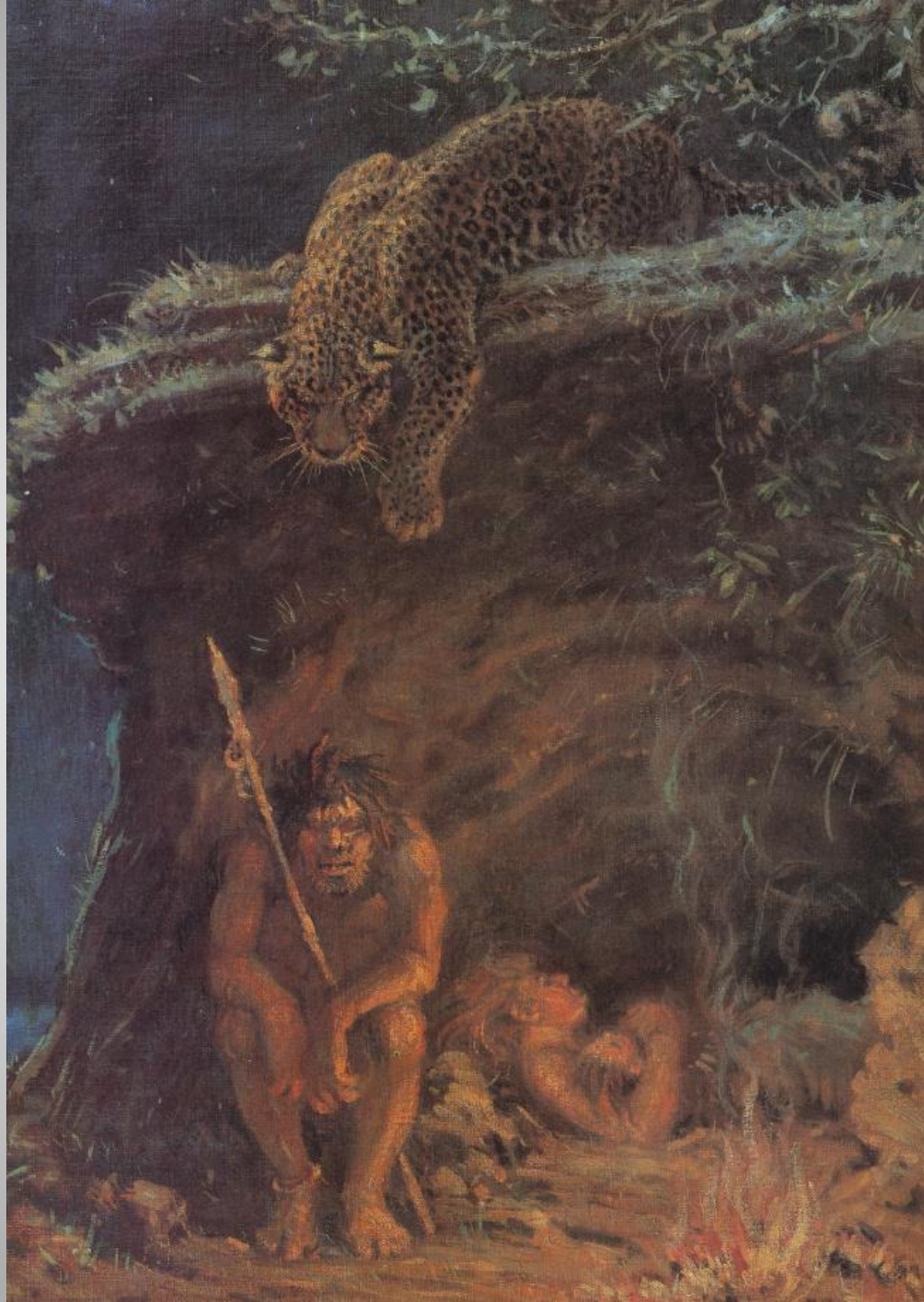


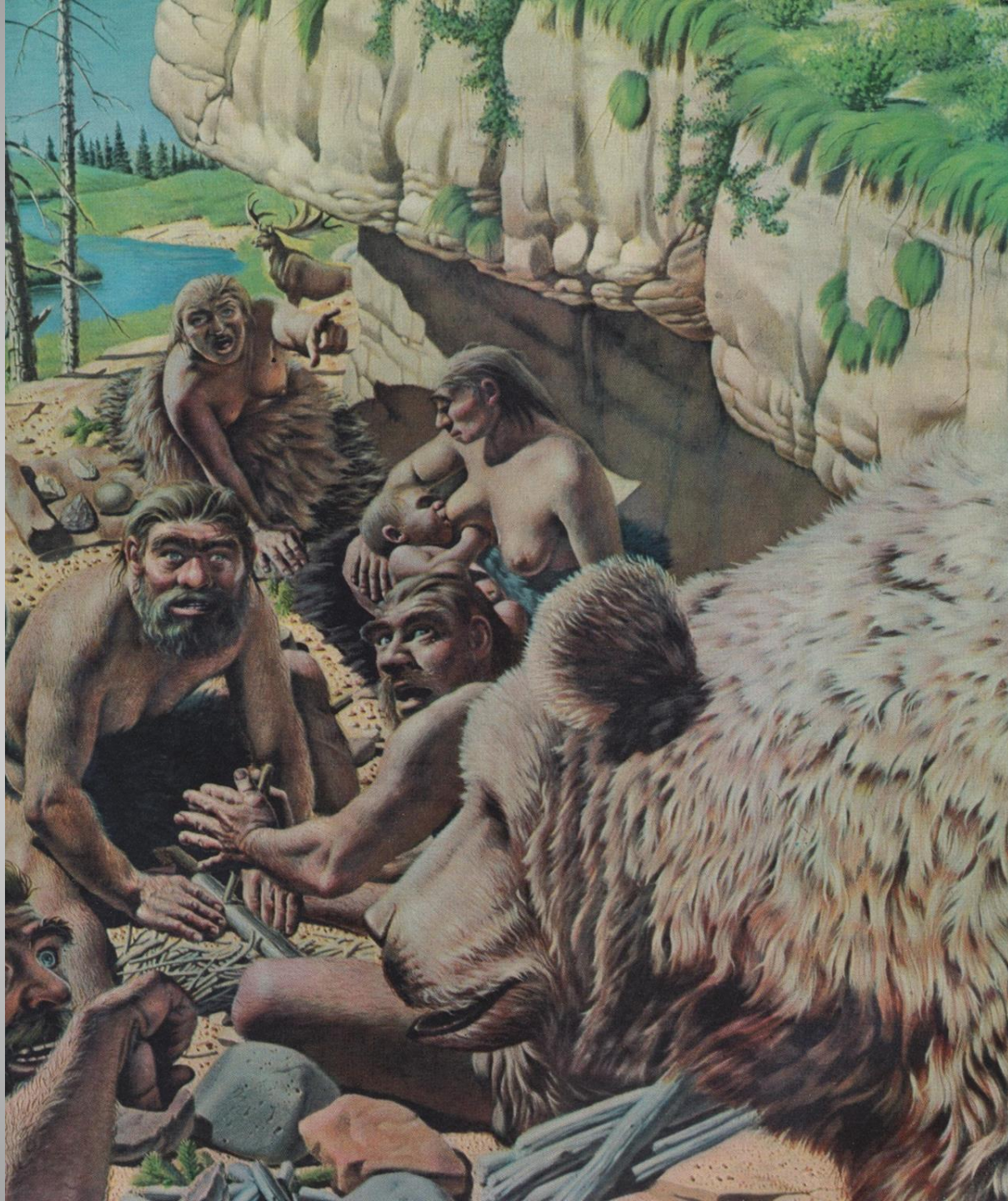
70 (*above*) Reconstruction (1990s) of a Neanderthal in a suit at Erkrath Museum, Germany, based on a modern reassessment of the fossil remains.













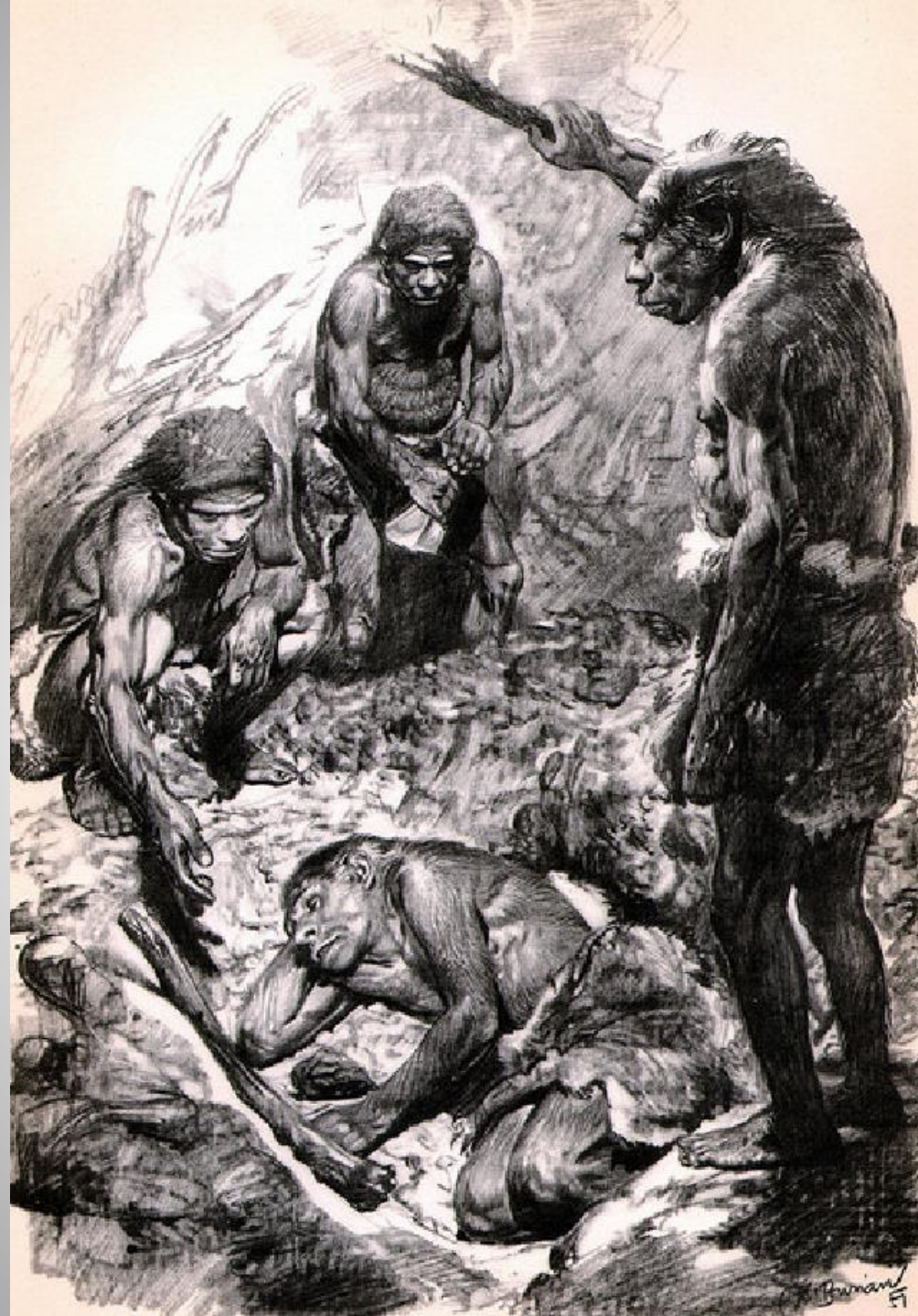


Pl. 1. *The Neanderthals*. The scene shows Neanderthals outside a cave sited with a wide view across open tundra. Activities shown (right to left) are: knapping a handaxe, straightening a spearshaft, scraping a skin, creating a fire. The skin shelter is resonant of the structure in the Grotte du Lazaret near Nice. The bear's skull was shown to evoke the possibility of ritual but its depiction was actually tongue in cheek, since the evidence for Neanderthal bear cults had already been discounted by the time of the drawing. The image was created in about 1980 by Gino D'Achille for the National Museum of Wales from a brief prepared by Stephen Green in consultation with Christopher Stringer. (By permission of the National Museum of Wales)





R. Burian
50



Memoirs of a Neanderthal

With no written records we will never know the details of a Neanderthal's social life.

They probably lived in small groups and were social beings, like us. During seasonal events, perhaps hunting, they might have joined other Neanderthal groups, coming back to the same spot year after year as they did at La Cotte de St Brelade, on Jersey.

We don't know if they had a language like ours, but clues in their behaviour suggest that Neanderthals communicated verbally in some way. They looked after their sick, for example, and they also buried their dead.

The Neanderthal way

Posted on [October 13, 2005](#) by [GJ](#)

A talk by Dr. Danielle Schreve described animal bones and flint tools extracted from a 65,000 year-old infilled stream channel exposed by quarrying in Norfolk. Here, a voice from the past challenges our stereotyped view of Neanderthal hominids and reveals the answer to an important question left unanswered by Dr. Schreve's Scanning Electron Microscope.



I think that we Neanderthals deserve a better press –
You think of us as hairy, thick-brained grunters.
In fact, our brains were just as big as yours are, more or less,
And we were quite sophisticated hunters:



I think that we Neanderthals deserve a better press –
You think of us as hairy, thick-brained grunters.
In fact, our brains were just as big as yours are, more or less,
And we were quite sophisticated hunters:

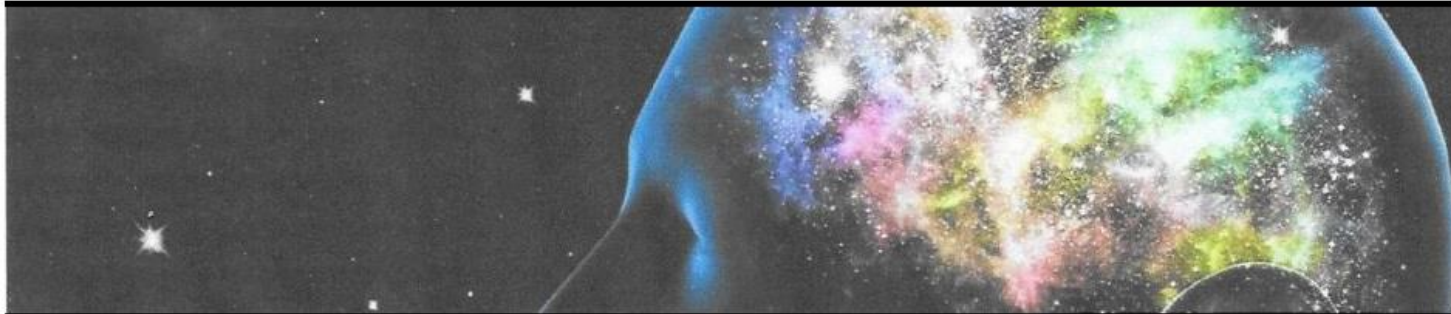
We made our landscape work for us; we killed beasts in their prime
To give us lots of protein for our belly
(The early mid-Devensian was such a chilly time).
Our favourite special treat? Bone-marrow jelly!

Our instincts always helped us to protect ourselves from harm,
For we could be the target of attacks;
So speed was of the essence and, to cut off leg or arm,
We'd use a sharp triangular hand axe.

I understand you're puzzled why our axes were so clean
That SEMs reveal no trace of nosh:

(SEM = Scanning Electron Microscope)

Well, that's because our women nagged "You don't know *where* they've been",
And regularly put them in the wash.



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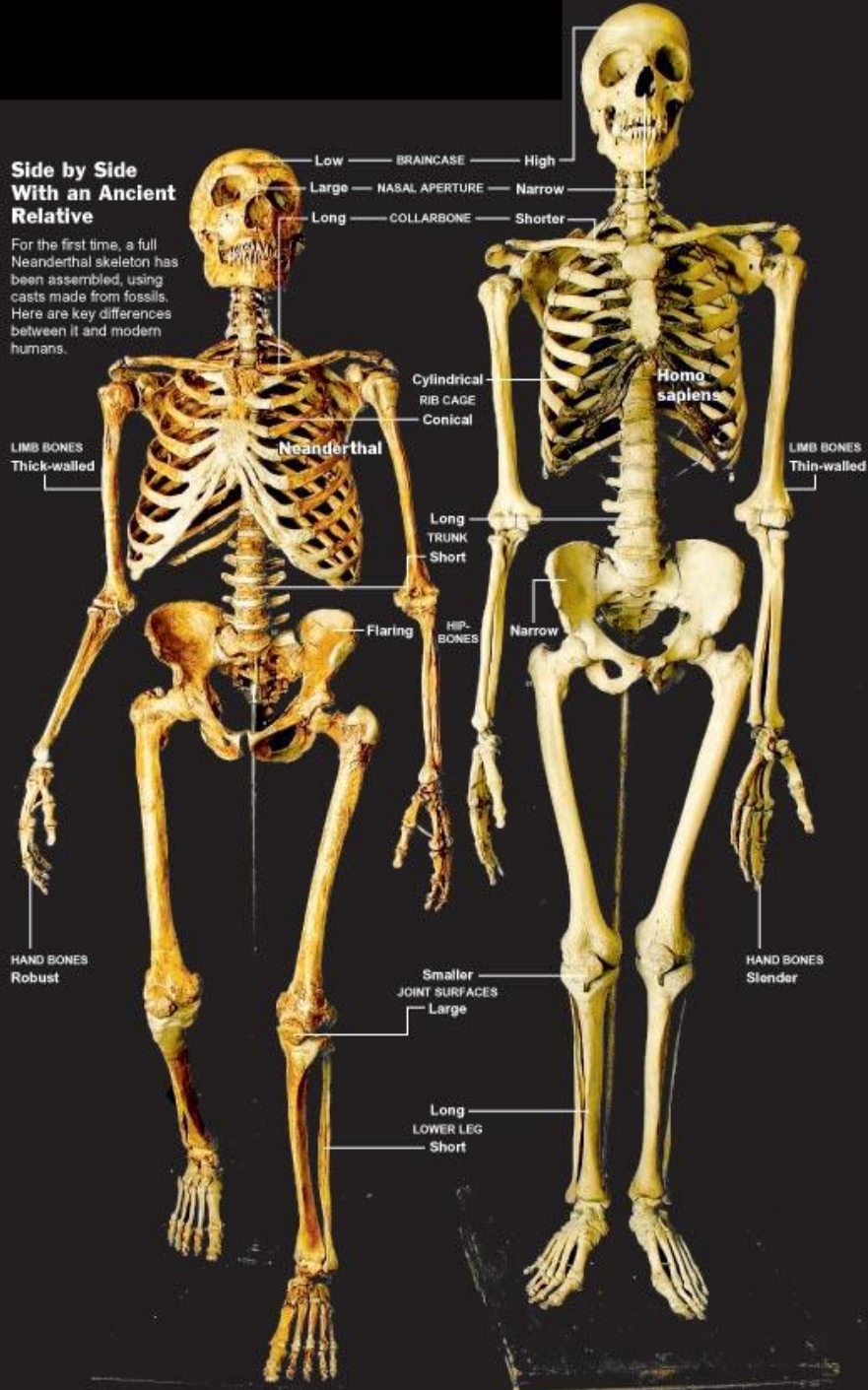






Side by Side With an Ancient Relative

For the first time, a full Neanderthal skeleton has been assembled, using casts made from fossils. Here are key differences between it and modern humans.



Hostile coexistence

Posted on [June 14, 2007](#) by [GJ](#)

Neanderthal humans vanished as a recognisable species from the fossil record some 30,000 years ago. Until then, though, they had co-existed in Europe with the taller and slimmer Cro-Magnons (early modern Homo sapiens) for the previous 10,000 years or so. The two groups had brains of similar size – a little larger than our own! There is some dispute about whether they interbred, but I bet they argued when they met. Imagine two of them, after a few pints of Mammoth Blood:



*“Don’t you patronise me,
You Cro-Magnon sissy,
Or I’ll show you the point of my spear.
Yeah, we’re brutish and short,
(Like our lives, some have thought. . .)
But we’re second to none while we’re here.*



“Don’t you patronise me,
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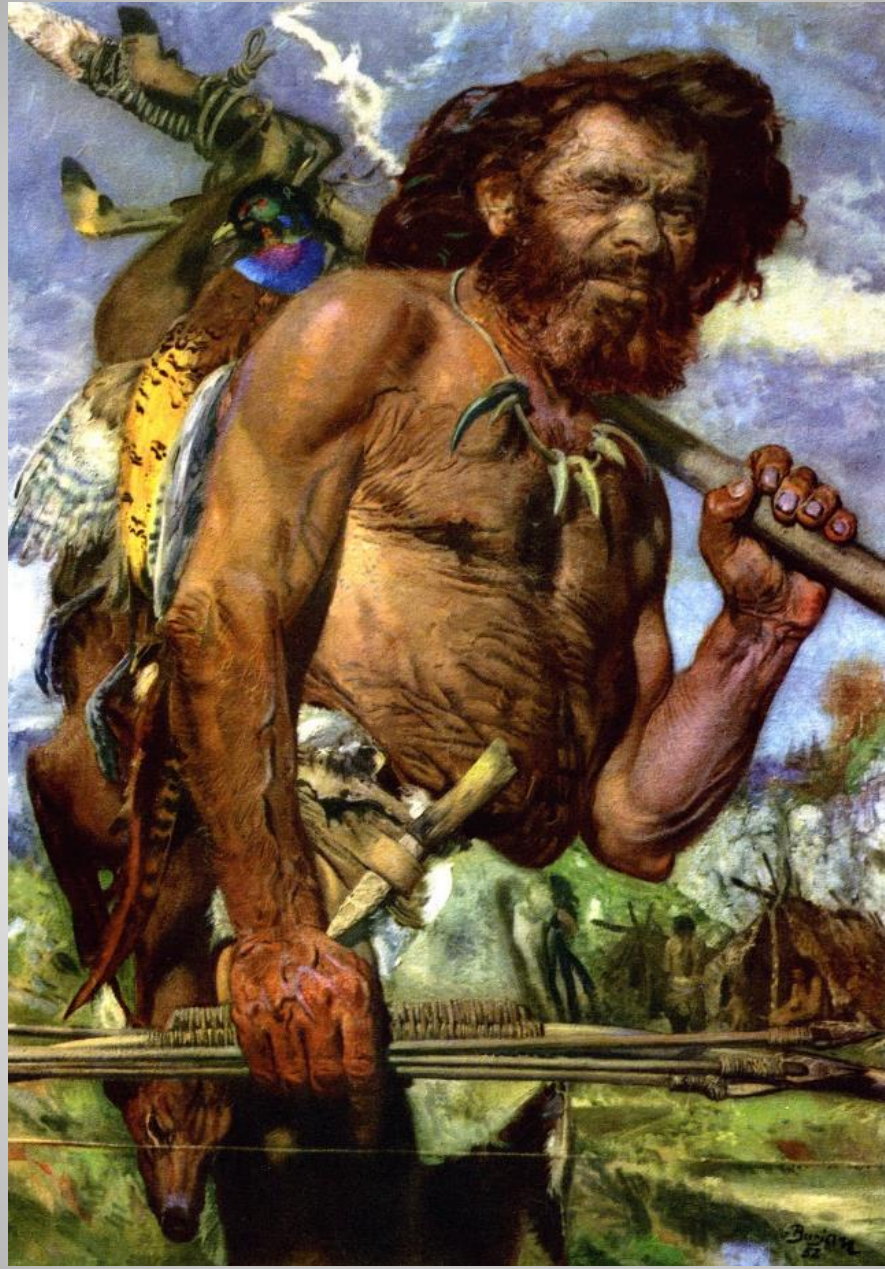
“We’re Neanderthal, see?
And you’ve got to agree
We’re as big-brained as you are, my friend.
Though our brows might be prominent,
It’s *we* who’d be dominant
If it came to a fight to the end.”

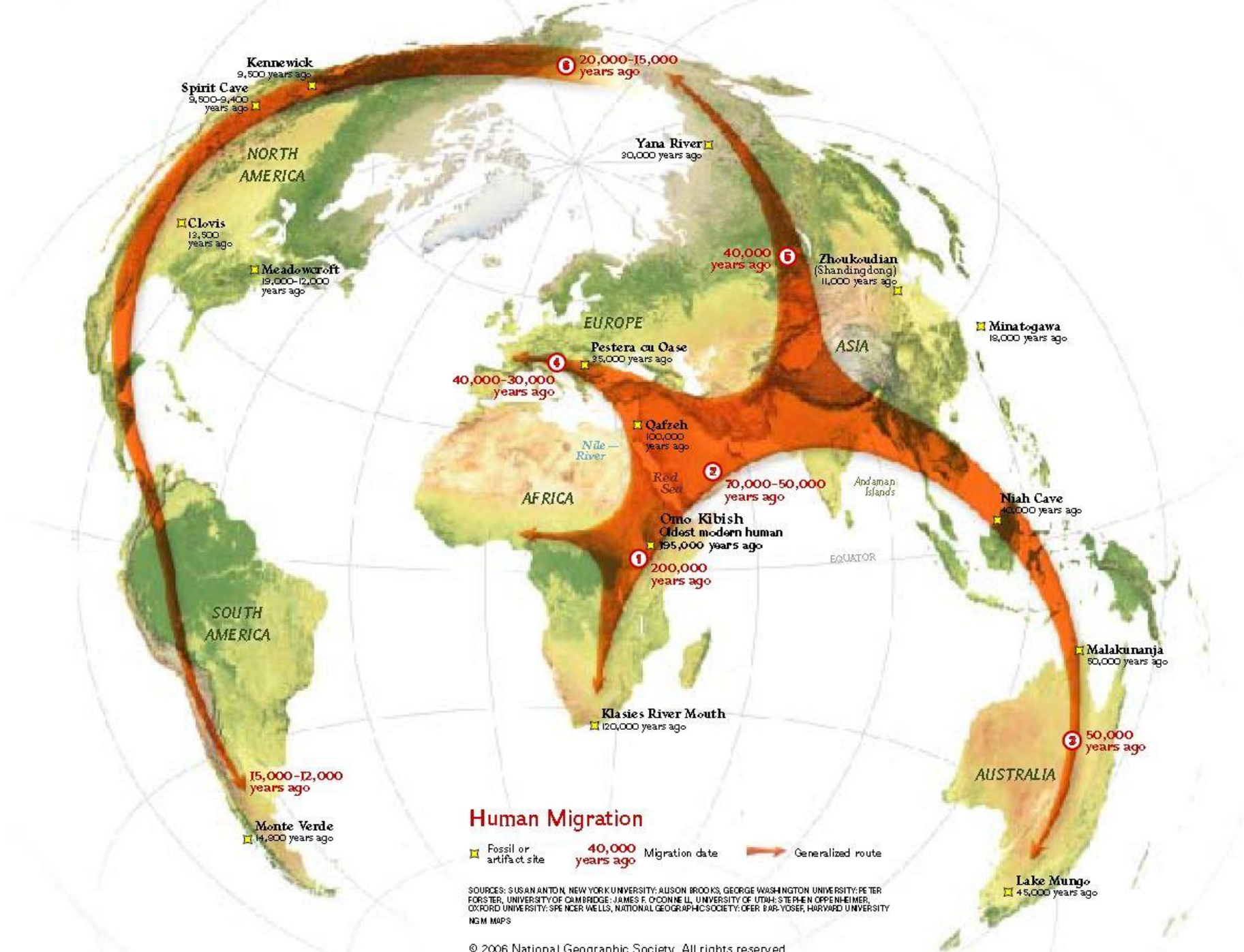
The Cro-Magnon replies:

“We’re more cultured and wise
Than you clunky Neanderthal dudes.
We are speedy evolvers
And good problem solvers,
And we paint our cave walls and carve nudes.

“And we happen to know
That your fossils will show
That big brains and brow ridges won’t cut it.
To survive here for ever
You’ve got to be *clever*,
And Neanderthals aren’t, see? So *shut it!*”











SOURCES: SUSAN ANTON, NEW YORK UNIVERSITY; ALISON BROOKS, GEORGE WASHINGTON UNIVERSITY; PETER FORSTER, UNIVERSITY OF CAMBRIDGE; JAMES F. O'CONNELL, UNIVERSITY OF UTAH; STEPHEN OPPEHEIMER, OXFORD UNIVERSITY; SPENCER WELLS, NATIONAL GEOGRAPHIC SOCIETY; OFER BAR-YOSEF, HARVARD UNIVERSITY; N.G.M. MAPS


Human fossils in Europe


 *Homo erectus* and *Homo heidelbergensis*,
c.800,000–300,000 years ago


 Pre-Neanderthals,
300,000–150,000 years ago

 *Homo neanderthalensis*,
c.150,000–28,000 years ago

 Modern *Homo sapiens*

 Conjectural spread of
physically modern humans

 Glaciation 18,000 years ago

 Coastline 18,000 years ago



