50 & 100 YEARS AGO

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The question of how far an editor should go in correcting an author's manuscript was discussed on April 29 at a meeting of the Scientific Publications Council ... Dr. R. D. Keynes ... said an editor has a dual responsibility (*a*) to the author and (*b*) to the reader. Many authors submit manuscripts containing a long historical introduction and a discussion that is a wearisome repetition of the results ... However, conformity to a standard form of presentation should not be insisted on too rigidly, and in matters of taste the author should always have the last word ... Some editors send the author a report from an anonymous referee, but anonymity is apt to cause resentment; an editor writing personally can often be much ruder and more effective without causing ill-feeling.

From *Nature* 9 July 1960.

100 YEARS AGO

The Laws of Heredity. By G. Archdall Reid — Dr. Archdall Reid confesses that he is an "extreme Darwinian" ... The author accepts and starts from Weismann's theory of the continuity of the germ-plasm. From this he makes the fundamental deduction that "individuals ... are nothing more than dwellings which the germ-plasm builds about its germinal descendants." Thence it follows "that the child inherits nothing from his parent." What it does inherit is nothing more than what was "inborn" in the germ-plasm from which it started. The germ-plasm ... produces the enveloping soma. But the latter also requires the stimulus of use ... a limb will not reach full development unless used, and mental powers will remain dormant unless exercised. But the characters so developed are "rooted, as it were, in the germ-plasm." They flow from it: the question ... is whether modification of these characters produced by the stimulus of use can flow back and be transmitted to a succeeding generation. Darwin latterly apparently thought they could.

From *Nature* 7 July 1910.

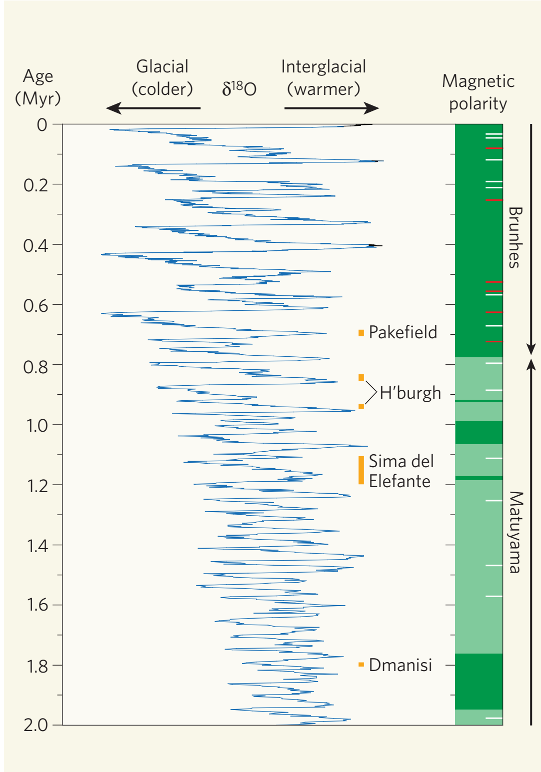

Figure 1 | Palaeomagnetic and climatic context for the human occupation of Europe. 'Magnetic polarity' represents the timescale for reversals of Earth's magnetic field (dark green, normal polarity; light green, reversed polarity), with the boundary between the Brunhes (normal) and Matuyama (reversed) intervals at 780,000 years ago. White bars on the polarity log denote 'validated' geomagnetic excursions; red bars denote 'possible' geomagnetic excursions[9] in the Brunhes interval. Variations in global climate between glacial and interglacial stages — blue curve, from marine oxygen isotope ($\delta^{18}O$) data[11] — are also shown. The most likely interglacial stages for human presence at Happisburgh, when the climate in Britain was milder than today but still chilly by Mediterranean standards, are marked in orange. The geomagnetic evidence of reversed polarity could be consistent with an excursion at a later time, but Parfitt and colleagues' fossil evidence[3] favours the earlier dates. Other early sites with human artefacts or remains are Pakefield, UK[2], Sima del Elefante, Spain[5], and Dmanisi, Georgia[4]. Myr, millions of years.

Parfitt and colleagues' careful documentation[3] of rich fossil plant and mammal assemblages, which include extinct taxa such as hemlock-type conifers, hop-hornbeam birches, southern mammoths, equids (horse family), voles, elk and red deer. Temperatures indicated by fossil beetles suggest that summers at Happisburgh were similar to or slightly warmer than today's, but that winters were probably at least 3 °C cooler. Fossil pollen grains indicate a conifer-dominated woodland such as can be found today in southern Scandinavia. The authors' detailed analysis suggests that human visits to Happisburgh occurred during the later part of a warm interglacial period, either at 840,000 or 950,000 years ago (Fig. 1). Parfitt and colleagues have therefore produced a credible chronology, along with an analysis that provides insight into the ability of early 'Homo britannicus' to exploit a resource-rich but challenging environment during a period of climatic deterioration.

At face value, the work of Parfitt *et al.*[3] indicates that humans moved farther into Europe at an earlier stage than was previously thought. But much work remains to obtain precise dates and to test this assertion at many other European archaeological sites. As scientists who use palaeomagnetism and electron spin resonance (ESR), respectively, to determine the age of sediments, we are especially aware of the difficulties in dating the types of deposit that contain archaeological artefacts. ESR dating of river sediments in the Loire basin, central France, suggests that humans were present at similar times to those at Happisburgh[8], but not all of the problems associated with the physical basis of the ESR method have been adequately addressed.

There is a real need to develop robust dating methods with the chronological precision to resolve questions about the timing of the human occupation of Europe. Particularly promising is the application of cosmogenic isotopes to determine the burial age of sediments[10]. Systematic efforts to improve dating of archaeological sites will clarify questions concerning the timing of arrival of our European ancestors, their development of technology, their adaptation to cold, and the role of climate in determining their chosen habitats. The exceptional preservation of artefacts and fossils that provide information about human presence and environmental conditions along the East Anglian coast means that further discoveries at Happisburgh, and elsewhere, are likely to continue to shape our thinking about these questions. ■

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