

Bibliography

Note: Where journal abbreviations are used they follow the ISSN List of Title Word Abbreviations and (for archaeological publications) those published by the Council for British Archaeology (1991).

- Abelson, P H, 1954 Amino acids in fossils, *Science* **119**, 576
- Abelson, P H, 1955 *Organic Constituents of Fossils*, Carnegie Institution of Washington Year Book **54**, 107–9
- Adam, von K D, 1951 Der Waldelefant von Lehringen, eine Jagdbeute des diluvialen Menschen, *Quartär* **5**, 79–92
- Adamic, G, and Aitken, M J, 1998 Dose-rate conversion factors: new data, *Ancient TL* **16**, 37–50
- ADS, 2013 HS1 Ebbsfleet Elephant Digital Archive, Archaeology Data Service, University of York http://archaeologydataservice.ac.uk/archives/view/ebbsfleet_oa_2013/landing.cfm
- Aitken, M J, 1985 *Thermoluminescence Dating*, Academic Press, London
- Alba, D M, Carlos Calero, J A, Mancheno, M Á, Montoya, P, Morales, J, and Rook, L, 2011 Fossil remains of *Macaca sylvanus florentina* (Cocchi, 1872) (Primates, Cercopithecidae) from the Early Pleistocene of Quibas (Murcia, Spain), *J Hum Evol* **61**, 703–18
- Allen, P, 1991 Deformation structures in British Pleistocene sediments, in *Glacial Deposits in Great Britain and Ireland* (eds J Ehlers, P L Gibbard and J Rose), 455–469, Balkema, Rotterdam
- Andrews P, Biddulph E, Hardy H, and Brown, R, 2011a. *Settling the Ebbsfleet Valley, High Speed 1 Excavations at Springhead and Northfleet, Kent; the Late Iron Age, Roman, Saxon and Medieval Landscape – Volume 1: The Sites*, Oxford Wessex Archaeol Monogr **1**, Oxford and Salisbury
- Andrews P, Mephram L, Schuster J, and Stevens C J, 2011b *Settling the Ebbsfleet Valley, CTRL Excavations at Springhead and Northfleet, Kent; the Late Iron Age, Roman, Saxon and Medieval Landscape – Volume 4: Post-Roman Finds and Environmental Reports*, Oxford Wessex Archaeol Monogr **4**, Oxford and Salisbury
- Andrews, C W, 1928 *On a Specimen of Elephas antiquus from Upnor*, Brit Mus (Nat Hist), London
- Andrews, P, 1990 *Owls, Caves and Fossils*, Brit Mus (Nat Hist), London
- Andrews, P, and Cook, J, 1985 Natural modifications to bones in a temperate setting, *Man* **20**, 675–691
- Antoine, P, Limondin-Lozouet, N, Auguste, P, Locht, J-L, Ghaleb, B, Reyss, J-L, Escude, E, Carbonel, P, Mercier, N, and Bahain, J-J, 2006 The Caours tufa (Somme, France): evidence from an Eemian sequence associated with a Palaeolithic settlement, *Quaternaire* **17**, 281–320
- Anzidei, A P, Bulgarelli, G M, Catalano, P, Cerilli, E, Gallotti, R, Lemorini, C, Milli, S, Palombo, M R, Pantano, W, and Santucci, E, 2012 Ongoing research at the late Middle Pleistocene site of La Polledrara di Cecanibbio (central Italy), with emphasis on human-elephant relationships, *Quat Internat* **255**, 171–187
- Ashton, N M, 1998 The technology of the flint assemblages, in Ashton *et al.* 1998, 205–235
- Ashton, N M, and McNabb, J, 1994 Bifaces in perspective, in *Stories in Stone* (eds N Ashton and A David), 182–191, Lithic Stud Soc Occ Pap **4**, London
- Ashton, N M, and McNabb, J, 1996 The flint industries from the Waechter excavations, in Conway *et al.* 1996, 201–236
- Ashton, N M and Lewis, S G, 2002 Deserted Britain: declining populations in the British late Middle Pleistocene, *Antiquity* **76**, 388–396
- Ashton, N M, Cook, J, Lewis, S G, and Rose, J (eds), 1992 *High Lodge: excavations by G. de G. Sieveking 1962–68 and J. Cook 1988*, Brit Mus Press, London
- Ashton, N M, McNabb, J, Irving B, Lewis S, and Parfitt, S, 1994 Contemporaneity of Clactonian and Acheulian flint industries at Barnham, Suffolk, *Antiquity* **68**, 585–589
- Ashton, N M, Lewis, S G, and Parfitt, S 1998 *Excavations at the Lower Palaeolithic site at East Farm, Barnham, Suffolk 1989–94*, Brit Mus Occ Pap **125**, London
- Ashton, N, Lewis, S, Parfitt, S, Candy, I, Keen, D, Kemp, R, Penkman, K, Thomas, G, Whittaker, J, and White, M, 2005 Excavations at the Lower Palaeolithic site at Elveden, Suffolk, UK, *Proc Prehist Soc* **71**, 1–61
- Ashton, N, Lewis, S G, Parfitt, S, and White, M, 2006 Riparian landscapes and human habitat preferences during the Hoxnian (MIS 11) Interglacial, *J Quat Sci* **21**, 497–505
- Ashton N, Lewis S G, Parfitt S A, Penkman K E H, and Coope G, 2008 New evidence for complex climate change in MIS 11 from Hoxne, Suffolk, UK, *Quat Sci Rev* **27**, 652–668
- Avery, B W, 1990 *Soils of the British Isles*, CAB International, Wallingford
- Avery, B W, Stephen, I, Brown, G, and Yaalon, D H, 1959 The origin and development of brown earths on Clay-with-Flints and Coombe Deposits, *J Soil Sci* **10**, 177–195

- Bada, J L, 1972 The dating of fossil bones using the racemization of isoleucine, *Earth Planet Sci Let* **15**, 223–31
- Bada, J L, 1982 Racemization of amino acids in nature, *Interdiscip Sci Rev* **7** (1), 30–46
- Bada, J L, 1990 Racemization dating, *Science* **248**, 539–40
- Bada, J L, 1991 Amino acid cosmogeochemistry, *Phil Trans Royal Soc, London* **B333**, 349–58
- Bada J L, Shou M-Y, Man E H, and Schroeder R A, 1978 Decomposition of hydroxy amino acids in foraminiferal tests: Kinetics, mechanism and geochronological implications, *Earth Planet Sci Let* **41**, 67–76
- Ball, D F, 1964 Loss-on-ignition as an estimate of organic matter and organic carbon in non-calcareous soils, *J Soil Sci* **15**, 84–92
- Ballesio, R, 1980 Le gisement Pléistocène supérieur de la grotte de Jaurens à Nespouls, Corrèze, France: les Carnivores (Mammalia, Carnivora). II Felidae, *Nouvelles Archives du Muséum d'Histoire Naturelle de Lyon* **18**, 61–102
- Banerjee, D, Murray, A S, Bøtter-Jensen, L, and Lang, A, 2001 Equivalent dose estimation using a single aliquot of polymineral fine grains, *Radiat Meas* **33**, 73–94
- Bar Yosef O, and van Peer P, 2009 The *chaîne opératoire* approach in Middle Paleolithic archaeology, *Curr Anthropol* **50** (1), 103–131
- Barnett C, McKinley J I, Stafford, E, Grimm, J M, and Stevens C J, 2011 *Settling the Ebbsfleet Valley, High Speed 1 Excavations at Springhead and Northfleet, Kent; the Late Iron Age, Roman, Saxon and Medieval Landscape – Volume 3: Late Iron Age to Roman human remains and environmental reports*, Oxford Wessex Archaeol Monogr **3**, Oxford and Salisbury
- Bates, C D, Coxon, P, and Gibbard, P L, 1978 A new method for the preparation of clay-rich sediment samples for palynological investigation, *New Phytologist* **81**, 459–463
- Bates, M R, 1998 Pleistocene deposits at Portfield Pit, Westhampnett East, Chichester, in *The Quaternary of Kent and Sussex. Field Guide* (eds J B Murton, C A Whiteman, M R Bates, D R Bridgland, A J Long, M B Roberts and M P Waller), 178–186, Quat Res Ass, London
- Bates, M R, Bates, C R, Bates, S, Jones, S, Schwenninger, J-L, Walker, M J C, and Whittaker, J E, 2009 Cold stage deposits of the West Sussex Coastal Plain: the evidence from Warblington, Hampshire, in *The Quaternary of the Solent Basin and West Sussex Raised Beaches* (eds R M Brian, M R Bates, R T Hosfield and F F Wenban-Smith), 60–72, Quat Res Ass, London
- Bates, M R, Wenban-Smith, F F, Bridgland, D R, Collins, M C, Keen, D H, Parfitt, S A, Rhodes, E, and Whittaker, J, in prep. Late Middle Pleistocene human occupation and palaeoenvironmental reconstruction at Harnham, Salisbury (UK), submitted to *J Quat Sci*
- Battarbee, RW, 1986 Diatom analysis, in *Handbook of Holocene Palaeoecology and Palaeohydrology* (ed. B E Berglund), 527–571, J Wiley, Chichester
- Battarbee, RW, Jones, V J, Flower, R J, Cameron, N G, Bennion, H B, Carvalho, L, and Juggins, S, 2001 Diatoms, in *Tracking Environmental Change Using Lake Sediments Volume 3: terrestrial, algal, and siliceous indicators* (eds J P Smol and H J B Birks), 155–202, Kluwer, Dordrecht
- Baumel, J J (ed.), 1979 *Nomina Anatomica Avium*, Academic Press, London
- Behrensmeier, A K, 1993 The taphonomic record of faunal change in Amboseli Park, Kenya, *Research and Exploration* **9**, 402–421
- Behrensmeier, A K, Gordon, K, and Yanagi, G, 1986 Trampling as a cause of bone surface damage and pseudo-cut marks, *Nature* **319**, 768–771
- Bello, S M, 2011 New results from the examination of cut-marks using 3-Dimensional imaging, in *The Ancient Human Occupation of Britain* (eds N M Ashton, S G Lewis and C B Stringer), 249–262, *Developments in Quaternary Science* **14**, Elsevier, Amsterdam
- Bello, S M, and Soligo C, 2008 A new method for the quantitative analysis of cutmark micromorphology, *J Archaeol Sci* **35**, 1542–1552
- Bello, S M, Parfitt, S A, and Stringer, C, 2009 Quantitative micromorphological analyses of cut marks produced by ancient and modern handaxes, *J Archaeol Sci* **36**, 1869–1880
- Benninghof, W S, 1962 Calculation of pollen and spores density in sediments by addition of exotic pollen in known quantities, *Pollen et Spores* **4**, 332–333
- Berthelet, A, and Chavaillon, J, 2001 The early Palaeolithic butchery sites of Barogali (Republik of Djibouti), in *The World of Elephants: proceedings of the 1st International Congress* (eds G. Caverretta, P. Gioia, M. Mussi and M.R. Palomba), 587–591, Consiglio Nazionale delle Ricerche, Rome
- Biddulph, E, Smith, R S, and Schuster J, 2011 *Settling the Ebbsfleet Valley, High Speed 1 Excavations at Springhead and Northfleet, Kent; the Late Iron Age, Roman, Saxon and Medieval Landscape – Volume 2: Late Iron Age to Roman find reports*, Oxford Wessex Archaeol Monogr **2**, Oxford and Salisbury
- Billia, E M E, 2011 Occurrences of *Stephanorhinus kirchbergensis* (Jäger, 1839) (Mammalia, Rhinocerotidae) in Eurasia – An Account, *Acta Palaeontologica Romaniaae* **7**, 17–40
- Binford, L R, 1973 Interassemblage variability – the Mousterian and the ‘functional’ argument, in *The Explanation of Culture Change: models in prehistory* (ed. C. Renfrew), 227–254, Duckworth, London
- Binford, L R, 1981 *Bones: ancient men and modern myths*, Academic Press, New York
- Binford, L R, 1985 Human ancestors: changing views of their behavior, *J Anthropol Archaeol* **4**, 292–327
- Binford, L R, 1987a Were there hunters at Torralba? in *The Evolution of Human Hunting* (eds M.H.

- Nitecki, and D.V. Nitecki), 47–105, Plenum Press, New York
- Binford, L R, 1987b Searching for camps and missing the evidence? Another look at the Lower/Middle Palaeolithic, in *The Pleistocene Old World: regional perspectives* (ed. O Soffer), 17–31, Plenum Press, New York
- Binford, L R and Binford, S R, 1966 A preliminary analysis of functional variability in the Mousterian of Levallois facies, *Am Anthropol* **68** (2), 238–295
- Birks, H J B, 1973, *Past and Present Vegetation of the Isle of Skye: a palaeoecological study*, CUP, Cambridge
- Birks, H J B, and Birks, H H, 1980 *Quaternary Palaeoecology*, Edward Arnold, London
- Bishop, M J, 1982 The mammal fauna of the early Middle Pleistocene cavern infill site of Westbury-sub-Mendip, Somerset, *Spec Pap Palaeontol* **28**, 1–108
- Bjarväll, A, and Ullström, S, 1986 *The Mammals of Britain and Europe*, Croom Helm, London
- Blumenschine, R J, and Selvaggio, M M, 1988 Percussion marks on bone surfaces as a new diagnostic of homind behaviour, *Nature* **333**, 763–765
- Boismier, W A, Gamble, C S, and Coward, F, 2012 *Neanderthals among Mammoths: excavations at Lynford Quarry, Norfolk*, English Heritage, Swindon
- Booth, P, Champion, T, Foreman, S, Garwood, P, Glass, E, Munby, J, and Reynolds, A, 2011 *On Track: the archaeology of High Speed 1 Section 1 in Kent*, Oxford Wessex Archaeol Monogr **4**, Oxford
- Bordes, F, 1979 *Typologie du Paléolithique Ancien et Moyen*, (3rd edition), Centre Nationale de Recherche Scientifique, Paris
- Bordes, F, 1981 Vingt-cinq ans après: le complexe Moustérien revisité, *Bulletin de la Société Préhistorique Française* **78**, 77–87
- Boschian, G, and Saccà, D, 2009 Ambiguities in human and elephant interactions? Stories of bones, sand and water from Castel di Guido (Italy), *Quat Internat* **214**, 3–16
- Bøtter-Jensen, L, 1988 The automated Riso TL dating reader system, *Nuclear Tracks and Radiat Meas* **14**, 177–180
- Bøtter-Jensen, L, 1997 Luminescence techniques: instrumentation and methods, *Radiat Meas* **27**, 749–768
- Bøtter-Jensen, L, Bulur, E, Duller, G A T, Murray, A S, 2000 Advances in luminescence instrument systems, *Radiat Meas* **32**, 523–528
- Boulestin, B, 1999 *Approche Taphonomique des Restes Humaines. le cas des Mésolithiques de la Grotte des Perrats et le problème du cannibalisme en préhistoire récente européenne*, Brit Archaeol Rep (Int Ser) **776**, Oxford
- Bouma, J, Fox, C A, and Miedema, R, 1990 Micromorphology of hydromorphic soils: applications for soil genesis and land evaluation, in *Soil Micromorphology: A basic and applied science* (ed. L A Douglas), 257–278, Volume Developments in Soil Science **19**, Elsevier, Amsterdam
- Bowen, D Q (ed.), 1999 *A Revised Correlation of Quaternary Deposits in the British Isles*, The Geol Soc, London, Spec Rep **23**
- Bowen, D Q, and Sykes G A, 1988 Correlation of marine events and glaciations on the Northeast Atlantic Margin, *Phil Trans Royal Soc, London* **B318**, 619–35
- Bowen, D Q, Hughes, S, Sykes, G A, and Miller, G H, 1989 Land-sea correlations in the Pleistocene based on isoleucine epimerization in non-marine molluscs, *Nature* **340**, 49–51
- Bradley, B, and Sampson, C G, 1986 Analysis by replication of two Acheulian artefact assemblages from Caddington, England, in *Stone Age Prehistory: studies in memory of Charles McBurney* (eds G N Bailey and P Callow), 29–45, CUP, Cambridge
- Branch, N P, 2000 Pollen preparation procedure, unpubl document, Dept Geography, Royal Holloway Univ London
- Breda, M, Collinge, S, Parfitt, S A, and Lister, A M, 2010 Metric analysis of ungulate mammals in the early Middle Pleistocene of Britain, in relation to taxonomy and biostratigraphy. I: Rhinocerotidae and Bovidae, in *The West Runton Freshwater Bed and the West Runton Mammoth* (eds A J Stuart and A M Lister), *Quat Internat* **228**, 136–156
- Breuil, H, 1926 Palaeolithic industries from the beginning of the Rissian to the beginning of the Würmian Glaciation, *Man* **116**, 176–179
- Breuil, H, 1932 Les industries à éclats du Paléolithique ancien: I. Le Clactonien, *Préhistoire* **1**, 125–190
- Breuil, H, and Koslowski, L, 1931 Etudes de stratigraphie Paléolithique dans le nord de la France, la Belgique et l'Angleterre: la vallée de la Somme, *L'Anthropologie* **41**, 449–488
- Breuil, H, and Koslowski, L, 1932 Etudes de stratigraphie Paléolithique dans le nord de la France, la Belgique et l'Angleterre: V – Basse terrasse de la Somme, *L'Anthropologie* **42**, 27–47, 291–314
- Breuil, H, and Koslowski, L, 1934 Etudes de stratigraphie Paléolithique dans le nord de la France, la Belgique et l'Angleterre: La Belgique, *L'Anthropologie* **44**, 249–290
- Bridgland, D R, 1986 *Clast Lithological Analysis*, Tech Guide 3, Quat Res Assoc, Cambridge
- Bridgland, D R, 1988 The Pleistocene fluvial stratigraphy and palaeogeography of Essex, *Proc Geol Ass* **99**, 291–314
- Bridgland, D R, 1994 *Quaternary of the Thames*, Chapman and Hall, London
- Bridgland, D R, 1995 The Quaternary sequence of the eastern Thames basin: problems of correlation, in *The Quaternary of the Lower Reaches of the Thames. Field Guide* (eds D R Bridgland, P Allen and B A Haggart), 35–52, Quat Res Ass, Cambridge
- Bridgland, D R, 1999 Analysis of the raised beach gravel deposits at Boxgrove and related sites, in *A Middle Pleistocene Hominid Site at Eartham Quarry, Boxgrove, West Sussex, UK* (M B Roberts and S A Parfitt), 100–110, Engl Herit Archaeol Rep **17**, London

- Bridgland, D R, 2000 River terrace systems in north-west Europe: an archive of environmental change, uplift and early Human occupation, *Quat Sci Rev* **19**, 1293–1303
- Bridgland, D R, 2001 The Pleistocene evolution and Palaeolithic occupation of the Solent River, in *Palaeolithic Archaeology of the Solent River* (eds F F Wenban-Smith, and R T Hosfield), 15–25, Lithic Stud Soc Occ Pap 7
- Bridgland, D R, 2006 The Middle and Upper Pleistocene sequences in the Lower Thames: a record of Milankovitch climatic fluctuation and early human occupation of southern Britain, *Proc Geol Ass* **117**, 281–306
- Bridgland, D R, and Harding, P, 1993 Middle Pleistocene Thames terrace deposits at Globe Pit, Little Thurrock, and their contained Clactonian industry, *Proc Geol Ass* **104**, 263–283
- Bridgland, D R, and D'Olier, B, 1995 The Pleistocene evolution of the Thames and Rhine drainage systems in the southern North Sea Basin, in *Island Britain, a Quaternary Perspective* (ed. R C Preece), 27–45, *Geol Soc Spec Publ* **96**, The Geol Soc, London
- Bridgland, D R, and Maddy, D, 2002 Global correlation of long Quaternary fluvial sequences; a review of baseline knowledge and possible methods and criteria for establishing a database, *Netherlands J Geosciences* **81**, 265–281
- Bridgland, D R, Lewis, S G. and Wymer, J J, 1995 Middle Pleistocene stratigraphy and archaeology around Mildenhall and Icklingham, Suffolk: report on the Geologists' Association Field Meeting, 27 June 1992, *Proc Geol Ass* **106**, 57–69
- Bridgland, D R, Field, M H, Holmes, J A, McNabb, J, Preece, R. C, Selby, I, Wymer, J J, Boreham, S, Irving, B G, Parfitt, S, Peglar, S and Stuart, A J 1999, Middle Pleistocene interglacial Thames-Medway deposits at Clacton-on-Sea, England: Reconsideration of the biostratigraphical and environmental context of the type Clactonian Palaeolithic industry, *Quat Sci Rev* **18**, 109–146
- Bridgland, D R, Harding, P, Allen, P, Candy, I, Cherry, C, George, W, Horne, D, Keen, D H, Penkman, K E H, Preece, R C, Rhodes, E J, Scaife, R, Schreve, D C, Schwenninger, J.-L, Slipper, I, Ward, G, White, M J, White, T S, Whittaker, J E, 2012 An enhanced record of MIS 9 environments, geochronology and geoarchaeology: data from construction of the High Speed 1 (London – Channel Tunnel) rail-link and other recent investigations at Purfleet, Essex, UK, *Proc Geol Ass*, <http://dx.doi.org/10.1016/j.pgeola.2012.03.006>
- British Geological Survey, 1977 *Dartford: England and Wales Sheet 271, Drift Geology*, 1:50,000 Series, Geol Survey of Great Britain, Southampton
- British Geological Survey, 1998 *Dartford: England and Wales Sheet 271, Solid and Drift Geology*, 1:50,000 Series, Keyworth, Nottingham
- Bromage, T G, Boyde, A, 1984 Microscopic criteria for the determination of directionality of cutmarks on bone, *Am J Phys Anthropol* **65**, 359–366
- Brooks, D and Thomas, K W, 1967 The distribution of pollen grains on microscope slides. The non randomness of the distribution, *Pollen and Spores* **9**, 621–629.
- Bull, C R, 1990 A Glimpse of Pre-Industrial Swanscombe, *Proc Dartford Hist and Antiq Soc* **27**, 4–13
- Bullock, P, Fedoroff, N, Jongerius, A, Stoops, G, and Tursina, T, 1985 *Handbook for Soil Thin Section Description*, Waine Res Publs, Wolverhampton
- Burchell, J P T, 1935 Some Pleistocene deposits at Kirmington and Crayford, *Geol Mag* **72**, 327–331
- Burchell, J P T, 1957 A temperate bed of the last interglacial period at Northfleet, Kent. *Geol Mag* **94**, 212–214
- Burger, J, Rosendahl, W, Loreille, O, Hemmer, H, Eriksson, T, Gotherstrom, A, Hiller, J, Collins, M. J, Wess, T. and Alt, K W, 2004 Molecular phylogeny of the extinct cave lion *Panthera leo spelaea*. *Mol Phylogenet Evol* **30**, 841–49
- Byers, D A, 2002 Taphonomic analysis, associational integrity, and depositional history of the Fetterman Mammoth, Eastern Wyoming, U.S.A, *Geoarchaeology* **17**, 417–440
- Candy, I., Coope, G R, Lee, J.R, Parfitt, S A, Preece, R C, Rose, J, and Schreve, D C, 2010 Pronounced warmth during early Middle Pleistocene interglacials: Investigating the Mid-Brunhes Event in the British Pleistocene sequence, *Earth Sci Rev* **103**, 183–196
- Carreck, J N, 1972 Chronology of the Quaternary deposits of south-east England, with special reference to their vertebrate faunas, unpubl M. Phil thesis, Univ London
- Cassoli P F, Fabbo G, Fiore I, Piperno M and Tagliacozzo A, 1999 Taphonomic analysis of some levels of the Lower Palaeolithic site of Notarchirico (Venosa, Basilicata, Italy), in *The Role of Early Humans in the Accumulation of European Lower and Middle Palaeolithic Bone Assemblages* (eds S Gaudzinski and E Turner), 153–173, Monographien des Römisch-Germanischen Zentralmuseums Mainz, Habelt, Mainz and Bonn
- CgMs Consulting and Wenban-Smith, F F 2003 Springhead Quarter, Ebbsfleet Development: Palaeolithic/Pleistocene observations during geo-technical site investigations, unpubl client rep submitted to Kent Co Council
- Chaplin, R E, 1971 *The Study of Animal Bones from Archaeological Sites*, Seminar Press, London and New York
- Clark, J D and Haynes, C V, 1970 An elephant butchery site at Mwanganda's Village, Karonga, Malawi, and its relevance for Palaeolithic archaeology, *World Archaeol* **1**, 390–411
- Coe, M, 1978 The decomposition of elephant carcasses in the Tsavo (East) National Park, Kenya, *J Arid Environ* **1**, 71–86
- Coles, B, 2010 The European Beaver, in *Extinctions and*

- Invasions. A Social History of British Fauna* (eds T O'Connor and N Sykes), 104–115, Windgather Press, Oxford
- Collins, M J, Waite, E R, and van Duin, E C T, 1999 Predicting protein decomposition: the case of aspartic-acid racemization kinetics, *Phil Trans Royal Soc London* **B354** (1379), 51–64
- Conway, B W, McNabb, J, and Ashton, N, (eds) 1996 *Excavations at Barnfield Pit, Swanscombe, 1968–72*, Brit Mus Occ Pap **94**, London
- Conybeare, A, and Haynes, G, 1984 Observations on elephant mortality and bones in water holes, *Quat Res* **22**, 189–200
- Cook J, Stringer, C B, Currant, A P, Schwarcz, H, and Wintle, A G, 1982 A review of the chronology of the European Middle Pleistocene hominid record, *Yearbook Physical Anthropol* **25**, 19–65
- Council for British Archaeology, 1991 *Signposts for Archaeological Publication* (3rd edition), CBA, York
- Corbet, G B, and Southern, H N (eds), 1977 *The Handbook of British Mammals*, Blackwell, Oxford
- Courty, M A, 2001 Microfacies analysis assisting archaeological stratigraphy, in *Earth Sciences and Archaeology* (eds P Goldberg, V T Holliday and C R Ferring), 205–239, Kluwer, New York
- Courty, M A, Goldberg, P, and Macphail, R I, 1989 *Soils and Micromorphology in Archaeology*, CUP, Cambridge
- Crowther, J, 2003 Potential magnetic susceptibility and fractional conversion studies of archaeological soils and sediments, *Archaeometry* **45**, 685–701
- Crowther, J and Barker, P, 1995 Magnetic susceptibility: distinguishing anthropogenic effects from the natural, *Archaeol Prospect* **2**, 207–215
- Cruise, G M, Macphail, R I, Linderholm, J, Maggi, R, and Marshall, P D, 2009 Lago di Bargone, Liguria, N. Italy: a reconstruction of Holocene environmental and land-use history, *The Holocene* **19**, 987–1003
- Cruse, R J, 1987 Further investigation of the Acheulian site at Cuxton, *Archaeol Cantiana* **104**, 39–81
- Cuenca-Bescós, G, Rofes, J and Garcia-Pimienta, J, 2005 *Environmental change across the Early-Middle Pleistocene transition: small mammalian evidence from the Trinchera Dolina cave, Atapuerca, Spain*, *Geol Soc Spec Publ* **247**, 277–286
- Currant, A P, 1986a The Lateglacial mammal fauna of Gough's Cave, Cheddar, Somerset, *Proc Univ Bristol Spelaeological Soc* **17**, 286–304
- Currant, A P, 1986b Interim report on the small mammal remains, in *Excavation of a Lower Palaeolithic site at Amey's Eartham Pit, Boxgrove, West Sussex: a preliminary report* (M B Roberts), *Proc Prehist Soc* **52**, 215–245
- Currant, A P, 1996 Notes on the mammalian remains from Barnfield Pit, Swanscombe, in B Conway *et al.* 1996, 163–167
- Davies, P, 2002 The straight-tusked elephant (*Palaeoloxodon antiquus*) in Pleistocene Europe, unpubl dissertation, Univ London
- Davis, S M, 1992 *A Rapid Method for Recording Information about Mammal Bones from Archaeological Sites*, Ancient Monuments Lab Rep 19/92, English Heritage, London
- Delagnes A, Lenoble A, Harmand S, Brugal J-P, Prat S, Tiercelin J-J and Roche H, 2006 Interpreting pachyderm single carcass sites in the African Lower and Early Middle Pleistocene record: a multi-disciplinary approach to the site of Nadung'a 4 (Kenya), *J Anthropol Archaeol* **25**, 448–465
- Delson, E, 1980 *Fossil Macaques*. Phyletic relationships and a scenario of development, in *The Macaques: Studies in Ecology, Behaviour and Evolution* (ed. D Lindburg), 10–30, Van Nostrand Reinhold, New York
- Dennell W R, Martínón-Torres M, and Bermúdez de Castro, J M, 2011 Hominin variability, climatic instability and population demography in Middle Pleistocene Europe, *Quat Sci Rev* **30**, 1511–1524
- Department of the Environment, 1990 *Planning Policy Guidance: Archaeology and Planning*, PPG 16, HMSO, London
- Dewey, H, 1932 The Palaeolithic deposits of the Lower Thames Valley, *Q J Geol Soc London* **88**, 36–56
- Dewey, H, Bromehead, C E N, Chatwin C P and Dines, H G, 1924 *The Geology of the Country around Dartford: explanation of sheet 271*, Memoirs of the Geological Survey of Great Britain
- Dibble, H L and Rolland, N, 1992 On assemblage variability in the Middle Palaeolithic of western Europe, in *The Middle Palaeolithic: adaptation, behaviour and variability* (eds H L Dibble and P A Mellars), 1–27, Univ Mus Press, Philadelphia
- Dick, W A, and Tabatabai, M A, 1977 An alkaline oxidation method for the determination of total phosphorus in soils, *J Soil Sci Soc America* **41**, 511–14
- Domínguez-Rodrigo, M, de Juana, S, Galán, A B, and Rodríguez, M, 2009 A new protocol to differentiate trampling marks from butchery cut marks, *J Archaeol Sci* **36**, 2643–2654
- Donnard, E, 1981 *Oryctolagus cuniculus* dans quelques gisements quaternaires Française, *Quaternairia* **23**, 145–57
- Drewett, P L, 1997 The Channel Tunnel Rail Link: archaeological research strategy, unpubl rep for Rail Link Engineering
- Driesch, A von den, 1974 *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Bulletin **1**, Harvard Univ, Cambridge, Mass
- Duchaufour, P, 1982 *Pedology*, Allen and Unwin, London
- Edmonds, C N, 1988 The engineering geology of karst development and the prediction of subsidence risk upon the Chalk outcrop in England, unpubl Ph.D. dissertation, Royal Holloway and Bedford New College, Univ London
- Edmonds, C N, 1983 Towards the prediction of subsidence risk upon the Chalk outcrop, *Q J Eng Geol* **16**, 261–266

- English Heritage, 1991 *Exploring our Past: Strategies for the Archaeology of England*, HBMG England, London
- English Heritage, 1998 *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers*, English Heritage, London
- English Heritage/Prehistoric Society, 1999 *Research Frameworks for the Palaeolithic and Mesolithic of Britain and Ireland*, English Heritage, London
- EPICA Community Members, 2004 Eight glacial cycles from an Antarctic ice core, *Nature* **429**, 623–628
- Erd, K, 1970 Pollen analytical classification of the Middle Pleistocene in the German Democratic Republic, *Palaeogeogr, Palaeoclimatol, Palaeoecol* **12**, 129–145
- Essex County Council and Kent County Council, 2004 Archaeological Survey of Mineral Extraction Sites around the Thames Estuary: Aggregates Levy Sustainability Fund 1, Assessment Report. Project 3374, Report lodged with Archaeology Data Service, ADS Collection 774, DOI 10.5284/1000016
- Evans, J, Morse, E, Reid, C, Ridley, E P, and Ridley, H N, 1896 The relation of Palaeolithic man to the glacial epochs, *Rep Brit Assoc Liverpool*, 400–416
- Evans, J G, and Smith, I F, 1983 Excavations at Cherhill, North Wiltshire, 1967, *Proc Prehist Soc* **49**, 43–117
- Evans, P, 1971 *Towards a Pleistocene time-scale, Part 2 of The Phanerozoic Time-scale – A Supplement*, The Geol Soc, London, Spec Publ **5**, 123–356
- Fa, J E, 1984 *The Barbary Macaque. a case study in conservation*, Plenum Press, New York
- Faegri, K, and Iversen, J, 1989 *Textbook of Pollen Analysis* (4th edn with K. Krzywinski), John Wiley, Chichester and New York
- Fisher, P F, and Bridgland, D R, 1986 Analysis of pebble morphology, in *Clast Lithological Analysis* (ed. D R Bridgland), 43–58, Tech Guide 3, Quat Res Assoc, Cambridge
- Flower, R J, 1993 Diatom preservation: experiments and observations on dissolution and breakage in modern and fossil material, *Hydrobiologia* **269/270**, 473–484
- Forrest, A J, 1983 *Masters of Flint*, Terance Dalton, Lavenham
- Fortelius, M, Mazza, P and Sala, B, 1993 *Stephanorhinus* (Mammalia: Rhinocerotidae) of the western European Pleistocene, with a revision of *S. etruscus* (Falconer, 1868), *Palaeontographia Italica* **40**, 63–155
- Frison, G C, 1989 Experimental use of Clovis weaponry and tools on African elephants, *Am Antiq* **54**, 766–784
- Frison, G C, and Todd, L C, 1986 *The Colby Mammoth Site. Taphonomy and Archaeology of a Clovis Kill in Northern Wyoming*, Univ of New Mexico Press, Albuquerque
- Gabunia, L, Vekua, A, Lordkipanidze, P, Swisher, C C III, Ferring, R, Justus, A, Nioridze, M, Tralchrelidze, M, Anton, S C, Bosinski, G, Joris, O, de Lumley, M-A, Majsuradze, G, and Mashkhelishnili, A, 2000 Earliest Pleistocene hominid cranial remains from Dmanisi, Republic of Georgia: Taxonomy, geological setting and age, *Science* **288**, 1019–1025
- Gamble, C S, 1986 *The Palaeolithic Settlement of Europe*, CUP, Cambridge
- Gamble, C S, 1987 Man the shoveller: alternative models for Middle Pleistocene colonization and occupation in northern latitudes, in *The Pleistocene Old World Regional Perspectives* (ed. O Soffer), 81–98, Plenum Press, New York
- Gamble, C S, 1993 *Timewalkers: the Prehistory of Global Colonization*, Sutton, Stroud
- Gamble, C S, and Steele, J, 1999 Hominid ranging patterns and dietary strategies, in *Hominid Evolution: lifestyles and survival strategies* (ed. H. Ullrich), 396–409, Archea, Schwelm
- Gaudzinski, S, 1999 The faunal record of the Lower and Middle Palaeolithic of Europe: remarks on human interference, in *The Middle Palaeolithic of Europe* (eds W Roebroeks and C. Gamble), 215–233, Univ Leiden, Leiden
- Gaudzinski, S, and Turner, E, 1999 Summarising the role of early humans in the accumulation of European Lower and Middle Palaeolithic bone assemblages, in *The Role of Early Humans in the Accumulation of European Lower and Middle Palaeolithic Bone Assemblages* (eds S Gaudzinski and E Turner), 381–394, Monographien des Römisch- Germanischen Zentralmuseums Mainz. Habelt, Mainz and Bonn
- Gaudzinski, S, Turner, E, Anzidei, A P, Álvarez-Fernández, E, Arroyo-Cabrales, J, Cing-Mars, J, Dobosi, V T, Hannus, A, Johnson, E, Münzel, S C, Scheer, A, and Villa, P, 2005 The use of Proboscidean remains in every-day Palaeolithic life, in *Studying Proboscideans: Knowledge, Problems and Perspectives* (eds M R Palombo, M Mussi, P Gioia and G Cavarretta), *Quat Internat* **126–128**, 179–194
- Gaudzinski-Windheuser, S, Lindler, L, Rabinovich, R, and Goren-Inbar, N, 2010 Testing heterogeneity in faunal assemblages from archaeological sites, Tumbling and trampling experiments at the early-Middle Pleistocene site of Gesher Benot Ya'aqov (Israel), *J Archaeol Sci* **37**, 3170–3190
- Gee, H E, 1991 Bovids in the Pleistocene of Britain, unpubl PhD thesis, Univ. Cambridge
- Gee, H E, 1993 The distinction between postcranial bones of *Bos primigenius* Bojanus, 1827 and *Bison priscus* Bojanus, 1827 from the British Pleistocene and the taxonomic status of *Bos* and *Bison*, *J Quat Sci* **8**, 79–92
- Geist, V, 1978 *Life Strategies, Human Evolution, Environmental Design. Toward a Biological Theory of Health*, Springer Verlag, New York.
- Gibbard, P L, 1979 Middle Pleistocene drainage in the Thames valley, *Geol Mag* **116**, 87–90

- Gibbard, P L, 1994 *Pleistocene History of the Lower Thames Valley*, CUP, Cambridge
- Gibbard, P L, 1995 The formation of the Strait of Dover, in *Island Britain: a Quaternary Perspective* (ed. R C Preece), 15–26, The Geol Soc, London
- Gladfelter, B G, and Singer, R, 1975 Implications of East Anglian glacial stratigraphy for the British Lower Palaeolithic, in *Quaternary Studies* (eds R P Suggate and M M Creswell), 139–45, Royal Soc New Zealand, Wellington
- Goldberg, P, and Guy, J, 1996 Micromorphological observations of selected rock ovens, Wilson-Leonard site, Central Texas, in *Paleoecology; Colloquium 3 of XIII International Congress of Prehistoric and Protohistoric Sciences* (eds L Castelletti and M Cremaschi), 115–122, ABACO, Forli
- Goldberg, P, Weiner, S, Bar-Yosef, O, Xu, Q, and Liu, J, 2001 Site formation processes at Zhoukoudian, China, *J Hum Evol* **41**, 483–530
- Goldberg, P, and Macphail R I, 2006 *Practical and Theoretical Geoarchaeology*, Blackwell, Oxford
- Goodfriend, G A, 1991 Patterns of racemization and epimerization of amino acids in land snail shells over the course of the Holocene, *Geochim Cosmochim Acta* **55**, 293–302
- Goodfriend, G A, 1992 Rapid racemization of aspartic acid in mollusc shells and potential for dating over recent centuries, *Nature* **357**, 399–401.
- Goodfriend, G A, and Stanley, D J, 1996 Reworking and discontinuities in holocene sedimentation in the Nile Delta – documentation from amino-acid racemization and stable isotopes in mollusk shells, *Marine Geol* **129**, 271–83.
- Goren-Inbar, N, Lister, A, Werker, E, and Chech, M, 1994 A butchered elephant skull and associated artifacts from the Acheulian site of Gesher Benot Ya'aqov, Israel, *Paléorient* **20** (1), 99–112
- Gowlett J, Hallos J, Hounsell S, Brant V, and Debenham N, 2005 Beeches Pit: Archaeology, assemblage dynamics and early fire history of a Middle Pleistocene site in East Anglia, UK, *Eurasian Prehist* **3** (2), 3–38
- Graham, I D G, and Scollar, I, 1976 Limitations on magnetic prospection in archaeology imposed by soil properties, *Archaeo-Physika* **6**, 1–124
- Green, C P, Branch, N P, Coope, G R, Field, M H, Keen, D H, Wells, J M, Schwenninger, J-L, Preece, R C, Schreve, D C, Canti, M G, and Gleed-Owen, C P, 2006 Marine Isotope Stage 9 environments of fluvial deposits at Hackney, north London, UK, *Quat Sci Rev* **25**, 89–113
- Greenfield, H J, 1999 The origins of metallurgy: distinguishing stone from metal cut-marks on bones from archaeological sites, *J Archaeol Sci* **26**, 797–808
- Grigson, C, and Mellars, P A, 1987 The mammalian remains from the middens, in *Excavations on Oronsay. Prehistoric Human Ecology on a small Island* (ed P A Mellars), 243–289, Edinburgh Univ Press, Edinburgh
- Hallos, J, 2004 Artefact dynamics in the Middle Pleistocene: implications for hominid behaviour, in *Lithics in Action: Proceedings of the Lithic Studies Society Conference held in Cardiff, September 2000* (eds E A Walker, F F Wenban-Smith and F Healy), 26–37, Lithic Stud Soc Occ Pap **8**, Oxbow Books, Oxford
- Harada, N, Handa, N, Ito, M, Oba, T, and Matsumoto, E, 1996 Chronology of marine sediments by the racemization reaction of aspartic acid in planktonic foraminifera, *Organic Geochem* **24**, 921–30
- Hare, P E, and Abelson, P H, 1967 Racemization of amino acids in fossil shells, *Carnegie Institution of Washington Year Book* **66**, 526–8
- Hare, P E, and Mitterer, R M, 1969 Laboratory simulation of amino-acid diagenesis in fossils, *Carnegie Institution of Washington Year Book* **67**, 205–8
- Hare, P E, von Endt, D W, and Kokis, J E, 1997 Protein and amino acid diagenesis dating, in *Chronometric Dating in Archaeology* (eds R E Taylor and M J Aitken), 261–96, Advances in Archaeological and Museum Science **2**, Plenum Press, New York
- Harrison, C J O, and Stewart, J R, 1999 The birds remains, in *A Middle Pleistocene Hominid Site at Eartham Quarry, Boxgrove, West Sussex, UK* (M B Roberts and S A Parfitt), Engl Herit Archaeol Rep **17**, London
- Havinga, A J, 1964 Investigation into the differential corrosion susceptibility of pollen and spores, *Pollen et Spores* **6**, 621–635
- Havinga, A J, 1967 Palynology and pollen preservation, *Rev Palaeobot Palynol* **2**, 81–98
- Havinga, A J, 1985 A 20-year experimental investigation into the differential corrosion susceptibility of pollen and spores in various soil types, *Pollen et Spores* **26**, 541–558
- Haynes, G, 1988, Longitudinal studies of African elephant death and bone deposits, *J Archaeol Sci* **15**, 131–157
- Haynes, G, 1991 *Mammoths, Mastodons and Elephants: Biology, Behavior and the Fossil Record*, CUP, Cambridge
- Haynes, G, and Krasinski, K E, 2010 Taphonomic fieldwork in Southern Africa and its application in studies of the earliest peopling of North America, *J Taphonomy* **8**, 181–202
- Hays, J D, Imbrie, J, and Shackleton, N J, 1976 Variations in the earth's orbit: pacemaker of the ice ages, *Science* **194**, 1121–1132
- Higginbottom, I E, and Fookes, P G, 1970 Engineering aspects of periglacial features in Britain, *Q J Eng Geol* **3**, 85–117
- High Speed 1, 2011 *Tracks and Traces: The Archaeology of High Speed 1*, I C Art and Design Ltd
- Hill, A, and Behrensmeier, A K, 1984 Disarticulation patterns of some modern east African mammals, *Paleobiology* **10**, 366–76
- Hill, R L, 1965 Hydrolysis of proteins, *Adv Protein Chem* **20**, 37–107

- Hinton, M A C, 1908 Note on the discovery of the bone of a monkey in the Norfolk Forest Bed, *Geol Mag* 5, 440–4
- Hinton, M A C and Kennard, A S, 1900 Contributions to the Pleistocene geology of the Thames valley, I. The Grays Thurrock area, Part I, *Essex Naturalist* 11, 336–370
- Hinton, M A C and Kennard, A S, 1905 The relative ages of the stone implements of the Lower Thames Valley, *Proc Geol Ass* 19, 76–100
- Holman, J A, 1998 *Pleistocene Amphibians and Reptiles in Britain and Europe*, CUP, Cambridge
- Horne, D J, 2007 A Mutual Temperature Range method for Quaternary palaeoclimatic analysis using European nonmarine Ostracoda, *Quat Sci Rev* 26, 1398–1415
- Hutchinson, J N, 1991 Periglacial and slope processes, *Geol Soc Engineering Geol Spec Publ* 7, 283–331
- Hutchinson, J N, 1992 Engineering in relict periglacial and extraglacial areas in Britain, in *Applications of Quaternary Research, Quaternary Proceedings* 2 (ed. J Gray), 49–65, Quat Res Ass Cambridge
- Hutchinson, J N, and Hight, D W, 1987 Strongly folded structures associated with past permafrost degradation and periglacial solifluction at Lyme Regis, Dorset, in *Periglacial Processes and Landforms in Britain and Ireland* (ed. J Boardman), 245–256, CUP, Cambridge
- Isaac, G L, 1983 Recent single-carcass bone scatters and the problem of ‘butchery’ sites in the archaeological record, in *Animals and Archaeology, Hunters and Their Prey* (eds J Clutton-Brock and C Grigson), 3–19, *Brit Archaeol Rep (Int Ser)* 163, Oxford
- Isaac, G L, and Crader, D C, 1981 To what extent were the early hominids carnivorous? An archaeological perspective, in *Omnivorous Primates* (eds R S O Hardinger and G Teleki), 37–103, Columbia Univ Press, New York
- Johnson, B J, and Miller, G H, 1997 Archaeological applications of amino acid racemization, *Archaeometry* 39, 265–87
- Jones, D K C, 1981 *Southeast and Southern England*, Methuen, London and New York
- Jones, P R, and Vincent, A S, 1986 A study of bone surfaces from La Cotte de St. Brelade, in *La Cotte de St. Brelade, 1961–1978* (eds P. Callow and J M Cornford), 185–192, Geo Books, Norwich
- Jones, R M, and White, N, 1988 Point blank: stone tool manufacture at the Ngilipitji Quarry, Arnhem Land, in *Archaeology with Ethnography* (ed E Meehan and R Jones), 51–87, Aust Nat Univ, Canberra
- Karklins, K, 1984 The gunflint industry at Brandon, *Canadian J Arms Collect* 22 (2), 51–59
- Kaufman, D S, 2000 Amino Acid Racemization in Ostracodes, in *Perspectives in Amino Acid and Protein Geochemistry* (ed. G A Goodfriend, M J Collins, M L Fogel, S A Macko and J F Wehmiller), 145–160, OUP, Oxford
- Kaufman D S, and Manley W F, 1998 A new procedure for determining DL amino acid ratios in fossils using Reverse Phase Liquid Chromatography, *Quat Sci Rev* 17, 987–1000
- Kemp, R A, 1985 The decalcified Lower Loam at Swanscombe, Kent: a buried Quaternary soil, *Proc Geol Ass* 96, 343–354
- Kennard, A S, 1942 Faunas of the High Terrace at Swanscombe, *Proc Geol Ass* 53, 105
- Kerney, M P, 1959 An interglacial tufa near Hitchin, Hertfordshire, *Proc Geol Ass* 70, 322–337
- Kerney, M P, 1968 Britain’s fauna of land Mollusca and its relation to the the Post-glacial thermal optimum, *Symp Zool Soc London* 22, 273–291
- Kerney, M P, 1971 Interglacial deposits at Barnfield Pit, Swanscombe, and their molluscan fauna, *J Geol Soc London* 127, 69–86
- Kerney, M P, 1999 *Atlas of the Land and Freshwater Molluscs of Britain and Ireland*, Harley Books, Colchester
- Kerney, M P, and Sieveking, G de G, 1977 Northfleet, in *South East England and the Thames Valley* (eds E R Shephard-Thorn and J J Wymer), 44–49, X INQUA Congress excursion guide A5, Geo Abstracts, Norwich
- Kerney, M P, and Cameron, R A D, 1979 *A Field Guide to the Land Snails of Britain and North-West Europe*, Collins, London
- Klein, R G, and Cruz-Urbe, K, 1984 *The Analysis of Animal Bones from Archaeological Sites*, Univ Chicago Press, Chicago and London
- Klein, R, 2009, Hominin Dispersals in the Old World, in *The Human Past: World Prehistory and the Development of Human Societies* (ed. C Scarre), 84–123, Thames and Hudson, London
- Kohn, M, and Mithen, S, 1999 Handaxes: products of sexual selection? *Antiquity* 73, 518–26
- Krause J, Fu Q, Good J M, Viola B, Shunkov M V, Derevianko A P, and Pääbo S, 2010 The complete mitochondrial DNA genome of an unknown hominin from southern Siberia, *Nature* 464, 894–897
- Kroll, W, 1991 Der Waldelefant von Crumstadt. Ein Beitrag zur Osteologie des Waldelefanten, *Elephas (Palaeoloxodon) antiquus* Falconer and Cautley (1847), unpubl dissertation, Ludwig-Maximilians-Universität, München
- Langford, H, 1981 Discovery of straight-tusked elephant bones near Peterborough, *Quat Newslett* 81, 25
- Lajoie, K R, Peterson, E, and Gerow, B A, 1980 Amino acid bone dating: a feasibility study, South San Francisco Bay region, California, in *Biogeochemistry of Amino Acids* (ed. P E Hare, T C Hoering, and K J King), 477–89, Wiley, New York
- Lauritzen, S E, Haugen, J E, Lovlie, R, and Giljanielsen, H, 1994, Geochronological potential of isoleucine epimerization in calcite speleothems, *Quat Res* 41(1), 52–8

- Le Borgne, E, 1955 Susceptibilité magnétique anormale du sol superficiel, *Annales de Geophysique* **11**, 399-419
- Leakey, M D, 1971 *Olduvai Gorge, Excavations in Beds I and II, 1960-1963, Vol. 3*. CUP, Cambridge
- Legge, A J, 2010 The aurochs and domestic cattle, in *Extinctions and Invasions. A Social History of British Fauna* (eds T. O'Connor and N. Sykes), 26-35, Windgather Press, Oxford
- Legge, A J, and Rowley-Conwy, P A, 1988 *Star Carr Revisited. A Re-analysis of the Large Mammals*, Birkbeck College, London
- Leonardi, G, and Petroni, C, 1976 The fallow deer of the European Pleistocene, *Geologica Romana* **57**, 1-67
- Lewis, J S, Wiltshire, P, and Macphail, R I, 1992 A Late Devensian/Early Flandrian site at Three Ways Wharf, Uxbridge: environmental implications, in *Alluvial Archaeology in Britain* (eds S Needham and M G Macklin), 235-248, Oxbow Monogr **27**, Oxbow Books, Oxford
- Lewis, J S C, and Rackham, J, 2010 *Three Ways Wharf, Uxbridge. A Lateglacial and Early Holocene Hunter-gatherer Site in the Colne Valley*, Mus London Archaeol Monogr **51**, London
- Lewis, S G, 1998 Quaternary geology of East Farm brick pit, Barnham and the surrounding area, in Ashton *et al.* 1998, 23-78
- Lister, A M, 1981 Evolutionary studies on Pleistocene deer, unpubl. PhD. thesis, Univ Cambridge
- Lister, A M, 1986 New results on deer from Swanscombe, and the stratigraphical significance of deer in the Middle and Upper Pleistocene of Europe, *J Archaeol Sci* **13**, 319-338
- Lister, A M, 1989 Rapid dwarfing of red deer on Jersey in the Last Interglacial, *Nature* **342**, 539-542
- Lister, A M, 1992 Mammalian fossils and Quaternary biostratigraphy, *Quat Sci Rev* **11**, 329-344
- Lister, A M, 1993 Cervidae (Deer), in *The Lower Paleolithic Site at Hoxne, England*. (eds R Singer, B G Gladfelter and J J Wymer), 176-190, Univ Chicago Press, Chicago
- Lister, A M, 1994 The evolution of the giant deer, *Megaloceros giganteus* (Blumenbach), *Zool J Linnean Soc* **112**, 65-100
- Lister, A M, 1995 Sea-levels and the evolution of island endemics: the dwarf red deer of Jersey, in *Island Britain: a Quaternary perspective* (ed. R C Preece), 151-172, Geol Soc Spec Publ **96**, London
- Lister, A M, 1996 The morphological distinction between bones and teeth of fallow deer (*Dama dama*) and red deer (*Cervus elaphus*), *Int J Osteoarch* **6**, 119-143
- Lister, A M, 2004 Ecological interactions of Elephantids in Pleistocene Eurasia: *Palaeoloxodon* and *Mammuthus*, in *Human Paleocology in the Levantine Corridor* (eds N Goren-Inbar and J D Speth), 53-60, Oxbow, Oxford
- Lister, A M, and Brandon, A, 1991 A pre-Ipswichian cold stage mammalian fauna from Balderton Sand and Gravel, Lincolnshire, England, *J Quat Sci* **6**, 139-75
- Lister, A, and Agenbroad, L D, 1994 Gender determination of the Hot Springs Mammoths, in *The Hot Springs Mammoth Site* (eds L D Agenbroad and J I Mead), 208-260, The Mammoth Site of South Dakota, Hot Springs, South Dakota
- Lister, A M, and Stuart, A J, (eds), 2010 The West Runton Freshwater Bed and the West Runton Mammoth, *Quat Internat* **228 (1-2)**, 1-248
- Lister, A M, Parfitt, S A, Owen, F J, Collinge, S, and Breda, M, 2010 Metric analysis of ungulate mammals in the early Middle Pleistocene of Britain, in relation to taxonomy and biostratigraphy. II: Cervidae, Equidae and Suidae, in Lister and Stuart (eds) 2010, 157-179
- Lord, A R, Whittaker, J E, and King, C, 2009 Paleogene, in *Ostracods in British Stratigraphy* (eds J E Whittaker and M B Hart), 373-409, The Micropalaeontol Soc Spec Publ, The Geol Soc, London
- Lotbinière, S de, 1977 The story of the English gunflint, some theories and queries, *J Arms and Armour Soc* **9**, 18-53
- Loveland, P J, and Findlay, D C, 1982 Composition and development of some soils on glauconitic Cretaceous (Upper Greensand) rocks in southern England, *J Soil Sci* **33**, 279-294
- Lowe, J J, and Walker, M J C, 1997 (reprinted edition) *Reconstructing Quaternary Environments*, Longman Scientific and Technical, Harlow
- Lycett, S J, 2008 Acheulean variation and selection: does handaxe symmetry fit neutral expectations, *J Archaeol Sci* **35**, 2640-2648
- Machin, A, Hosfield, R, and Mithen, S J, 2005 Testing the functional utility of handaxes symmetry: fallow deer butchery with replica handaxes, *Lithics* **26**, 23-37
- McNabb, J, and Ashton, N M, 1990 Clactonian gunflints? *Lithics* **11**, 44-47
- McNabb, J, and Ashton, N M, 1992 The cutting edge: bifaces in the Clactonian, *Lithics* **13**, 4-10
- McNabb, J, and Ashton, N M, 1995 Thoughtful flakers, *Camb Archaeol J* **5**, 289-298
- Macphail, R I, 1999 Sediment micromorphology, in M B Roberts and S A Parfitt 1999, 118-148
- Macphail, R I, 2001 The soil micromorphologist as team player: a multianalytical approach to the study of European microstratigraphy, in *Earth Science and Archaeology* (eds P Goldberg, V Holliday and R Ferring), 241-267, Kluwer Academic/Plenum, New York
- Macphail, R I, 2009 Marine inundation and archaeological sites: first results from the partial flooding of Wallasea Island, Essex, UK, *Antiquity Project Gallery*, Vol 2009, <http://antiquity.ac.uk/projgall/macphail/>
- Macphail, R I, and Cruise, G M, 2000 Soil micromorphology, in *Prehistoric Intertidal Archaeology in the Welsh Severn Estuary* (eds M Bell, A Caseldine and

- H Neumann), 267-269 and CD-Rom, CBA Res Rep 120, York
- Macphail, R I, and Cruise, G M, 2001 The soil micromorphologist as team player: a multianalytical approach to the study of European microstratigraphy, in *Earth Science and Archaeology* (eds P Goldberg, V Holliday and R Ferring), 241-267, Kluwer Academic/Plenum, New York
- Macphail, R I, and Crowther, J, 2009 A13 Thames Gateway, Movers Lane and Woolwich Manor Way Sites: soil micromorphology and bulk analyses, unpubl rep for Oxford Archaeology
- Macphail, R I, Acott, T G, and Crowther, J, 2001 Boxgrove: Sediment microstratigraphy (soil micromorphology, image analysis and chemistry), unpubl rep, Institute of Archaeology, London
- Macphail, R I, Crowther, J, and Cruise, G M, 2009 The Pilgrims' School, Winchester: soil micromorphology, pollen, chemistry and magnetic susceptibility, unpubl rep for Oxford Archaeology
- Macphail, R I, Allen, M J, Crowther, J, Cruise, G M, and Whittaker, J E, 2010 Marine inundation: effects on archaeological features, materials, sediments and soils, *Quat Internat* 214, 44-55
- Maddy, D, Lewis, S G, Scaife, R G, Bowen, D Q, Coope, G R, Green, C P, Hardaker, T, Keen, D H, Rees-Jones, J, Parfitt, S, and Scott, K, 1998 The Upper Pleistocene deposits at Cassington, near Oxford, England, *J Quat Sci*, 13 (3), 205-231
- Martínez-Navarro, B, Pérez-Claros, J A, Palombo, M R, Rook, L, and Palmquist, P, 2007 The Olduvai buffalo *Pelorovis* and the origin of *Bos*, *Quat Res* 68, 220-6
- Martinson, D G, Pisias, N G, Hays, J D, Imbrie, J, Moore, T C, and Shackleton, N J, 1987 Age dating and the orbital theory of the ice ages: Development of a high-resolution 0 to 300,000-year chronostratigraphy, *Quat Res* 27, 1-30
- Marshall, E, 1990 Racemization dating: great expectations, *Science* 247, 799
- Maul, L C, and Parfitt, S A, 2010 Micromammals from the 1995 Mammoth Excavation at West Runton, Norfolk, UK: morphometric data and taxonomic reappraisal, in *The West Runton Freshwater Bed and the West Runton Mammoth* (eds A Lister and A J Stuart), *Quat Internat* 228, 91-115
- Mayhew, D F, 1975 The quaternary history of some British Pleistocene rodents and lagomorphs, unpubl Ph.D. thesis, Univ Cambridge
- Mazza, P P M, Martini, F, Sala, B, Magi, M, Colombini, M P, Giachi, G, Landucci, F, Lemorini, C, Modugno, F, and Ribechini, E, 2006. A new Palaeolithic discovery: tar-hafted stone tools in a European Mid-Pleistocene bone-bearing bed, *J Archaeol Sci* 33, 1310-1318
- Meijer T and Preece R C, 1995 Malacological evidence relating to the insularity of the British Isles during the Quaternary, in *Island Britain: a Quaternary Perspective* (ed R C Preece), 89-110, Geol Soc Spec Publ 96, London
- Meisch, C, 2000 Freshwater Ostracoda of Western and Central Europe in *Süßwasserfauna von Mitteleuropa, Band 8/3* (eds J Schwoerbel and P Zwick), Spektrum Akademischer Verlag, Heidelberg and Berlin
- Mejdahl, V, 1979 Thermoluminescence dating: beta-dose attenuation in quartz grains, *Archaeometry* 21, 61-72
- Menke, B, 1968 Beiträge zur Biostratigraphie des Mittelpleistozäns in Norddeutschland (pollenanalytische Untersuchungen aus Westholstein), *Meyniana* 18, 35-42
- Miedema, R, Jongmans, A G, and Slager, S, 1974 Micromorphological observations on pyrite and its oxidation products in four Holocene alluvial soils in the Netherlands, in *Soil Microscopy* (ed. G K Rutherford), 772-794, The Limestone Press, Kingston, Ontario
- Miller, G H, Beaumont, P B, Jull, A J T, and Johnson, B, 1992 Pleistocene geochronology and palaeothermometry from protein diagenesis in ostrich eggshells: implications for the evolution of modern humans, *Phil Trans Royal Soc London* B337, 149-57
- Miller, G H, Magee, J W, and Jull, A J T, 1997 Low-latitude glacial cooling in the Southern Hemisphere from amino acid racemization in emu eggshells, *Nature* 385, 241-4
- Miller, G H, Hart, C P, Roark, E B, and Johnson, B J, 2000 Isoleucine epimerization in eggshells of the flightless Australian birds *Genyornis* and *Dromaius*, in *Perspectives in Amino Acid and Protein Geochemistry* (eds G A Goodfriend, M J Collins, M L Fogel, S A Macko and J F Wehmiller), 161-181, OUP, Oxford
- Mitchell-Jones, A J, Amori, G, Bogdanowicz, W, Kryštufek, B, Reijnders, P J H, Spitzenberger, F, Stubbe, M, Thissen, J B M, Vohralík, V and Zima, J, 1999 *The Atlas of European Mammals*, T and A.D Poyser, London
- Mithen, S, 1994 Technology and society during the Middle Pleistocene: hominid group size, social learning and industrial variability, *Cambridge Archaeol J* 4, 3-32
- Mol, D, de Vod, J, and van der Plicht, J, 2007 The presence and extinction of *Elephas antiquus* Falconer and Cautley, 1847, in Europe, *Quat Internat* 169-170, 149-153
- Moore, P D, Webb, J A, and Collinson, M E, 1991 *Pollen Analysis*, 2nd edn, Oxford
- Mortillet, G de, 1869 Essai d'une classification des cavernes et des stations sous abris, fondée sur les produits de l'industrie humaine, *Comptes Rendus des Séances de l'Académie des Sciences* 68, 553-555
- Mortillet, G de, 1872 Classification des âges de la pierre, *Comptes Rendus: Congrès International d'Anthropologie et d'Archéologie Préhistorique, 6e session (Bruxelles)*, 432-44
- Mortillet, G de, and A de, 1900 (3rd edn) *Le Préhistorique Origine et Antiquité de l'Homme*, Reinwald, Paris
- Movius, H L, 1950 A wooden spear of Third Interglacial age from lower Saxony, *Southwestern J Anthropol* 6 (2), 139-142
- Murphy, C P, 1986 *Thin section Preparation of Soils and*

- Sediments*, A B Academic Publishers, Berkhamsted
- Murray, A S and Wintle, A G, 2000 Luminescence dating of quartz using an improved single-aliquot regenerative-dose protocol, *Radiat Meas* **32**, 57–73
- Murray-Wallace, C V, 1993 A review of the application of the amino acid racemization reaction to archaeological dating, *The Artefact* **16**, 19–26
- Murray-Wallace, C V, and Kimber, R W L, 1987 Evaluation of the amino acid racemization reaction in studies of Quaternary marine sediments in South Australia, *Aust J Earth Sci* **34**, 279–292
- Museum of London Archaeology, 2011 Northfleet West substation, Southfleet Road, Swanscombe (County of Kent): geoarchaeological evaluation report, unpubl client rep (site code KT-SFL 03), submitted to Kent Co. Council
- Mussi, M, and Villa, P, 2008 Single carcass of *Mammuthus primigenius* with lithic artifacts in the Upper Pleistocene of northern Italy, *J Archaeol Sci* **35**, 2606–2613
- Newcomer, M.H. 1971 Some quantitative experiments in hand-axe manufacture, *World Archaeol* **3**, 85–94
- Newton, W M, 1901 The occurrence in a very limited area of the rudest with the finer forms of worked stones, *Man* **66**, 81–82
- Nitecki, M H, and Nitecki, D V (eds), 1987 *The Evolution of Human Hunting*, Plenum Press, New York and London
- O'Connor, T P, 2003 *The Analysis of Urban Animal Bone Assemblages: a handbook for archaeologists*, The Archaeology of York **19/2**, CBA, York
- Oakley, K P, 1952 Swanscombe Man, *Proc Geol Assoc* **63**, 271–300
- Oakley, K P and Leakey, M D, 1937 Report on excavations at Jaywick Sands, Essex (1934) with some observations on the Clactonian industry, and on the fauna and geological significance of the Clacton channel, *Proc Prehist Soc* **3**, 217–260
- Ohel, M, 1979 The Clactonian: an independent complex or an integral part of the Acheulian, *Current Anthropol* **20**, 685–726
- Otte, M, 1990 The northwestern European Plain around 18,000 BP, in *The World at 18,000 BP: Vol 1, High Latitudes* (eds O. Soffer and C. Gamble), 54–68, Unwin Hyman, London
- Ovey, C D (ed.), 1964 *The Swanscombe Skull: a survey of research on a Pleistocene site*, Royal Anthropol Inst Occ Pap **20**, 19–61
- Oxford Archaeology, 1994 Channel Tunnel Rail Link: assessment of historic and cultural effects, final report, unpubl client rep
- Oxford Archaeology, 2004a Channel Tunnel Rail Link contract URN/342/ARC/0018, archaeological works at Southfleet Road: method statement [rev AA, 20th January 2004], unpubl client rep
- Oxford Archaeology, 2004b Channel Tunnel Rail Link contract URN/342/ARC/0018, archaeological works at Southfleet Road: method statement [rev AD, 20th May 2004], unpubl client rep
- Oxford Archaeology, 2005 Channel Tunnel Rail Link contract URN/342/ARC/0018, Southfleet Road elephant site ARC 342 W 02: Preliminary post-excavation assessment report [342-EZR-SOXAR-00007], unpubl client rep
- Palmer, S, 1975 A Palaeolithic site at North Road, Purfleet, Essex, *Trans Essex Archaeol Soc* **7**, 1–13
- Parfitt, S A, 1998a Pleistocene vertebrate faunas of the West Sussex coastal plain: their stratigraphic and palaeoenvironmental significance, in *The Quaternary of Kent and Sussex: Field Guide* (eds J B Murton, C A Whiteman, M R Bates, D R Bridgland, A J Long, M B Roberts and M P Walker), 121–135, Quat Res Ass, London
- Parfitt, S, 1998b The interglacial mammalian fauna from Barnham, in Ashton *et al.* 1998, 111–147
- Parfitt, S A, 1999 Mammalia, in M B Roberts and S A Parfitt 1999, 197–290
- Parfitt, S, 2008 A tree frog (*Hyla* sp.) from the West Runton Freshwater Bed (early Middle Pleistocene), Norfolk, and its palaeoenvironmental significance, *Quat Newslett* **114**, 20–27
- Parfitt, S A, Barendregt, R W, Breda, M, Candy I, Collins, M J, Coope, G R, Durbidge, P, Field, M H, Lee, J R, Lister, M, Mutch, R, Penkman, K E H, Preece, R C, Rose, J, Stringer, C B, Symmons, R, Whittaker, J E, Wymer, J J, and Stuart, A J, 2005 The earliest record of human activity in northern Europe, *Nature* **438**, 1008–1012
- Parfitt S A, Ashton N M, Lewis S G, Abel R L, Coope G R, Field M H, Gale R, Hoare P G, Larkin N R, Lewis M, Karloukovski V, Maher B, Peglar S M, Preece R C, Whittaker J E and Stringer C B, 2010a Early Pleistocene human occupation at the edge of the boreal zone in northwest Europe, *Nature* **466**, 229–233
- Parfitt, S A, Coope, G R, Field, M H, Peglar, S M, Preece, R C P, and Whittaker, J E, 2010b Middle Pleistocene biota of the early Anglian 'Arctic Freshwater Bed' at Ostend, Norfolk, UK, *Proc Geol Ass* **121**, 55–65
- Paterson, T T, 1937 Studies in the Palaeolithic succession of England. No. 1, the Barnham sequence, *Proc Prehist Soc East Anglia* **3**, 87–135
- Paul, C R C, 1974 *Azeca* in Britain, *J Conchological Soc* **28**, 155–172
- Penkman, K E H, 2005 Amino acid geochronology: a closed system approach to test and refine the UK model, unpubl PhD thesis, Univ Newcastle
- Penkman, K E H, 2010 Amino acid geochronology: its impact on our understanding of the Quaternary stratigraphy of the British Isles, *J Quat Sci* **25**(4), 501–514
- Penkman, K E H, Preece, R C, Keen, D H, Maddy, D, Schreve, D C and Collins, M J, 2007. Amino acids from the intra-crystalline fraction of mollusc shells, applications to geochronology, *Quat Sci Rev* **26**, 2958–2969

- Penkman, K E H, Kaufman, D S, Maddy, D and Collins, M J, 2008a Closed-system behaviour of the intra-crystalline fraction of amino acids in mollusc shells, *Quat Geochronol* **3**, 2–25
- Penkman, K, Collins, M, Keen, D, and Preece, R, 2008b British Aggregates: An improved chronology using amino acid racemization and degradation of intra-crystalline amino acids (IcPD), Engl Herit Res Dept Rep ser 6-2008
- Penkman, K E H, Preece, R C, Bridgland, D R, Keen, D H, Meijer, T, Parfitt, S A, White, T S, and Collins, M J, 2011 A chronological framework for the British Quaternary based on *Bithymia* opercula, *Nature* **476**, 446–449
- Penkman, K E H, Preece, R C, Bridgland, D R, Keen, D H, Meijer, T, Parfitt, S A, White, T S and Collins, M J, 2013 An aminostratigraphy for the British Quaternary based on *Bithymia* opercula, *Quat Sci Rev* **61**, 111–134
- Pettitt, P, and White, M, 2012 *The British Palaeolithic*, Routledge, London and New York
- Pickering, T R, and Hensley-Marschand, B, 2008 Cutmarks and hominid handedness, *J Archaeol Sci* **35**, 310–315
- Pike, K, and Godwin, H, 1953 The interglacial at Clacton-on-Sea, Essex, *Q J Geol Soc London* **108**, 261–72
- Piperno M, Lefèvre D, Raynal J-P and Tagliacozzo A, 1998 Notarchirico. An early Middle Pleistocene site in the Venosa Basin, *Anthropologie* **36** (1-2), 85–90
- Piperno M, Tagliacozzo A, 2001 The elephant butchery area at the Middle Pleistocene site of Notarchirico (Venosa, Basilicata, Italy), in *The World of Elephants, International Congress* (eds G Cavarretta, P Gioia, M Mussi and M R Palombo), 230–236, Consiglio Nazionale delle Ricerche, Rome
- Pitts, M, and Roberts, M B, 1997 *Fairweather Eden: life in Britain half a million years ago as revealed by the excavations at Boxgrove*, Century, London
- Polly, P D, and Eronen, J T, 2011 Mammal associations in the Pleistocene of Britain: implications of ecological niche modelling and a method for reconstructing palaeoclimate, in *The Ancient Human Occupation of Britain* (ed N. Ashton, S. Lewis and C. Stringer), 257–282, Elsevier, Amsterdam
- Pope, M I, 2002 The significance of biface-rich assemblages: an examination of the behavioural controls on lithic assemblage formation in the Lower Palaeolithic, unpubl Ph.D. thesis, Univ Southampton
- Powers, M C, 1953 A new roundness scale for sedimentary particles, *J Sediment Petrol* **23**, 117–119
- Pradel, D L, 1944 Micro-nucléi du gisement acheuléo-moustérien de Fontmaure (Vienne), *Extrait du Bulletin de la Société Préhistorique Française* No **1-2-3**
- Preece, R C (ed), 1995 *Island Britain: A Quaternary Perspective*, Geol Soc Spec Publ **96**, Geol Soc, London
- Preece, R C, and Parfitt, S A, 2000 The Cromer Forest-bed Formation: new thoughts on an old problem, in *The Quaternary of Norfolk and Suffolk. Field Guide* (eds S G Lewis, C A Whiteman and R C Preece), 1–27, Quat Res Ass, London
- Preece, R C, and Penkman, K E H, 2005 New faunal analyses and amino acid dating of the Lower Palaeolithic site at East Farm, Barnham, Suffolk, *Proc Geol Ass* **116**, 363–377
- Preece, R C, and Parfitt, S A, 2008 The Cromer Forest-bed Formation: some recent developments relating to early human occupation and lowland glaciation, in *The Quaternary of Northern East Anglia. Field Guide* (eds I Candy, J R Lee and A M Harrison), 60–83, Quat Res Ass, London
- Preece, R C and Parfitt, S A, 2012 The Early and early Middle Pleistocene context of human occupation and lowland glaciation in Britain and northern Europe, *Quat Internat* **271**, 6–28
- Preece, R C, Gowlett, J A J, Parfitt, S A, Bridgland, D R, and Lewis, S G, 2006 Humans in the Hoxnian: habitat, context and fire use at Beeches Pit, West Stow, Suffolk, UK, *J Quat Sci* **21**, 485–496
- Preece, R C, Parfitt, S A, Bridgland, D R, Lewis, S G, Rowe, P J, Atkinson, T C, Candy, I, Debenham, N C, Penkman, K E H, Rhodes, E J, Schwenninger, J-L, Griffiths, H I, Whittaker, J E, and Gleed-Owen, C, 2007 Terrestrial environments during MIS 11: Evidence from the Palaeolithic site at West Stow, Suffolk, UK, *Quat Sci Rev* **26**, 1236–1300
- Preece, R C, Parfitt S A, Coope, G R, Penkman, K E H, Ponel, P, and Whittaker, J E 2009 Biostratigraphic and aminostratigraphic constraints on the age of the Middle Pleistocene glacial succession in north Norfolk, UK, *J Quat Sci* **24**, 557–580
- Prescott, J R, Hutton, J T, 1994 Cosmic ray contributions to dose rates for luminescence and ESR dating: large depths and long-term time variations, *Radiat Meas* **23**, 497–500
- Pryor, W A, 1971 Grain shape, in *Procedures in Sedimentary Petrology* (ed. R E Carver), 131–150, John Wiley, New York
- Pushkina, D, 2007 The Pleistocene easternmost distribution in Eurasia of the species associated with the Eemian *Palaeoloxodon antiquus* assemblage, *Mammal Rev* **37**, 224–245
- Rabinovich, R, Ackermann, O, Aladjem, E, Barkai, R, Biton, R, Milevski, I, Solodenko, N, and Marder, O, 2012 Elephants at the Middle Pleistocene Acheulian open-air site of Revadim Quarry, Israel, *Quat Internat* **276-277**, 183–197
- Reich, D, Green, R E, Kircher, M, Krause, J, Patterson, N, Durand, E Y, Viola, B, Briggs, A W, Stenzel, U, Johnson, P L, Maricic, T, Good, J M, Marques-Bonet, T, Alkan, C, Fu, Q, Mallick, S, Li, H, Meyer, M, Eichler, E E, Stoneking, M, Richards, M, Talamo, S, Shunkov, M V, Derevianko, A P, Hublin, J J, Kelso, J, Slatkin, M, and Pääbo, S, 2010 Genetic history of an archaic hominin group from Denisova Cave in Siberia, *Nature* **468** (7327), 1053–1060

- Rhodes, E J, and Schwenninger, J-L, 2007 Dose rates and radioisotope concentrations in the concrete calibration blocks at Oxford, *Ancient TL* **25**, 5–8
- Roberts, M B, 2000 CTRL Section 2: Pepper Hill to St. Pancras Terminus, research strategy for Palaeolithic archaeology and Pleistocene geology, Annex 13, CTRL Minor Works Contract, Contract URN/342/ARC/0018, Rail Link Engineering
- Roberts, M B, and Parfitt, S A, 1999 *A Middle Pleistocene Hominid Site at Eartham Quarry, Boxgrove, West Sussex, UK*, Engl Herit Archaeol Rep **17**, London
- Roberts, M B, and Pope, M I, in press *Mapping the Early Middle Pleistocene Deposits of the Slindon Formation across the Coastal Plain of West Sussex and Eastern Hampshire*, Left Coast Press, London
- Robinson, E, 1996 The ostracod fauna from the Waechter excavations, in Conway *et al.* 1996, 187–190
- Rodríguez, J, Burjachs, F, Cuenca-Bescós, G, García, N, Van der Made, J, Pérez González, A, Blain, H-A, Expósito, I, López-García, J-M, García Antón, M, Allué, E, Cáceres, I, Huguet, R, Mosquera, M, Ollé, A, Rosell, J, Parés, J M, Rodríguez, X-P, Díez, C, Rofes, J, Sala, R, Saladié, P, Vallverdú, J, Bennisar, M L, Blasco, R, Bermúdez de Castro, J M, and Carbonell E, 2011 One million years of cultural evolution in a stable environment at Atapuerca (Burgos, Spain), *Quat Sci Rev* **30**, 1396–1412
- Rodwell, J S, 1991, *British Plant Communities. Volume 2. Mires and Heaths*, CUP, Cambridge
- Roe, D A, 1968 *A Gazetteer of British Lower and Middle Palaeolithic Sites*, CBA Res Rep **8**, London
- Roe, D A, 1980 Introduction: precise moments in remote time, *World Archaeol* **12** (2), 107–108
- Roe, D A, 1981 *The Lower and Middle Palaeolithic Periods in Britain*, Routledge and Kegan Paul, London
- Roe, D A, 1996 The start of the British Palaeolithic: some old and new thoughts and speculations, *Lithics* **16**, 17–26
- Roe, H M, 1999 Late Middle Pleistocene sea-level change in the southern North Sea: the record from eastern Essex, UK, *Quat Internat* **55**, 115–128
- Roe, H M, Coope, G R, Devoy, R J N, Harrison, C J O, Penkman, K E H, Preece, R C, and Schreve, D C, 2009 Differentiation of MIS 9 and MIS 11 in the continental record: vegetational, faunal, amino-stratigraphic and sea-level evidence from coastal sites in eastern Essex, UK, *Quat Sci Rev* **28**, 2342–2373
- Roebroeks, W, 2001 Hominid behaviour and the earliest occupation of Europe: an exploration, *J Hum Evolut* **41**, 437–461
- Roebroeks W, 2007 Building blocks from an old brickyard, *Quat Sci Rev* **26**, 1194–1196
- Roebroeks, W, Conard, N J and van Kolfschoten, T, 1992 Dense forests, cold steppes, and the Palaeolithic settlement of Northern Europe, *Curr Anthropol* **33**, 551–586
- Rogers, P M, Arthur, C P, and Soriguer, R C, 1994 The rabbit in continental Europe, in *The European Rabbit: the history and biology of a successful coloniser* (eds H V Thomas and C M King), 22–63, OUP, Oxford
- Rose, J, 1987 Status of the Wolstonian glaciation in the British Quaternary, *Quat Newslett* **53**, 1–9
- Rose, J, 1991 Stratigraphic basis of the ‘Wolstonian Glaciation’, and retention of the term ‘Wolstonian’ as a chronostratigraphic stage name – discussion, in *Central East Anglia and the Fen basin. Field Guide* (eds S G Lewis, C A Whiteman and D R Bridgland), 15–20, Quat Res Ass, Cambridge
- Rutter, N W, and Blackwell, B, 1995 Amino acid racemization dating, in *Dating Methods for Quaternary Deposits* (eds N W Rutter and N R Catto), 125–64, Geol Assoc Canada, St John’s, Newfoundland
- Ryves, D B, Juggins, S, Fritz, S C, and Battarbee, R W, 2001 Experimental diatom dissolution and the quantification of microfossil preservation in sediments, *Palaeogeog, Palaeoclimatol, Palaeoecol* **172**, 99–113
- Sacca, D, 2012 Taphonomy of *Palaeoloxodon antiquus* at Castel di Guido (Rome, Italy): Proboscidean carcass exploitation in the Lower Palaeolithic, *Quat Internat* **276–277**, 27–41
- Santonja, M, and Villa, P, 1990 The Lower Palaeolithic of Spain and Portugal, *J World Prehist* **4**, 45–94
- Schick, K D, and Toth, N, 1993 *Making Silent Stones Speak*, Simon and Schuster, New York
- Schneiderhöhn, P, 1954 Eine vergleichende Studie über Methoden zur quantitativen Bestimmung von Abrundung und Form an Sandkörnern, *Heidl Beitr Miner Petrogr* **4**, 172–191
- Schreve, D, 1996 The mammalian fauna from the Waechter excavations, Barnfield Pit, Swanscombe, in Conway *et al.* 1996, 149–162
- Schreve, D C, 2001a. Differentiation of the British late Middle Pleistocene interglacials: the evidence from mammalian biostratigraphy, *Quat Sci Rev* **20**, 1693–1705
- Schreve, D C, 2001b. Mammalian evidence from fluvial sequences for complex environmental change at the oxygen isotope substage level, *Quat Internat* **79**, 65–74
- Schreve, D, 2006 The taphonomy of a Middle Devensian (MIS 3) vertebrate assemblage from Lynford, Norfolk, UK, and its implications for Middle Palaeolithic subsistence strategies, *J Quat Sci* **21**, 543–556
- Schreve, D C, and Thomas, G N, 2001 European Quaternary Biostratigraphy, *Quat Sci Rev* **20**, 1577–1764
- Schreve, D C, Bridgland, D R, Allen, P, Blackford, J J, Glead-Owen, C P, Griffiths, H I, Keen, D H, and White, M J, 2002. Sedimentology, palaeontology and archaeology of late Middle Pleistocene River Thames terrace deposits at Purfleet, Essex, UK, *Quat Sci Rev* **21**, 1423–1464
- Schroeder, R A, and Bada, J L, 1976 A review of the

- geochemical applications of the amino acid racemization reaction, *Earth-Sci Rev* **12**, 347–91
- Scollar, I, Tabbagh, A, Hesse, A, and Herzog, I, 1990 *Archaeological Prospecting and Remote Sensing*, CUP, Cambridge
- Scott, K, 1986 The bone assemblages of layers 3 and 6, in *La Cotte de St. Brelade, 1961–1978*. (eds P Callow and J M Cornford), 159–183, Geo Books, Norwich
- Shackleton, N J, 1987 Oxygen Isotopes, ice volume and sea level, *Quat Sci Rev* **6**, 183–190
- Shipman, P, 1981 Applications of scanning electron microscopy to taphonomic problems, *Ann NY Acad Sci* **276**, 357–385
- Shipman, P, and Rose, J J, 1983a Evidence of butchery and hominid activities at Torralba and Ambrona: an evaluation using microscopic techniques, *J Archaeol Sci* **10**, 465–474
- Shipman, P, and Rose, J, 1983b Early hominid hunting, butchering, and carcass processing behaviours: approaches to the fossil record, *J Anthropol Archaeol* **2**, 57–98
- Shotton, F W, Keen, D H, Coope, G R, Currant, A P, Gibard, P L, Aalto, M, Peglar, S M, Robinson, J E, 1993 The Middle Pleistocene deposits of Waverley Wood Pit, Warwickshire, England, *J Quat Sci* **8**, 293–325
- Sier, M J, Roebroeks, W, Bakels, C C, Dekkers, M J, Brühl, E, De Loecker, D, Gaudzinski-Windheuser, S, Hesse, N, Jagich, A, Kindler, L, Kuijper, W J, Laurat, T, Mùcher, H J, Penkman, K E H, Richter, D, *et al.* 2011 Direct terrestrial-marine correlation demonstrates surprisingly late onset of the last interglacial in central Europe, *Quat Res* **75**, 213–218
- Singer, R, Wymer, J J, Gladfelter, B G, and Wolff, R, 1973 Excavation of the Clactonian industry at the Golf Course, Clacton-on-Sea, Essex, *Proc Prehist Soc* **39**, 6–74
- Singer, R, Wolff, R, Gladfelter, G B, and Wymer, J J, 1982 Pleistocene *Macaca* from Hoxne, Suffolk, England, *Folia Primatologica* **37**, 141–52
- Singer, R, Gladfelter, B G, Wymer, J J (eds), 1993 *The Lower Paleolithic Site at Hoxne, England*, Univ Chicago Press, Chicago
- Slimak, L, Svendsen, J I, Mangerud, J, Plisson, H, Heggen, H P, Brugère, A, and Pavlov, P Y, 2011 Late Mousterian persistence near the Arctic Circle, *Science* **332**, 841–845
- Smith, G M, 2012 Middle Palaeolithic subsistence: The role of hominins at Lynford, Norfolk, UK, *Quat Internat* **252**, 68–81
- Smith, R A, 1911 A Palaeolithic Industry at Northfleet, Kent, *Archaeologia* **62** (2), 515–532
- Smith, R A, and Dewey, H, 1913 Stratification at Swanscombe: report on excavations made on behalf of the British Museum and H.M. Geological Survey, *Archaeologia* **64**, 177–204
- Smith, G G, and Evans, R C, 1980 The effect of structure and conditions on the rate of racemization of free and bound amino acids, in *Biogeochemistry of Amino Acids* (eds P E Hare, T C Hoering, and J King), 257–82, Wiley, New York
- Snelling, A J R, 1964 Excavations at the Globe Pit, Little Thurrock, Grays, Essex 1961, *Essex Naturalist* **31**, 199–208
- Spikins, P, 2012 Goodwill hunting? Debates over the ‘meaning’ of Lower Palaeolithic handaxe form revisited, *World Archaeol* **44** (3), 378–392
- Spurrell, F C J, 1890 Excursion to Swanscombe, *Proc Geol Assoc* **II**, *cxlv–vi*
- Stewart, J R, 1992 The Turdidæ of Pin Hole Cave, Derbyshire, unpubl. MSc dissertation, City of London, North London and Thames Polytechnics
- Stewart, J R, 1998 The avifauna, in Ashton *et al.*, 107–109
- Stewart, J R, 2007 *The Evolutionary study of some Archaeologically Significant Avian Taxa in the Quaternary of the Western Palaeartic*, Brit Archaeol Rep (Int Ser) **1653**, Oxford
- Stewart, J R, 2010 The bird remains from the West Runton Freshwater Bed, Norfolk, England, in *The West Runton Freshwater Bed and the West Runton Mammoth* (eds A J Stuart and A M Lister), *Quat Internat* **228**, 72–90
- Stewart, J R, and Hernández Carrasquilla, F, 1997 The identification of extant European birds remains: a review of the literature, *Int J Osteoarch* **7**, 364–371
- Stringer, C B, 2006 *Homo Britannicus: the Incredible Story of Human Life in Britain*, Allen Lane, London
- Stringer, C, and Hublin, J-J, 1999 New age estimates for the Swanscombe hominid, and their significance for human evolution, *J Hum Evol* **37**, 873–877
- Stringer, C B, Andrews, P, and Currant, A P, 1996 Palaeoclimatic significance of mammalian faunas from Westbury Cave, Somerset, England, in *The early Middle Pleistocene in Europe* (ed. C. Turner), 135–143, Balkema, Rotterdam
- Stoops, G, 2003 *Guidelines for Analysis and Description of Soil and Regolith Thin sections*, Soil Science Society of America, Inc, Madison, Wisconsin
- Stopes, H, 1900 On the discovery of *Neritina fluviatilis* with a Pleistocene fauna and worked flints in High Terrace gravels of the Thames valley, *J Royal Anthropol Inst* **29** (New Ser 2), 302–303
- Stuart, A J, 1979 Pleistocene occurrences of the European pond tortoise (*Emys orbicularis* L.) in Britain, *Boreas* **8**, 359–371
- Stuart, A J, 1982 *Pleistocene Vertebrates in the British Isles*, Longman, London
- Stuart, A J, 1996 Vertebrate faunas from the early Middle Pleistocene of East Anglia, in *The early Middle Pleistocene of Europe* (ed. C Turner), 9–24, AA Balkema, Rotterdam
- Stuart, A J, 2005 The extinction of the woolly mammoth (*Mammuthus primigenius*) and straight-tusked elephant (*Palaeoloxodon antiquus*) in Europe, *Quat Internat* **228**, 217–232
- Stuart, A J, and Larkin, N M, 2010 Taphonomy of the West Runton mammoth, in *The West Runton Freshwater Bed and the West Runton Mammoth* (eds A Lister and A J Stuart), *Quat Internat* **228**, 217–232

- Stuart, A J, Wolff, R G, Lister, A M, Singer, R, and Egginton, J M, 1993 Fossil Vertebrates, in *The Lower Paleolithic Site at Hoxne, England* (eds R Singer, B G Gladfelter and J J Wymer), 163–206, Univ Chicago Press, Chicago
- Sumbler, M G, 1996 *London and the Thames Valley*, British Regional Geology (4th edn), BGS, Keyworth
- Surrovell, T, Waguespack, N, and Brantingham, P J, 2005 Global archaeological evidence for proboscidean overkill, *Proc Nat Acad Sci* **102** (17), 6231–6236
- Sutcliffe, A J, 1964 The mammalian fauna, in *The Swanscombe Skull: a survey of research on a Pleistocene site* (ed C D Ovey), 85–111
- Sutcliffe, A J, 1995 The Aveley elephant site, Sandy Lane Pit (TQ 553807), in *The Quaternary of the Lower Reaches of the Thames* (eds D R Bridgland, P Allen and B A Hart), 189–199, Quat Res Ass, London
- Swanscombe Committee, 1938 Report on the Swanscombe skull: prepared by the Swanscombe Committee of the Royal Anthropological Institute, *J Royal Anthropol Inst* **68**, 17–98.
- Sykes, G A, Collins, M J and Walton, D I, 1995 The significance of a geochemically isolated intracrystalline organic fraction within biominerals, *Organic Geochemistry* **23** (11/12), 1039–1065
- Thieme, H, 1997 Lower Palaeolithic hunting spears from Germany, *Nature* **385**, 807–10
- Thirly, M, Galbois, J, and Schmitt, J-M, 2006 Unusual phosphate concretions related to groundwater flow in a continental environment, *J Sediment Res* **76**, 866–877
- Tite, M S, 1972 The influence of geology on the magnetic susceptibility of soils on archaeological sites, *Archaeometry* **14**, 229–236
- Tite, M S, and Mullins, C, 1971 Enhancement of magnetic susceptibility of soils on archaeological sites, *Archaeometry* **13**, 209–19
- Toth, N, 1982 The stone technologies of early hominids at Koobi Foor, Kenya: an experimental approach, unpubl Ph.D. dissertation, Univ California, Berkeley, Ann Arbor, University Microfilms
- Toth, N, 1985 Archaeological evidence for preferential right-handedness in the Lower and Middle Pleistocene, and its possible implications, *J Hum Evol* **14**, 607–614
- Trigger, B G, 1989 *A History of Archaeological Thought*, CUP, Cambridge
- Turner, A, 1984 Dental sex dimorphism in European lions (*Panthera leo* L.) of the Upper Pleistocene: palaeoecological and palaeoethological implications, *Annales Zoologici Fennici* **21**, 1–8
- Turner, A, 1997 *The Big Cats and their Fossil Relatives*, Columbia Univ Press, New York
- Turner, A, 2009 The evolution of the guild of large Carnivora of the British Isles during the Middle and Late Pleistocene, *J Quat Sci* **24**, 991–1005
- Turner, C, 1970 The Middle Pleistocene deposits at Marks Tey, Essex, *Phil Trans Royal Soc London* **B257**, 373–440
- Turner, C, 1975a The correlation and duration of Middle Pleistocene interglacial periods in northwest Europe, in *After the Australopithecines: stratigraphy, ecology and culture-change in the Middle Pleistocene* (eds K W Butzer and G L Isaac), 259–308, Mouton, Le Hague
- Turner, C, 1975b Der Einfluss grosser Mammalier auf die interglaziale Vegetation, *Quartärpaläontologie* **1**, 13–19
- Turner, C, and Kerney, M P, 1971 A note on the age of the freshwater beds of the Clacton Channel, *J Geol Soc* **127**, 87–93
- Turner, C and West, R G, 1968 The subdivision and zonation of interglacial periods, *Eiszeitalter und Gegenwart* **19**, 93–101
- Tzedakis, P C, Hooghiemstra, H, Magri, D, Reille, M, Sadori, L, Shackleton, N, Wijmstra, T A, 2001 Establishing a terrestrial chronological framework as a basis for biostratigraphical comparisons, *Quat Sci Rev* **25**, 3416–3430
- Van der Made, J, and Grube R, 2010 The rhinoceroses from Neumark-Nord and their nutrition, in *Elefantenreich – Eine Fossilwelt in Europa* (ed H Meller, H), 383–394, Landesmat für Denkmalpflege und Archäologie Sachsen-Anhalt and Landesmuseum Vorgeschichte, Denmark
- Van der Made, J, 2010 The rhinos of the Middle Pleistocene of Neumark-Nord (Saxony-Anhalt), in Neumark-Nord: Ein interglaziales Ökosystem des mittelpaläolithischen Menschen, *Veröffentlichungen des Landesamtes für Denkmalpflege und Archäologie* **62**, 433–527
- Villa, P, 1990 Torralba and Aridos: elephant exploitation in Middle Pleistocene Spain, *J Hum Evol* **19**, 299–309
- Villa, P, and Mahieu, È, 1991 Breakage patterns of human long bones, *J Hum Evol* **21**, 27–48
- Voormolen B, 2008 Ancient hunters, modern butchers. Schöningen 13II-4, a kill-butcher site dating from the northwest European Lower Palaeolithic, *J Taphonomy* **6** (2), 71–247
- Waelbroeck, C, Labeyrie, L, Michel, E, Duplessy, J C, McManus, J F, Lambeck, K, Balbon, E, Labracherie, M, 2002 Sea-level and deep water temperature changes derived from benthic foraminifera isotopic records, *Quat Sci Rev* **21** (1-3), 295–305
- Walker, E A, 2001 Old collections – a new resource? The history of some English Palaeolithic collections in Cardiff, in *A Very Remote Period Indeed: papers on the Palaeolithic presented to Derek Roe* (eds S Milliken and J Cook), 249–259, Oxbow Books, Oxford
- Walton D, 1998 Degradation of intracrystalline proteins and amino acids in fossil brachiopods, *Org Geochem* **28**, 389–410

- Warren, S H, 1922 The Mesvinian industry of Clacton-on-Sea, *Proc Prehist Soc East Anglia* 3, 597–602
- Warren, S H, 1923 The *Elephas antiquus* bed of Clacton-on-Sea (Essex) and its flora and fauna, with reports by E M Reid, M E J Chandler, J Groves, C W Andrews, M A C Hinton, T H Withers, A S Kennard and B B Woodward, *Q J Geol Soc London* 79, 606–34
- Warren, S H, 1926 The classification of the Lower Palaeolithic with especial reference to Essex, *Trans South Eastern Union of Scientific Societies 1926*, 38–50
- Warren, S H, 1951 The Clactonian flint industry: a new interpretation. *Proc Geol Ass* 62, 107–135
- Warren, S H, 1955 The Clacton (Essex) channel deposits, *Q J Geol Soc London* 111, 283–307
- Warren, S H, 1958 The Clactonian Flint Industry: a supplementary note, *Proc Geol Ass* 69, 123–129
- Waters, M R, Stafford, T W, McDonald, H G, Gustafson, C, Rasmussen, M, Cappellini, E, Olsen, J V, Sklarczyk, D, Jensen, L J, Gilbert, M T P, and Willerslev, E, 2011 Pre-Clovis mastodon hunting 13, 800 years ago at the Manis site, Washington, *Science* 334, 351–353
- Weber, T, 2000 The Eemian *Elephas antiquus* finds with artefacts from Lehringen and Gröbern: are they really killing sites? *Anthropologie et Préhistoire* 111, 177–185
- Wehmiller, J F, Thieler, E R, Miller, D, Pellerito, V, Bakeman Keeney, V, Riggs, S R, Culver, S, Mallinson, D, Farrell, K M, York, L L, Pierson, J, and Parham, P R, 2010 Aminostratigraphy of surface and subsurface Quaternary sediments, North Carolina coastal plain, USA, *Quat Geochronol* 5, 459–494
- Wenban-Smith, F F, 1985 Analysis of experimentally produced flint debitage and on-site application of results, unpubl BA diss, Institute of Archaeology, Univ London
- Wenban-Smith, F F, 1992 Palaeolithic Priorities and Acceptability of Proposed Rail-link Routes in the Ebbsfleet Valley, unpubl rep submitted to Oxford Archaeology on behalf of Union Railways
- Wenban-Smith, F F, 1995a, The Ebbsfleet Valley, Northfleet (Baker's Hole), in *The Quaternary of the Lower Reaches of the Thames. Field Guide* (eds D R Bridgland, P Allen and B A Haggart), 147–64, Quat Res Ass, Durham
- Wenban-Smith, F F, 1995b Another one bites the dust. Review of *Excavations at Barnfield Pit, Swanscombe, 1968–72* (eds B Conway, J McNabb and N Ashton), *Lithics* 16, 99–108
- Wenban-Smith, F F, 1996 The Palaeolithic archaeology of Baker's Hole: a case study for focus in lithic analysis, unpubl PhD thesis, Dept Archaeology, Univ Southampton
- Wenban-Smith, F F, 1998 Clactonian and Acheulian industries in Britain: their chronology and significance reconsidered, in *Stone Age Archaeology: essays in honour of John Wymer* (eds N Ashton, F Healy and P Pettitt), 90–97, Oxbow Books, Oxford
- Wenban-Smith, F F, 1999 Palaeolithic archaeology at Craylands Lane East: assessment report, unpubl client rep submitted to Kent Co Council
- Wenban-Smith, F F, 2004a The Stopes Palaeolithic project: final report, unpubl rep for English Heritage
- Wenban-Smith, F F, 2004b Bringing behaviour into focus: Archaic landscapes and lithic technology, in *Lithics in Action: Proceedings of the Lithic Studies Society Conference held in Cardiff, September 2000* (eds E A Walker, F F Wenban-Smith and F Healy), 48–56, Lithic Stud Soc Occ Pap 8, Oxbow Books, Oxford
- Wenban-Smith, F F, 2007 The Palaeolithic archaeology of Kent, in *The Archaeology of Kent to AD 800* (ed. J H Williams), 25–64, The Boydell Press, Woodbridge
- Wenban-Smith, F F, 2009 Henry Stopes (1852–1902): engineer, brewer and anthropologist, in *Great Prehistorians: 150 years of Palaeolithic research, 1859–2009* (eds R T Hosfield, F F Wenban-Smith and M Pope), 65–85, *Lithics* 30 (spec edn), London
- Wenban-Smith, F F, and Ashton, N, 1998 Raw material and lithic technology, in Ashton *et al.* 1998, 237–244
- Wenban-Smith, F F, and Bridgland, D R, 2001 Palaeolithic archaeology at the Swan Valley Community School, Swanscombe, Kent, *Proc Prehist Soc* 67, 219–259
- Wenban-Smith, F F, and CgMs Consulting Ltd, 2002 Eastern Quarry, Swanscombe: preliminary Palaeolithic/Pleistocene field evaluation report, unpubl client rep submitted to Kent Co Council
- Wenban-Smith, F F, and Bates, M R, 2011a Northfleet waste-water treatment works: archive report on Palaeolithic investigations, unpubl client report for Canterbury Archaeol Trust, submitted to Kent Co Council
- Wenban-Smith, F F and Bates, M R, 2011b Palaeolithic and Pleistocene investigations, in *Excavations in North-West Kent 2005–2007: one hundred thousand years of human activity in and around the Darent Valley* (eds A Simmonds, F F Wenban-Smith, M R Bates, K Powell, D Sykes, R Devaney, D Stansbie and D Score), 17–59, Oxford Archaeol Monogr 11, Oxford
- Wenban-Smith, F F, Gamble C S, and ApSimon, A M, 2000 The Lower Palaeolithic site at Red Barns, Portchester, Hampshire: bifacial technology, raw material quality and the organisation of Archaic behaviour, *Proc Prehist Soc* 66, 209–255
- Wenban-Smith, F F, Allen, P, Bates, M R, Parfitt, S A, Preece, R C, Stewart, J R, Turner, C, and Whittaker, J E, 2006 The Clactonian elephant butchery site at Southfleet Road, Ebbsfleet, UK, *J Quat Sci* 21 (5), 471–483
- Wenban-Smith, F F, Bates, M R, and Marshall, G, 2007 Medway Valley Palaeolithic project final report: the Palaeolithic resource in the Medway Gravels (Kent), unpubl rep for English Heritage, made available through the Archaeology Data Service,

- Univ York (ADS) <http://ads.ahds.ac.uk>
- Wenban-Smith F F, Bates M R, and Schwenninger J-L, 2010 Early Devensian (MIS 5d-5b) occupation at Dartford, southeast England, *J Quat Sci* **25** (8), 1193-1199
- Wenban-Smith F F, Stafford E, and Bates, M R (eds) forthcoming *Prehistoric Ebbsfleet: Excavations and Research in Advance of High Speed 1 and STDR 4*, Monogr in Oxford/Wessex Archaeol HS1 series, forthcoming 2013
- Wenban-Smith, F F, Schwenninger, J-L, Bates, M R, in prep. OSL dating and post-depositional sediment disturbance: single-grain results from the late Middle Pleistocene handaxe site at Cuxton, UK, for *J Archaeol Sci*
- Wessex Archaeology, 1993 *The Southern Rivers Palaeolithic Project, Report No. 2 – The South West and South of the Thames*, Wessex Archaeol, Salisbury
- Wessex Archaeology, 2004 Springhead Quarter, Ebbsfleet, Kent: archaeological evaluation report, unpubl client rep [WA 54924.01] for CgMs Consulting, submitted to Kent Co Council
- Wessex Archaeology, 2006a Eastern Quarry (Area B and Additional Areas), Swanscombe, Kent: archaeological investigations, unpubl client rep [WA 61040.01] for CgMs Consulting, submitted to Kent Co Council
- Wessex Archaeology, 2006b Station Quarter South, Ebbsfleet, Kent: archaeological test pits in the location of the Elephant Lake Site, unpubl client rep [WA 63542] for CgMs Consulting, submitted to Kent Co Council
- Wessex Archaeology, 2007 Watching brief during geotechnical window sampling in Station Quarter South and a targeted (Palaeolithic) test pit evaluation in Eastern Quarry adjacent to Southfleet Road and in close proximity to the elephant lake site, Ebbsfleet, Kent, unpubl client report [WA 63544] for CgMs Consulting, submitted to Kent Co Council
- Wessex Archaeology 2008a Weldon, Castle Hill (Eastern Quarry), Swanscombe, Kent: further Palaeolithic test-pitting along fastrack spine route and cross-site link road, unpubl client rep [WA 61041] for CgMs Consulting, submitted to Kent Co Council
- Wessex Archaeology 2008b Weldon, Castle Hill (Eastern Quarry), Swanscombe, Kent: additional further Pal TPs, unpubl client rep [WA 61042] for CgMs Consulting submitted to Kent Co Council
- Wessex Archaeology 2008c Plots A8 and A9 Crossways Business Park, Dartford, Kent: report on a programme of archaeological mitigation, unpubl client rep [WA 66223.02]
- Wessex Archaeology 2009a Weldon, Castle Hill (Eastern Quarry), Swanscombe, Kent: Palaeolithic integrated deposit model and research framework, unpubl client rep [WA 61046] for CgMs Consulting on behalf of Land Securities, submitted to Kent Co Council
- Wessex Archaeology, 2009b Watching Brief on a Septic tank in Weldon, Castle Hill (Eastern Quarry), unpubl client rep [WA 68990] for CgMs Consulting, submitted to Kent Co Council
- West, R G, 1956 The Quaternary deposits at Hoxne, Suffolk, *Phil Trans Royal Soc London* **B239**, 265–356
- West, R G, 1969 Pollen analyses from interglacial deposits at Aveley and Grays, Essex, *Proc Geol Ass* **80**, 271–282
- Westaway, R, 2011 A re-evaluation of the timing of the earliest reported human occupation of Britain: the age of sediments at Happisburgh, eastern England, *Proc Geol Ass* **122** (3), 383-396
- Wheeler, W, 1977 The origin and distribution of the freshwater fishes of the British Isles, *J Biogeog* **4**, 1–24
- White, M J, 1998 On the significance of Acheulean biface variability in southern Britain, *Proc Prehist Soc* **64**, 15–44
- White, M J, 2000 The Clactonian question: on the interpretation of core-and-flake assemblages in the British Lower Palaeolithic, *J World Prehist* **14**, 1–63
- White, M J, and Jacobi, R M, 2002 Two sides to every story: *bout coupé* handaxes revisited, *Oxford J Archaeol* **21**, 109–133
- White, M J, and Schreve, D C, 2000 Peninsula Britain, palaeogeography, colonisation, and the Lower Palaeolithic settlement of the British Isles, *Proc Prehist Soc* **66**, 1–28
- White, T D, 1992 *Prehistoric Cannibalism at Mancos 5Mtumr-2346*, Princeton Uni Press, Princeton
- White, T S, 2012 Late Middle Pleistocene molluscan and ostracod successions, and their relevance to the Palaeolithic record, unpubl PhD thesis, Dept Zoology, Univ Cambridge
- White, T S, Preece, R C, and Whittaker, J E 2013 Molluscan and ostracod successions from Dierden's Pit, Swanscombe: insights into the fluvial history, sea-level record and human occupation of the Hoxnian Thames, *Quat Sci Rev* **70**, 73-90
- Whittaker, J E, 2006 Report on the ostracoda from 8 samples, in Station Quarter South, Ebbsfleet, Kent: archaeological test pits in the location of the Elephant Lake Site: Appendix 2 (Wessex Archaeol), unpubl client rep (WA 63542) for CgMs Consulting submitted to Kent Co Council
- Whittaker, J E, and Horne, D J, 2009 Pleistocene, in *Ostracods in British Stratigraphy* (eds J E Whittaker and M B Hart), 447–467, Spec Publ of The Micropalaeontol Soc, Geol Soc London
- Whittaker, K, Beasley, M, Bates, M R, and Wenban-Smith, F F, 2004 The lost valley, *Brit Archaeol* **74** (Jan 2004), 22–27
- Wiltshire, P E J, Edwards, K J, and Bond, S, 1994 Microbially-derived metallic sulphide spherules, pollen, and the waterlogging of archaeological sites, *Proc Am Assoc of Sedimentary Palynologists* **29**, 207–221
- Wintle, A G, 1991 Luminescence dating, in *Quaternary Dating Methods – a User's Guide* (eds P L Smart and

- P D Frances), 108–127, *Quat Res Ass Tech Guide 4*, Cambridge
- Wintle, A G, and Murray, A S, 2006 A review of quartz optically stimulated luminescence characteristics and their relevance in single-aliquot regeneration dating protocols, *Radiat Meas* **41**, 369–391
- Woelfle, E, 1967 *Vergleichend morphologische Untersuchungen an Einzelknochen des postcranialen Skeletts in Mitteleuropa vorkommender Enten, Halbgänse und Säuger*, Ludwig-Maximilians-Universität, München
- Woolfenden, G E, 1961 Postcranial osteology of the waterfowl, *Bull Florida State Mus, Biol Sci* **6** (1), 1–129
- Wymer, J J, 1957 A Clactonian flint industry at Little Thurrock, Grays, Essex, *Proc Geol Ass* **68**, 159–177
- Wymer, J J, 1968 *Lower Palaeolithic Archaeology in Britain as Represented by the Thames Valley*, John Baker, London
- Wymer, J J, 1974 Clactonian and Acheulian industries in Britain – their chronology and significance, *Proc Geol Ass* **85**, 391–421
- Wymer, J J, 1982 *The Palaeolithic Age*, Croon Helm, London
- Wymer, J J, 1983 The Lower Palaeolithic site at Hoxne, *Proc Suffolk Inst Archaeol and Hist* **35**, 169–89
- Wymer, J J, 1985 *The Palaeolithic Sites of East Anglia*, Geo Books, Norwich
- Wymer, J J, 1988 Palaeolithic archaeology and the British Quaternary sequence, *Quat Sci Rev* **7**, 79–98
- Wymer, J J, 1998 Review of ‘Excavations at Barnfield Pit, Swanscombe, 1968–1972’, *J Quat Sci* **13** (2), 179–181
- Wymer, J J, 1999 *The Palaeolithic Occupation of Britain*, Wessex Archaeol, Salisbury
- Yravedra, J, Domínguez-Rodrigo, M, Santonja, M, Pérez-González, A, Panera, J, Rubio-Jara, S, Baquedano, E, 2010 Cut marks on the Middle Pleistocene elephant carcass of Áridos 2 (Madrid, Spain), *J Archaeol Sci* **37**, 2469–2476
- Yravedra, J, Rubio-Jara, S, Panera, J, Uribelarrea, D, and Pérez-González, A, 2012 Elephants and subsistence. Evidence of the human exploitation of extremely large mammal bones from the Middle Palaeolithic site of PRERESA (Madrid, Spain), *J Archeol Sci* **39**, 1063–1071
- Zimmerman, D W, 1971 Thermoluminescent dating using fine grains from pottery, *Archaeometry* **13**, 29–50
- Zwilling, E A, 1942 (4th edition) *Unvergessenes Kamerun: Zehn Jahre Wanderungen und Jagden: 1928–1938*, Paul Parey, Berlin

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This is the final volume in the monograph series resulting from archaeological excavations in the Ebbsfleet Valley in advance of High Speed 1 and the Ebbsfleet International station. It provides the full account of the discovery, excavation and subsequent analysis of rich and deeply buried archaeological horizons found late in the construction programme, dating to early in the Palaeolithic and associated with the Hoxnian interglacial between about 425,000 and 375,000 years ago.

The highlight of this work was recovery of the remains of an extinct straight-tusked elephant *Palaeoloxodon antiquus* surrounded by the undisturbed scatter of flint tools used for its butchery, made and abandoned at the spot. Rich fossil palaeo-environmental remains provide a remarkable record of the climate and environment, showing that the elephant lived and died at a time of peak interglacial warmth, when the Ebbsfleet Valley was a lush, densely-wooded tributary of the Thames, containing a quiet, almost stagnant swamp. The abundant lithic remains from the elephant horizon are attributable to the Clactonian industrial tradition, after Clacton-on-Sea, Essex where similar remains have been found. The evidence from this new site provides the best record yet of Clactonian remains from the Hoxnian, establishing that Britain was re-settled (after local extinction due to the great Anglian glaciation) by hominins who did not make handaxes, generally the typical artefact of the earlier Palaeolithic. The elephant horizon is overlain by a younger deposit rich in handaxes of various forms, including sharply pointed specimens, bluntly pointed sub-cordates and twisted ovates. Possible interpretations for this sequence of greatly contrasting lithic industries are discussed in the volume.

Finally, this monograph provides a fascinating case-study of Palaeolithic excavation methods, and how archaeological work is carried out in conjunction with large engineering developments such as High Speed 1.

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