Quaternary of the Thames

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Scientific Editor: D. Q. Bowen GCR Editor: W. A. Wimbledon





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References

- Abbott, W.J.L. (1890) Notes on some Pleistocene sections in and near London. *Proceedings of the Geologists' Association*, **11**, 473–80.
- Abbott, W.J.L. (1911) On the classification of the British Stone Age industries and some new, and little known well marked horizons and cultures. Journal of the Royal Anthropological Institute, 41, 458–81.
- Allen, P. (1983) Middle Pleistocene stratigraphy and landform development in south-east Suffolk. Unpublished Ph.D. thesis, University of London.
- Allen, P. (1984) *Field Guide to the Gipping and Waveney Valleys*, Quaternary Research Association, Cambridge, 116 pp.
- 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), A.A. Balkema, Rotterdam, pp. 455–69.
- Allen, P., Cheshire, D.A. and Whiteman, C.A. (1991) Glacial deposits of southern East Anglia. In *Glacial Deposits in Great Britain* and Ireland (eds J. Ehlers, P.L. Gibbard and J. Rose), A.A. Balkema, Rotterdam, pp. 255– 78.
- Allen, T. (1977) Interglacial sea-level change: evidence for brackish water sedimentation at Purfleet, Essex. *Quaternary Newsletter*, **22**, 1–3.
- Allen, T.J. (1978) Disposition of the terraces of the River Thames in the vicinity of Yiewsley. In *Early Man in West Middlesex* (ed. D. Collins), HMSO, London, pp. 5–10.
- Almaine, H.G.W.D. (1922) Palaeolithic gravel near Abingdon. *Antiquaries Journal*, 2, 257–8.

Artest (2000) Statistical and a statistical and a statistic for a statistical and a

- Ambrose, J.D. (1973) The sand and gravel resources of the country around Maldon, Essex. Report of the Institute of Geological Sciences, 73/1.
- Anon. (1906) Flint implements and fossils from Clacton. *Essex Naturalist*, 14, 164.
- Anon. (1908) Palaeolithic flint implement from a gravel pit, Handborough, Oxon. Oxford University Gazette, 38, 752.
- Anon. (1911a) Visit to Clacton-on-Sea, and 301st ordinary meeting. Saturday, 30th September 1911. Essex Naturalist, 16, 322–4.
- Anon. (1911b) Exhibition by S.H. Warren of plaster casts of Palaeolithic wooden spear (?) and some flint-flakes from a Pleistocene deposit at Clacton-on-Sea. *Essex Naturalist*, 16, 326.
- Anon. (1913) Excursion to Mersea Island (the 427th Meeting), Saturday, 20th September 1913. Essex Naturalist, 17, 229–34.
- Anon. (1931) The Newton Collection. Antiquaries Journal, 11, 420-1.
- Anon. (1966) The Aveley elephants. Report of the British Museum (Natural History) [for 1963–1965], pp. 30–1.
- Anon. (1982a) Waltham Cross, Hertfordshire. Earth Science Conservation, 19, 35.
- Anon. (1982b) Hornchurch, Essex. Earth Science Conservation, 19, 35.
- Anon. (1984a) Hornchurch railway cutting. Earth Science Conservation, 21, 42.
- Anon. (1984b) Globe Pit SSSI, Essex. *Earth Science Conservation*, **21**, 39–40.
- Arkell, W.J. (1943) The Pleistocene rocks at Trebetherick Point, north Cornwall; their interpretation and correlation. *Proceedings* of the Geologists' Association, 54, 41–170.

- Arkell, W.J. (1945) Three Oxfordshire palaeoliths and their significance for Pleistocene correlation. *Proceedings of the Prehistoric Society*, 2, 20–31.
- Arkell, W.J. (1947a) *The Geology of Oxford*, Clarendon Press, Oxford, 268 pp.
- Arkell, W.J. (1947b) The geology of the Evenlode Gorge, Oxfordshire. *Proceedings of the Geologists' Association*, 58, 87–113.
- Arkell, W.J. (1947c) A palaeolith from the Hanborough Terrace. Oxoniensia, 11-12, 1-4.
- Arkell, W.J. and Oakley, K.P. (1948) The implements in the Treacher Collection. *In* On the ancient channel between Caversham and Henley, Oxfordshire, and its contained flint implements. *Proceedings of the Prebistoric Society*, 14, 126–54.
- Avery, B.W. and Catt, J.A. (1983) Northaw Great Wood. In *The Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 96–101.
- Baden-Powell, D.F.W. (1948) The chalky boulder clays of Norfolk and Suffolk. *Geological Magazine*, **85**, 279–96.
- Baden-Powell, D.F.W. (1949) Experimental Clactonian technique. Proceedings of the Prebistoric Society, 15, 38–41.
- Baden-Powell, D.F.W. (1950) The Pliocene-Pleistocene boundary in the British deposits.
 In *The Pliocene-Pleistocene boundary* (ed. K.P. Oakley), International Geological Congress 18th session [G.B., 1948], Vol. 9, pp. 8–10.
- Baden-Powell, D.F.W. (1951) The age of interglacial deposits at Swanscombe. *Geological Magazine*, 88, 344–56.
- Baden-Powell, D.F.W. (1955) Appendix B: Report on the marine fauna of the Clacton Channels. In Warren, S.H., The Clacton (Essex) channel deposits. *Quarterly Journal* of the Geological Society of London, 111, 301–5.
- Baker, C.A. (1971) A contribution to the glacial stratigraphy of west Essex. *Essex Naturalist*, 32, 318–30.
- Baker, C.A. (1977) Quaternary stratigraphy and environments in the Upper Cam valley. Unpublished Ph.D. thesis, University of London.
- Baker, C.A. (1983) Glaciation and Thames diversion in the Mid-Essex Depression. In *The Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 39–49.

- Baker, C.A. and Jones, D.K.C. (1980) Glaciation of the London Basin and its influence on the drainage pattern: a review and appraisal. In *The Shaping of Southern England* (ed. D.K.C. Jones), Institute of British Geographers Special Publication 11, Academic Press, London, pp. 131–76.
- Barrow, G. (1919a) Some future work for the Geologists' Association. *Proceedings of the Geologists' Association*, **30**, 1–48.
- Barrow, G. (1919b) Notes on the correlation of the deposits described in Mr C. J. Gilbert's paper with the high-level gravels of the south of England (or the London Basin). *Quarterly Journal of the Geological Society of London*, 75, 44–50.
- Barrow, G. (1919c) Excursion to Stanmore Hill and Bushey Heath. Proceedings of the Geologists' Association, 30, 122–6.
- Bell, A.M. (1894a) Palaeolithic remains at Wolvercote, Oxfordshire, I and II. Antiquary, 30, 148–52 and 192–8.
- Bell, A.M. (1894b) On the Pleistocene gravels at Wolvercote near Oxford. *Report of the British* Association, Oxford, pp. 663–4.
- Bell, A.M. (1904) Implementiferous sections at Wolvercote (Oxfordshire). *Quarterly Journal* of the Geological Society of London, 60, 120-32.
- Bell, F.G. (1969) The occurrence of southern, steppe and halophyte elements in Weichselian (last glacial) floras from southern Britain. *New Phytologist*, **68**, 913–22.
- Bennett, K.D., Peglar, S.M. and Sharp, M.J. (1991) Holocene lake sediments in central East Anglia. In *Central East Anglia and the Fen Basin* (eds S.G. Lewis, C.A. Whiteman and D.R. Bridgland), Field Guide, Quaternary Research Association, London, pp. 111–118.
- Berckhemer, F. (1933) Ein Menschen-Schädel aus den diluvialen Schottern von Steinheim a.d. Murr. Anthropologische Anzeiger, 10, 318–21.
- Bishop, M.J. (1982) The mammal fauna of the early Middle Pleistocene cavern infill site of Westbury-sub-Mendip, Somerset. Special Papers in Palaeontology, 28, 1–108.
- Bishop, W.W. (1958) The Pleistocene geology and geomorphology of three gaps in the Middle Jurassic escarpment. *Philosophical Transactions of the Royal Society of London*, B241, 255–306.
- Blair, K.G. (1923) Some coleopterous remains from the peat-bed at Wolvercote, Oxford-

shire. Transactions of the Royal Entomological Society of London, 71, 558–63.

- Blake, J.H. (1891) Excursion to Henley-on-Thames and Nettlebed. *Proceedings of the Geologists' Association*, 12, 204–6.
- Blake, J.H. (1900) Excursion to Silchester. Proceedings of the Geologists' Association, 16, 513-6.
- Blake, J.H. (1903) *The Geology of the Country around Reading*. Memoir of the Geological Survey of Great Britain, 91 pp.
- Blezard, R.G. (1966) Field meeting at Aveley and West Thurrock. *Proceedings of the Geologists' Association*, 77, 273–6.
- Blezard, R.G. (1973) South Essex. In *The Estuarine Region of Suffolk and Essex* (eds J.T. Greensmith, R.G. Blezard, C.R. Bristow *et al.*), Geologists' Association Guide. Benham, Colchester, pp. 35–41.
- Boswell, P.G.H. (1940) Climates of the past: a review of the geological evidence. *Quarterly Journal of the Royal Meteorological Society of London*, **66**, 249–74.
- Boswell, P.G.H. (1952) The Pliocene-Pleistocene boundary in the east of England. *Proceedings* of the Geologists' Association, 63, 301–12.
- Bowen, D.Q. (1978) *Quaternary Geology: A Stratigraphic Framework for Multidisciplinary Work*, Pergamon Press, Oxford, 237 pp.
- Bowen, D.Q. (1989) The last interglacial-glacial cycle in the British Isles. *Quaternary International*, 3/4, 41–7.
- Bowen, D.Q. (1991) Amino acid geochronology. In *Central East Anglia and the Fen Basin* (eds S.G. Lewis, C.A. Whiteman and D.R. Bridgland), Field Guide, Quaternary Research Association, London, pp. 21–4.
- Bowen, D.Q., Sykes, G.A., Reeves, A., *et al.* (1985) Amino acid geochronology of raised beaches in south west Britain. *Quaternary Science Reviews*, 4, 279–318.
- Bowen, D.Q., Hughes, S.A., Sykes, G.A., *et al.* (1989) Land-sea correlations in the Pleistocene based on isoleucine epimerization in non-marine molluscs. *Nature, London*, 340, 49–51.
- Bowen, D.Q., Rose, J., McCabe, A.M., *et al.* (1986a) Correlation of Quaternary glaciations in England, Ireland, Scotland and Wales. *Quaternary Science Reviews*, **5**, 299–340.
- Bowen, D.Q., Richmond, G.M., Fullerton, D.S., et al. (1986b) Correlation of Quaternary glaciations in the Northern Hemisphere.

Quaternary Science Reviews, **5**, 509–10 + loose figures.

- Bowen, D.Q. and Sykes, G.A. (1988) Correlation of the marine events and glaciations on the north-east Atlantic margin. *Philosophical Transactions of the Royal Society of London*, B318, 619–35.
- Breitinger, E. (1952) Zur Morphologie und systematischen Stellung des Schädelfragmentes von Swanscombe. *Homo*, **3**, 131–3.
- Breitinger, E. (1955) Das Schädelfragment von Swanscombe und das 'Praesapiensproblem'. Mitteilungen der Antbropologischen Gesellschaft Wien, 84/85, 27–38.
- Breitinger, E. (1964) Reconstruction of the Swanscombe skull. In *The Swanscombe Skull: a Survey of Research on a Pleistocene Site*, (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, 161–72. Translated by D.M. Watson from: Das Schädelfragment von Swanscombe und das 'Praesapiensproblem'. *Mitteilunger der Antbropologischen Gesellschaft Wien*, 84/85, 27–38.
- Breuil, H. (1932a) Appendix in Sandford, K.S., The Pleistocene succession in England. *Geological Magazine*, 69, 17–18.
- Breuil, H. (1932b) Les industries à éclats du Palaéolithique ancien, I: Le Clactonien. Prébistoire, Paris, 1, 148–57.
- Breuil, H. (1934) De l'importance de la solifluction dans l'étude des terrains Quaternaires de la France et des pays voisins. *Revue de Géographie Physique et de Géologie Dynamique*, 7, 269–331.
- Breuil, H. (1947) Age of the Baker's Hole Coombe Rock, Northfleet, Kent. *Nature*, *London*, **160**, 831.
- Bridgland, D.R. (1980) A reappraisal of Pleistocene stratigraphy in north Kent and eastern Essex, and new evidence concerning the former courses of the Thames and Medway. *Quaternary Newsletter*, **32**, 15–24.
- Bridgland, D.R. (1983a) The Quaternary fluvial deposits of north Kent and eastern Essex. Unpublished Ph.D. thesis, City of London Polytechnic, 2 volumes.
- Bridgland, D.R. (1983b) Eastern Essex. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Reasearch Association, Cambridge, pp. 170–84.
- Bridgland, D.R. (1985a) Pleistocene sites in the Thames-Avon system. *Earth Science Conservation*, 22, 36–9.

- Bridgland, D.R. (1985b) Uniclinal shifting; a speculative reappraisal based on terrace distribution in the London Basin. *Quaternary Newsletter*, 47, 26–33.
- Bridgland, D.R. (1986a) Discussion of procedures and recommendations. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide No. 3, Quaternary Research Association, Cambridge, pp. 1–33.
- Bridgland, D.R. (1986b) The rudaceous components of the East Essex Gravels; their characteristics and provenance. *Quaternary Studies*, 2, 34–44.
- Bridgland, D.R. (1986c) The provenance of gravel at Great Fanton Hall, near Wickford, Essex. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide No. 3, Quaternary Research Association, Cambridge, pp. 147–52.
- Bridgland, D.R. (1988a) The Pleistocene fluvial stratigraphy and palaeogeography of Essex. *Proceedings of the Geologists' Association*, 99, 291–314.
- Bridgland, D.R. (1988b) Problems in the application of lithostratigraphic classification to Pleistocene terrace deposits. *Quaternary Newsletter*, **55**, 1–8.
- Bridgland, D.R. (1988c) The Quaternary derivation of quartzites used by Palaeolithic Man in the Thames Basin for tool manufacture. *In* Non-flint stone tools and the Palaeolithic occupation of Britain, *British Archaeological Report, British Series*, **189**, 187–98.
- Bridgland, D.R. (1990a) Pleistocene stratigraphy and river basin sediments: a reply to D. Maddy and C.P. Green. *Quaternary Newsletter*, **60**, 10–2.
- Bridgland, D.R. (1990b) Little Oakley (TM 223294), In *The Cromer Symposium Field Excursion Guidebook* (ed. C. Turner), Symposium of European Quaternary Stratigraphy/Quaternary Research Association, Cambridge, pp. 48–57.
- Bridgland, D.R. and D'Olier, B. (1987) Attempted correlation of onshore and offshore Thames channels and terraces in the eastern London Basin and the southern North Sea. *Programme and Abstracts XII INQUA Congress* [July 1987], pp. 136.
- Bridgland, D.R. and D'Olier, B. (1989) A preliminary correlation of the onshore and offshore courses of the Rivers Thames and Medway during the Middle and Upper Pleistocene. In *Quaternary and Tertiary*

Geology of the Southern Bight, North Sea (eds J.P. Henriet and G. De Moor), Belgian Ministry of Economic Affairs, Geological Survey, 161–72.

- Bridgland, D.R. and Gibbard, P.L. (1990) Ardleigh (Martell's Quarry) TM053280. In *The Cromer Symposium Field Excursion Guidebook* (ed. C. Turner), Symposium of European Quaternary Stratigraphy/Quaternary Research Association, Cambridge, 57–62.
- Bridgland, D.R. and Harding, P. (1985) Palaeolithic artifacts from the gravels of the Hoo Peninsula. Archaeologia Cantiana, 101, 41–55.
- Bridgland, D.R. and Harding, P. (1986) An attempt to locate the 'Wolvercote Channel' in the railway cutting adjacent to Wolvercote Brick Pit. *Quaternary Newsletter*, **48**, 12–6.
- Bridgland, D.R. and Lewis, S.G. (1991) Introduction to the Pleistocene geology and drainage history of the Lark valley. In *Central East Anglia and the Fen Basin* (eds S.G. Lewis, C.A. Whiteman and D.R. Bridgland), Field Guide, Quaternary Research Association, London, pp. 37–44.
- Bridgland, D.R., Gibbard, P.L., Harding, P., et al. (1985) New information and results from recent excavations at Barnfield Pit, Swanscombe. *Quaternary Newsletter*, 46, 25–39.
- Bridgland, D.R., Allen, P., Currant, A.P., et al. (1988) Report of the Geologists' Association field meeting in north-east Essex, May 22nd-24th, 1987. Proceedings of the Geologists' Association, 99, 315-33.
- Bridgland, D.R., Keen, D.H. and Maddy, D. (1989) The Avon Terraces: Cropthorne, Ailstone and Eckington. In *West Midlands* (ed. D.H. Keen), Field Guide, Quaternary Research Association, Coventry, pp. 51–67.
- Bridgland, D.R., Gibbard, P.L. and Preece, R.C. (1990) The geology and significance of the interglacial sediments at Little Oakley, Essex. *Philosophical Transactions of the Royal Society of London*, **B328**, 307–39.
- Bridgland, D.R., D'Olier, B., Gibbard, P.L. and Roe, H.M. (1993) Correlation of Thames terrace deposits between the lower Thames, eastern Essex and the submerged offshore continuation of the Thames-Medway valley. *Proceedings of the Geologists' Association*, 104, 51–58.
- Briggs, D.J. (1973) Quaternary deposits of the Evenlode valley and adjacent areas. Unpublished Ph.D. thesis, University of Bristol.

- Briggs, D.J. (1976a) River terraces of the Oxford area. In *Field Guide to the Oxford Region* (ed. D. Roe), Quaternary Research Association, Oxford, pp. 8–15.
- Briggs, D.J. (1976b) Some Quaternary problems in the Oxford area. In *Field Guide to the Oxford Region* (ed. D. Roe), Quaternary Research Association, Oxford, pp. 6–7.
- Briggs, D.J. (1988) The environmental background to human occupation in the Upper Thames valley during the Quaternary Period. *In* Non-flint stone tools and the Palaeolithic occupation of Britain (eds R.J. MacRae and N. Moloney), *Britisb Archaeological Report*, *Britisb Series*, 189, 167–86.
- Briggs, D.J. and Gilbertson, D.D. (1973) The age of the Hanborough Terrace of the River Evenlode, Oxfordshire. *Proceedings of the Geologists' Association*, 84, 155–73.
- Briggs, D.J. and Gilbertson, D.D. (1974) Recent studies of Pleistocene deposits in the Evenlode valley and adjacent areas of the Cotswolds. Sound [Journal of the Plymouth Polytechnic Geological Society], 3, 7–22.
- Briggs, D.J. and Gilbertson, D.D. (1980) Quaternary processes and environments in the Upper Thames basin. *Transactions of the Institute of British Geographers*, **5**, 53–65.
- Briggs, D.J., Coope, G.R. and Gilbertson, D.D. (1975a) Late Pleistocene terrace deposits at Beckford, Worcestershire, England. *Geological Journal*, 10, 1–16.
- Briggs, D.J., Gilbertson, D.D., Goudie, A.S., *et al.* (1975) New interglacial site at Sugworth. *Nature, London*, **257**, 477–9.
- Briggs, D.J., Coope, G.R. and Gilbertson, D.D. (1985) The chronology and environmental framework of early Man in the Upper Thames Valley: a new model. *British Archaeological Report, British Series*, **137**, 176 pp.
- Bristow, C.R. (1985) *The Geology of the Country around Chelmsford*. Memoir of the Geological Survey of Great Britain, 108 pp.
- Bristow, C.R. and Cox, F.C. (1973) The Gipping Till: a reappraisal of East Anglian glacial stratigraphy. *Journal of the Geological Society of London*, **129**, 1–37.
- Bromehead, C.E.N. (1912) On diversions of the Bourne near Chertsey. Summary of Progress, Geological Survey of Great Britain [for 1911], pp. 74–7.
- Bromehead, C.E.N. (1925) *The Geology of North London*. Memoir of the Geological Survey of Great Britain, 63 pp.

- Brown, E.H. (1975) The Quaternary terraces of the River Thames. In L'évolution Quaternaire des Bassins Fluviaux de la Mer du Nord Méridionale (ed. P. Macar), Société Géologique de Belgique, Liege, 318 pp.
- Brown, J. (1838) Discovery of a large pair of fossil horns in Essex. Magazine of Natural History, Series 2, 2, 163–4.
- Brown, J. (1839) Fossil bones at Clacton. *Essex Literary Journal* [for 1839], 29.
- Brown, J. (1840) Notice of a fluvio-marine deposit containing mammalian-remains occurring in the parish of Little Clacton on the Essex coast. *Magazine of Natural History*, *Series 2*, 4, 197–201.
- Brown, J. (1841) A list of the fossil shells found in a fluvio-marine deposit at Clacton in Essex. Annals and Magazine of Natural History, Series 1, 7, 427–9.
- Brown, J. (1845) On certain conditions and appearances of the strata on the coast of Essex near Walton. *Quarterly Journal of the Geological Society of London*, 1, 341–2.
- Brown, J. (1857) Note on bovine remains, lately found at Clacton, Essex. Annals and Magazine of Natural History, Series 2, 20, 397–8.
- Brunnacker, K. (1986) Quaternary stratigraphy in the Lower Rhine area and northern Alpine foothills. *Quaternary Science Reviews*, 5, 373–9.
- Brunnacker, K., Löscher, M., Tillmanns, W., et al. (1982) Correlation of the Quaternary terrace sequences in the Lower Rhine valley and northern Alpine foothills of central Europe. Quaternary Research, 18, 152–73.
- Bryant, I.D. (1983) Facies sequences associated with some braided river deposits of late-Pleistocene age from southern Britain. In Modern and Ancient Fluvial Systems: Sedimentology and Processes (eds J.D. Collinson and J. Lewin), International Association of Sedimentologists, Special Publication, No. 6, pp. 267–75.
- Bryant, I.D. and Holyoak, D.T. (1980) Devensian deposits at Brimpton, Berkshire. *Quaternary Newsletter*, **30**, 17.
- Bryant, I.D., Holyoak, D.T. and Moseley, K.A. (1983) Late Pleistocene deposits at Brimpton, Berkshire, England. *Proceedings of the Geologists' Association*, 94, 321–43.
- Buckland, W. (1823) Reliqiae Diluvianae: or Observation on the Organic Remains Contained in Caves, Fissures and Diluvial Gravel and on Other Geological Pheno-

mena, Attesting the Action of a Universal Deluge. John Murray, London, 303 pp.

- Buckman, S.S. (1897) Deposits of the Bajocian age in the northern Cotteswolds: The Cleeve Hill Plateau. Quarterly Journal of the Geological Society of London, 53, 607–29.
- Buckman, S.S. (1899a) Gravel at Moreton-in-Marsh, Gloucestershire. Quarterly Journal of the Geological Society of London, 55, 220–3.
- Buckman, S.S. (1899b) The development of rivers; and particularly the genesis of the Severn. *Natural Science*, 14, 273–89.
- Buckman, S.S. (1900) Excursion notes: chiefly on river features. Salisbury meeting. Proceedings of the Cotteswold Naturalists Field Club, 13, 175–92.
- Bull, A.J. (1942) Pleistocene chronology. Proceedings of the Geologists' Association, 53, 1–45.
- Burchell, J.P.T. (1931) Early Neanthropic Man and his relation to the Ice Age. *Proceedings* of the Prehistoric Society of East Anglia, 6, 253–303.
- Burchell, J.P.T. (1933) The Northfleet 50-foot submergence later than the coombe rock of the post-Early Mousterian times. Archaeologia, 83, 67–91.
- Burchell, J.P.T. (1934a) The Middle Mousterian culture and its relation to the coombe rock of post-early Mousterian times. *Antiquaries Journal*, 14, 33–9.
- Burchell, J.P.T. (1934b) Fresh facts relating to the Boyn Hill Terrace of the Lower Thames valley. *Antiquaries Journal*, 14, 163–6.
- Burchell, J.P.T. (1935a) Evidence of a further glacial episode within the valley of the Lower Thames. *Geological Magazine*, **72**, 90–1.
- Burchell, J.P.T. (1935b) Some Pleistocene deposits at Kirmington and Crayford. *Geological Magazine*, 72, 327–31.
- Burchell, J.P.T. (1936a) A final note on the Ebbsfleet Channel series. *Geological Mag*azine, 73, 550–4.
- Burchell, J.P.T. (1936b) Hand-axes later than the Main Coombe Rock of the Lower Thames valley. *Antiquaries Journal*, **16**, 260–4.
- Burchell, J.P.T. (1936c) Evidence of a Late Glacial episode within the valley of the Lower Thames. *Geological Magazine*, **73**, 91–2.
- Burchell, J.P.T. (1954) Loessic deposits in the fifty-foot terrace post-dating the Main Coombe Rock of Baker's Hole, Northfleet, Kent. *Proceedings of the Geologists' Association*, **65**, 256–61.

- Burchell, J.P.T. (1957) A temperate bed of the last interglacial period at Northfleet, Kent. *Geological Magazine*, 94, 212–14.
- Callaway, C. (1905) The occurrence of glacial clay on the Cotteswold Plateau. *Geological Magazine*, 2, 216–9.
- Cambridge, P.G. (1977) Whatever happened to the Boytonian? A review of the marine Plio-Pleistocene of the southern North Sea Basin. *Bulletin of the Geological Society of Norfolk*, 29, 23-45.
- Campbell, S. and Bowen, D.Q. (1989) *Quaternary of Wales*, Geological Conservation Review Series, Nature Conservancy Council, 240 pp.
- Carreck, J.N. (1972) Chronology of the Quaternary deposits of south-east England, with special reference to their vertebrate faunas. Unpublished M.Phil. thesis, University of London.
- Carreck, J.N. (1976) Pleistocene mammalian and molluscan remains from 'Taplow' Terrace deposits at West Thurrock, near Grays, Essex. *Proceedings of the Geologists' Association*, 87, 83–92.
- Case, H.J. and Kirk, J.R. (1952) Notes and news: Henley-on-Thames. Oxoniensia, 15, 107.
- Case, H.J. and Kirk, J.R. (1955) Notes and news: Rotherfield Peppard. Oxoniensia, 19, 118.
- Castell, C.P. (1964) The non-marine Mollusca. In The Swanscombe Skull: a Survey of Research on a Pleistocene Site, (ed. C.D. Ovey), Royal Anthropological Institute of London, pp. 77–83.
- Catt, J.A. (1977) Loess and coversands. In *British Quaternary Studies: Recent Advances* (ed. F.W. Shotton), Clarendon Press, Oxford, pp. 221–9.
- Catt, J.A. (1978) The contribution of loess to soils in lowland Britain. In *The Effect of Man* on the Landscape: the Lowland Zone (eds S. Imbrey and J.G. Evans), Council for British Archaeological Resources, Report No. 21, pp. 12–20.
- Catt, J.A. (1979) Soils and Quaternary geology in Britain. *Journal of Soil Science*, **30**, 607–42.
- Catt, J.A. and Hodgson, J.M. (1976) Soils and geomorphology of the chalk in south-east England. *Earth Surface Processes*, **1**, 181–93.
- Catt, J.A., Corbett, W.M., Hodge, C.A.H., et al. (1971) Soils of north Norfolk. *Journal of Soil Science*, 22, 444–52.
- Catt, J.A., Weir, R.A. and Madgett, P.A. (1974) The loess of eastern Yorkshire and Lincoln-

shire. Proceedings of the Yorkshire Geological Society, 40, 23–34.

- Cepek, A.G. (1986) Quaternary stratigraphy of the German Democratic Republic. *Quaternary Science Reviews*, **5**, 359–64.
- Cepek, A.G. and Erd, K. (1982) Classification and stratigraphy of the Holsteinian and Saalian complex in the Quaternary of the German Democratic Republic. In *Quaternary Glaciations in the Northern Hemisphere* (eds D.J. Easterbrook, P. Hansliêk, K-D. Jäger and F. W. Shotton), UNESCO – International Geological Correlation Programme, Project 73/1/24 Report 7, Prague 1981, pp. 50–7.
- Chandler, R.H. (1914) The Pleistocene deposits of Crayford. *Proceedings of the Geologists' Association*, 25, 61–70.
- Chandler, R.H. (1916) The implements and cores of Crayford. *Proceedings of the Prebistoric Society of East Anglia*, 2, 240–8.
- Chandler, R.H. (1930) On the Clactonian Industry at Swanscombe. *Proceedings of the Prehistoric Society of East Anglia*, 6, 79–116.
- Chandler, R.H. (1931) On the Clactonian Industry and report of field meeting at Swanscombe. *Proceedings of the Geologists' Association*, 42, 175–7.
- Chandler, R.H. (1932a) Notes on types of Clactonian implements at Swanscombe. Proceedings of the Prehistoric Society of East Anglia, 6, 377–8.
- Chandler, R.H. (1932b) The Clactonian industry and report of field meeting at Swanscombe (II), *Proceedings of the Geologists' Association*, 43, 70–2.
- Chandler, R.H. and Leach, A.L. (1907) Excursion to Crayford and Dartford Heath. *Proceedings* of the Geologists' Association, 20, 122–6.
- Chandler, R.H. and Leach, A.L. (1911) Excursion to Dartford Heath. *Proceedings of the Geologists' Association*, 22, 171–5.
- Chandler, R.H. and Leach, A.L. (1912) On the Dartford Heath Gravel and on a Palaeolithic implement factory. *Proceedings of the Geologists' Association*, 23, 102–11.
- Chartres, C.J. (1975) Soil development on the terraces of the River Kennet. Unpublished Ph.D. thesis, University of Reading.
- Chartres, C.J. (1980), A Quaternary soil sequence in the Kennet valley, central southern England. *Geoderma*, 23, 125–146.
- Chartres, C.J. (1981) The mineralogy of Quaternary deposits in the Kennet valley,

Berkshire. *Proceedings of the Geologists'* Association, 92, 93–103.

- Chartres, C.J. (1984) The micromorphology of Quaternary river terrace deposits in the Kennet valley, Berkshire, England. *Earth Surface Processes and Landforms*, 9, 343–55.
- Chartres, C.J., Cheetham, G.H. and Fenwick, I.M. (1976) Excursion to the Kennet valley. In *Field Guide to the Oxford Region* (ed. D. Roe), Quaternary Research Association, Oxford, pp. 23–31.
- Chatwin C.P. (1927) Fossils from the ironsands on Netley Heath (Surrey), Summary of Progress, Geological Survey of Great Britain [for 1926], pp. 154–7.
- Cheetham, G.H. (1980) Late Quaternary palaeohydrology: the Kennet valley case study. In *The Shaping of Southern England* (ed. D.K.C. Jones), Institute of British Geographers Special Publication 11, Academic Press, London, pp. 203–23.
- Cheshire, D.A. (1978) The Glaciation of the Lea valley between Hertford and Enfield. Unpublished M.Sc. thesis, City of London Polytechnic and Polytechnic of North London.
- Cheshire, D.A. (1981) A contribution towards a glacial stratigraphy of the lower Lea valley, and implications for the Anglian Thames. *Quaternary Studies*, **1**, 27–69.
- Cheshire, D.A. (1983a) Till lithology in Hertfordshire and west Essex. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 50–9.
- Cheshire, D.A. (1983b) Westmill. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 120–32.
- Cheshire, D.A. (1983c) Hoddesdon, St Albans Sand and Gravel Co. Quarry and Hoddesdon, Nursery Grove Pits. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 140–8.
- Cheshire, D.A. (1986a) The lithology and stratigraphy of the Anglian deposits of the Lea Basin. Unpublished Ph.D. thesis, Hatfield Polytechnic.
- Cheshire, D.A. (1986b) The use of small clast counts as a means of till differentiation in Hertfordshire and western Essex. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide 3, Quaternary Research Association, Cambridge, 129–43.

- Cheshire, D.A. and Gibbard, P.L. (1983) Harper Lane. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, 102–9.
- Clark, W.E.LeG. (1955) The Fossil Evidence for Human Evolution. Chicago University Press.
- Clarke, M.R. and Dixon, A.J. (1981) The Pleistocene braided river deposits in the Blackwater
- area of Berkshire and Hampshire, England. Proceedings of the Geologists' Association, 92, 139–57.
- Clayton, K.M. (1957) Some aspects of the glacial deposits of Essex. *Proceedings of the Geologists' Association*, 68, 1–19.
- Clayton, K.M. (1960) The landforms of parts of southern Essex. *Transactions of the Institute* of British Geographers, **28**, 55–74.
- Clayton, K.M. (1964) The glacial geomorphology of southern Essex. In *Guide to London Excursions* (ed. K.M. Clayton), International Geographical Congress [London 1964], **20**, 123–8.
- Clayton, K.M. (1977) River terraces. In *British Quaternary Studies: Recent Advances* (ed. F.W. Shotton), Clarendon Press, Oxford, pp. 153–68.
- Clayton, K.M. and Brown, J.C. (1958) The glacial deposits around Hertford. *Proceedings of the Geologists' Association*, 69, 103–19
- Clinch, G. (1908) Early Man. In *The Victoria History of the County of Kent* (ed. W. Page), Vol. 1, Archibald Constable Ltd., Westminster, pp. 307–38.
- Coles, R. (1934) The evolution of the coastal drainage of Essex. *Essex Naturalist*, 25, 36–49 and 65–70.
- Collins, D. (1969) Culture, traditions and environment of early Man. *Current Anthropologist*, **10**, 267–316.
- Conway, B.W. (1969) Preliminary geological investigation of Boyn Hill Terrace deposits at Barnfield Pit, Swanscombe, Kent during 1968. Proceedings of the Royal Anthropological Institute [for 1968], 59–61.
- Conway, B.W. (1970a) Geological investigation of Boyn Hill Terrace deposits at Barnfield Pit, Swanscombe, Kent, during 1969. *Proceedings of the Royal Anthropological Institute* [for 1969], 90–3.
- Conway, B.W. (1970b) Written discussions on R.G. West 1969. Pollen analyses from interglacial deposits at Aveley and Grays, Essex. *Proceedings of the Geologists' Association*, **81**, 177–9.

- Conway, B.W. (1971) Geological investigation of Boyn Hill Terrace deposits at Barnfield Pit, Swanscombe, Kent during 1970. Proceedings of the Royal Anthropological Institute [for 1970], 60–4.
- Conway, B.W. (1972) Geological investigation of Boyn Hill Terrace deposits at Barnfield Pit, Swanscombe, Kent during 1971. Proceedings of the Royal Anthropological Institute [for 1971], 80–5.
- Conway, B.W. (1985) Research history and geology of Barnfield Pit. In *The Story of Swanscombe Man* (ed. K.L. Duff), Kent County Council and Nature Conservancy Council, pp. 6–13.
- Conway B.W. and Waechter, J. d'A. (1977) Lower Thames and Medway valleys – Barnfield Pit, Swanscombe. In *South East England and the Thames Valley* (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for Excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 38–44.
- Cook, J., Stringer, C.B., Currant, A.P., *et al.* (1982) A review of the chronology of the European Middle Pleistocene hominid record. *Yearbook of Physical Anthropology*, **25**, 19–65.
- Coope, G.R. (1968) An insect fauna from the Mid-Weichselian deposits at Brandon, Warwickshire. *Philosophical Transactions of the Royal Society of London*, **B254**, 425–56.
- Coope, G.R. (1987) The response of late Quaternary insect communities to sudden climatic changes. In *Organisation of Communities, Past and Present* (eds J.H.R. Gee and P.S. Giller), Blackwell Scientific, Oxford, pp. 421–38.
- Coope, G.R. and Angus, R.B. (1975) An ecological study of a temperate interlude in the middle of the last glaciation, based on fossil Coleoptera from Isleworth, Middlesex. *Journal of Animal Ecology*, 44, 365–91.
- Coope, G.R., Shotton, F.W. and Strachan, I. (1961) A Late Pleistocene fauna and flora from Upton Warren, Worcestershire. *Philo*sophical Transactions of the Royal Society of London, B244, 379–421.
- Cooper, J. (1972) Last interglacial (Ipswichian) non-marine Mollusca from Aveley, Essex. *Essex Naturalist*, **33**, 9–14.
- Cornwall, I.W. (1950) Pleistocene and Holocene sections in deposits of the Lower Thames. University of London Institute of Archaeology, 6th Annual Report, 34–43.

Cornwall, I.W. (1958) Soils for the Archaeologist, Phoenix House, London. 230 pp.

- Cotton, R.P. (1847) On the Pliocene deposits of the valley of the Thames at Ilford. Annals and Magazine of Natural History, Series 1, 20, 164–9.
- Cranshaw, S. (1983) Handaxes and cleavers: selected English Acheulian industries. *British Archaeological Report, British Series*, 113, 283 pp.
- Currant, A.P. (1986) Man and Quaternary interglacial faunas in Britain. In *The Palaeolithic* of Britain and its Nearest Neighbours; Recent Trends (ed. S.N. Collcutt), J.R. Collis Publications, Department of Archaeology and Prehistory, Sheffield University, pp. 50–2.
- Currant, A.P. (1989) The Quaternary origins of the modern British mammal fauna. *Biological Journal of the Linnean Society*, 38, 23-30.
- Curry, D., Adams, C.G., Boulter, M.C., *et al.* (1978) *A Correlation of Tertiary Rocks in the British Isles*, Special Report of the Geological Society of London, No. 12, 72 pp.
- Dalrymple, J.B. (1958) The application of soil micromorphology to fossil soils and other deposits from archaeological sites. *Journal of Soil Science*, 9, 199–209.
- Dalton, W.H. (1880) *The Geology of the Neighbourhood of Colchester*. Memoir of the Geological Survey of Great Britain, 24 pp.
- Dalton, W.H. (1890) Note on the Upminster brickyard. *Essex Naturalist*, 4, 186-7.
- Dalton, W.H. (1908) Post-glacial beds in Mersea, Essex. Essex Naturalist, 15, 136–7.
- Davies, G.M. (1915) The rocks and minerals of the Croydon Regional Survey area. Proceedings and Transactions of the Croydon Natural History and Scientific Society, 8, 53–96.
- Davies, G.M. (1917) Excursion to Netley Heath, Newlands Corner and the Silent Pool. *Proceedings of the Geologists' Association*, 28, 48–51.
- Davis, A.G. (1953) On the geological history of some of our snails illustrated by some Pleistocene and Holocene deposits in Kent and Surrey. *Journal of Conchology*, 23, 355–64.
- Davis, W.M. (1895) The development of certain English rivers. *Geographical Journal*, 5, 127–46.
- Davis, W.M. (1899) The drainage of cuestas. Proceedings of the Geologists' Association,

16, 87-93.

- Davis, W.M. (1909) The valleys of the Cotswold Hills. Proceedings of the Geologists' Association, 21, 150–2.
- Dawkins, W.B. (1867) On the age of the lower brickearth of the Thames valley. *Quarterly Journal of the Geological Society of London*, 23, 91–109.
- Dawkins, W.B. (1868) On a new species of fossil deer from Clacton. Quarterly Journal of the Geological Society of London, 24, 511–13.
- Dawkins, W.B. (1869) On the distribution of the British post-glacial mammals. *Quarterly Jour*nal of the Geological Society of London, 25, 192–217.
- Day, M.H. (1977) Guide to Fossil Man: A Handbook of Human Palaeontology, 3rd edn, Cassell, London, 346 pp.
- Devoy, R.J.N. (1977) Flandrian sea level changes in the Thames estuary and the implications for land subsidence in England and Wales. *Nature, London*, **270**, 712–15.
- Devoy, R.J.N. (1979) Flandrian sea level changes and vegetational history of the Lower Thames estuary. *Philosophical Transactions of the Royal Society of London*, **B285**, 355–407.
- Dewey, H. (1919) On some Palaeolithic flake implements from the high level terraces of the Thames valley. *Geological Magazine*, 6, 49–57.
- Dewey, H. (1930) Palaeolithic Thames deposits. Proceedings of the Prehistoric Society of East Anglia, 6, 147–155.
- Dewey, H. (1932) The Palaeolithic deposits of the Lower Thames valley. Quarterly Journal of the Geological Society of London, 88, 35–56.
- Dewey, H. (1934) The excursion to the 100-foot terrace of the Thames at Swanscombe, Kent (4th August), *International Congress of Prebistoric and Protobistoric Science* (London), 70–2.
- Dewey, H. (1959) Palaeolithic deposits of the Thames at Dartford Heath and Swanscombe, north Kent. Unpublished, edited text of Henry Stopes memorial lecture, Geologists' Association, 1959.
- Dewey, H. and Bromehead, C.E.N. (1915) *The Geology of the Country around Windsor and Chertsey*. Memoir of the Geological Survey of Great Britain, 123 pp.
- Dewey, H. and Bromehead, C.E.N. (1921) *The Geology of South London*. Memoir of the Geological Survey of Great Britain, 92 pp.

- Dewey, H. and Smith, R.A. (1914) The Palaeolithic sequence at Swanscombe, Kent. Proceedings of the Geologists' Association, 25, 90-7.
- Dewey, H., Bromehead, C.E.N., Chatwin, C.P., et al. (1924) The Geology of the Country around Dartford, Memoir of the Geological Survey of Great Britain, 136 pp.
- Dibley, G.E. and Kennard, A.S. (1916) Excursion to Grays. Proceedings of the Geologists' Association, 27, 103–5.
- Diebel, K. and Wolfschläger, H. (1975) Ostracoden aus dem junpleistozänen Travertin von Ehringsdorf bei Weimar. Abhandlungen des Zentralen Geologischen Instituts [Berlin], 23, 91–136.
- Dines, H.G. (1928) On the glaciation of the north Cotteswold area. Summary of Progress, Geological Survey of Great Britain [for 1927], pp. 66–71.
- Dines, H.G. (1946) Pleistocene and recent deposits. In *The Geology of the Country* around Witney (eds L.S. Richardson, W.J. Arkell and H.G. Dines), Memoir of the Geological Survey of Great Britain, 105–29.
- Dines, H.G. and Chatwin, C.P. (1930) Pliocene sandstone from Rothamstead (Hertfordshire), Summary of Progress, Geological Survey of Great Britain [for 1929], pp. 1–7.
- Dines, H.G. and Edmunds, F.H. (1925) The Geology of the Country around Romford, Memoir of the Geological Survey of Great Britain, 53 pp.
- Dines, H.G. and Edmunds, F.H. (1929) The Geology of the Country around Aldersbot and Guildford, Memoir of the Geological Survey of Great Britain, 182 pp.
- Dines, H.G., King, W.B.R. and Oakley, K.P. (1938) A general account of the 100 ft terrace gravels of the Barnfield Pit, Swanscombe. *Journal of the Royal Anthropological Institute*, 68, 21–7.
- Docherty, J. (1967) The exhumed sub-Tertiary surface in north-west Kent. South East Naturalist, 70, 19–31.
- Docherty, J. (1971) Chalk karst: a synthesis of C.C. Faggs' theories of chalkland morphology in the light of recent hydrological research. *Proceedings of the Croydon Natural History and Scientific Society*, **15**, 21–34.
- D'Olier, B. (1975) Some aspects of late Pleistocene-Holocene drainage of the River Thames in the eastern part of the London Basin. *Philosophical Transactions of the Royal*

Society of London, A279, 269-77.

- Duff, K.L. (1985) (ed.) *The Story of Swanscombe Man*, Kent County Council and Nature Conservancy Council, 40 pp.
- Duigan, S.L. (1955) Plant remains from the gravels of the Summertown-Radley Terrace near Dorchester, Oxfordshire. *Quarterly Journal of the Geological Society of London*, 111, 225–38.
- Duigan, S.L. (1956) Interglacial plant remains from the Wolvercote channel, Oxford. Quarterly Journal of the Geological Society of London, 112, 363–72.
- Duphörn, K., Grube, F., Meyer, K.D., et al. (1973) Pleistocene and Holocene. Eiszeitalter und Gegenwart, 23/24, 222-50.
- Eden, D.N. (1980) The loess of north-east Essex, England. *Boreas*, 9, 165-77.
- Ehlers, J. (1981) Problems of the Saalian stratigraphy in the Hamburg area. *Mededelingen Rijks Geologische Dienst*, **34**, 26–9.
- Ellis, T.S. (1882) On some features in the formation of the Severn valley as seen near Gloucester. *Transactions of the School of Science Philosophical Society, Gloucester* [for 1882], pp. 3–15.
- Emiliani, C. (1955) Pleistocene temperatures. Journal of Geology, 63, 538–78.
- Emiliani, C. (1957) Temperature and age analysis of deep-sea cores. *Science, New York*, 125, 383–7.
- Evans, J. (1860) On the occurrence of flint implements in undisturbed beds of gravel, sand and clay. *Archaeologia*, **38**, 280–307.
- Evans, J. (1872) The Ancient Stone Implements, Weapons and Ornaments of Great Britain, 1st edn, Longmans, Green and Co., London, 640 pp.
- Evans, J. (1897) The Ancient Stone Implements, Weapons and Ornaments of Great Britain, 2nd edn, Longmans, Green, and Co, London, 747 pp.
- Evans, P. (1954) Field meeting in the Vale of St Albans. *Proceedings of the Geologists' Association*, **65**, 18–22.
- Evans, P. (1971) Towards a Pleistocene timescale. Part 2 of *The Phanerozoic Time-scale –* A Supplement, Special Publication of the Geological Society of London, No. 5, pp. 123–356.
- Falconer, H. (1868) Palaeontological Memoirs and Notes, Compiled and Edited by Charles Murchison, Vol. 2, R. Hardwicke, London, 675 pp.

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- Federoff, N. (1971) Caractères micromorphologiques des pédogénèses quaternaire en France. Bulletin de l'Association Française pour l'Étude du Quaternaire, Supplément, 4, 341-9.
- Fisher, O. (1868a) A few notes on Clacton, Essex. *Geological Magazine*, 5, 213–5.
- Fisher, O. (1868b) The boulder clay at Witham and the Thames valley. *Geological Magazine*, **5**, 98–100.
- Fisher, P.F. (1982) A study of the plateau gravels in the western part of the London Basin. Unpublished Ph.D. thesis, Kingston Polytechnic, 2 volumes.
- Franks, J.W. (1960) Interglacial deposits at Trafalgar Square, London. *New Phytologist*, 59, 145–52.
- Franks, J.W., Sutcliffe, A.J., Kerney, M.P., et al. (1958) Haunt of the elephant and rhinoceros: the Trafalgar Square of 100,000 years ago – new discoveries. *Illustrated London News*, 14th June, Vol. 232, pp. 1011–3.
- French, H.H. (1888) Excursion to Gomshall, Netley Heath, and Clandon. *Proceedings of the Geologists' Association*, **10**, 182–6.
- French, J. (1891) On the occurrence of Westleton Beds in part of north-western Essex. *Essex Naturalist*, 5, 210–18.
- Friedman, G.M. (1967) Dynamic processes and statistical parameters compared for size frequency distribution of beach and river sands. *Journal of Sedimentary Petrology*, 37, 327–54.
- Gascoyne, M., Currant, A.P. and Lord, T.C. (1981) Ipswichian fauna of Victoria Cave and the marine palaeoclimatic record. *Nature*, *London*, **294**, 652–4.
- Geikie, A. and Reid, C. (1866) The Pliocene deposits of north-western Europe. *Nature*, *London*, 34, 341–3.
- Gibbard, P.L. (1974) Pleistocene stratigraphy and vegetational history of Hertfordshire. Unpublished Ph.D. thesis, University of Cambridge.
- Gibbard, P.L. (1977) Pleistocene history of the Vale of St Albans. *Philosophical Transactions* of the Royal Society of London, **B280**, 445-83.
- Gibbard, P.L. (1978a) Quaternary geology and landform development in the Vale of St Albans. In *Field Guide to the Vale of St Albans* (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, pp. 9–29.

- Gibbard, P.L. (1978b) Westmill. In *Field Guide* to the Vale of St Albans (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, pp. 63–7.
- Gibbard, P.L. (1978c) Hatfield Polytechnic. In *Field Guide to the Vale of St Albans* (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, pp. 79–85.
- Gibbard, P.L. (1978d) Moor Mill. In *Field Guide* to the Vale of St Albans (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, pp. 87–90.
- Gibbard, P.L. (1979) Middle Pleistocene drainage in the Thames valley. *Geological Magazine*, **116**, 35–44.
- Gibbard, P.L. (1982) Terrace stratigraphy and drainage history of the plateau gravels of north Surrey, south Berkshire, and north Hampshire, England. *Proceedings of the Geologists' Association*, 93, 369–84.
- Gibbard, P.L. (1983) The diversion of the Thames – a review. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 8–23.
- Gibbard,P.L. (1985) *The Pleistocene History of the Middle Thames Valley*, Cambridge University Press, 155 pp.
- Gibbard, P.L. (1986) Comparison of the clast lithological composition of the gravels in the middle Thames using canonical variates analysis and principal components analysis. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide No. 3, Quaternary Research Association, Cambridge, pp. 153–64.
- Gibbard, P.L. (1988a) The history of the great northwest European rivers during the past three million years. *Philosophical Transactions of the Royal Society of London*, **B318**, 559–602.
- Gibbard, P.L. (1988b) Palynological problems and the vegetational sequence of the Pliocene-preglacial Pleistocene of East Anglia. In *Pliocene-Middle Pleistocene of East Anglia* (eds P.L. Gibbard and J.A. Zalasiewicz), Field Guide, Quaternary Research Association, Cambridge, pp. 42–9.
- Gibbard, P.L. (1989) The geomorphology of a part of the Middle Thames forty years on: a reappraisal of the work of F. Kenneth Hare. *Proceedings of the Geologists' Association*, **100**, 481–503.
- Gibbard, P.L. and Cheshire, D.A. (1983) Hatfield

Polytechnic (Roe Hyde Pit), In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 110–9.

- Gibbard, P.L. and Peglar, S.M. (1990) Palynology of the interglacial deposits at Little Oakley, Essex, and their correlation. *Philosophical Transactions of the Royal Society of London*, **B328**, 341–57.
- Gibbard, P.L. and Wymer, J.J. (1983) HighlandsFarm. In *Diversion of the Thames* (ed. J. Rose) Field Guide, Quaternary Research Association, Cambridge, pp. 69–76.
- Gibbard, P.L. and Pettit, M. (1978) The palaeobotany of the interglacial deposits at Sugworth, Berkshire. *New Phytologist*, 81, 465-77.
- Gibbard, P.L. and Stuart, A.J. (1974) Trace fossils from pro-glacial lake sediments. *Boreas*, 3, 69–74.
- Gibbard, P.L., Coope, G.R., Hall, A.R., et al. (1982) Middle Devensian river deposits beneath the 'Upper Floodplain' terrace of the River Thames at Kempton Park, Sunbury, Surrey, England. Proceedings of the Geologists' Association, 93, 275–90.
- Gibbard, P.L., Wintle, A.G. and Catt, J.A. (1987) Age and origin of clayey silt 'brickearth' in West London, England. *Journal of Quaternary Science*, **2**, 3–9.
- Gibbard, P.L., Whiteman, C.A. and Bridgland, D.R. (1988) A preliminary report on the stratigraphy of the Lower Thames valley. *Quaternary Newsletter*, 56, 1–8.
- Gibbard, P.L., West, R.G., Zagwijn, W.H., *et al.* (1991) Early and early Middle Pleistocene correlations in the southern North Sea Basin. *Quaternary Science Reviews*, **10**, 23–52.
- Gilbert, C.J. (1919a) On the occurrence of the extensive deposits of high-level sands and gravels resting upon the chalk at Little Heath, near Berkhampstead. *Quarterly Journal of the Geological Society of London*, **75**, 32–43.
- Gilbert, C.J. (1919b) Excursion to Berkhamstead and Little Heath. *Proceedings of the Geologists' Association*, **30**, 87–91.
- Gilbertson, D.D. (1976) Non-marine molluscan faunas of terrace gravels in the Upper Thames Basin. In *Field Guide to the Oxford Region* (ed. D.A. Roe), Quaternary Research Association, Oxford, pp. 16–9.
- Gilbertson, D.D. (1980) The palaeoecology of the Middle Pleistocene Mollusca from Sugworth, Oxfordshire. *Philosophical Transac*-

tions of the Royal Society of London, B289, 107–18.

- Gladfelter, B.G. (1972) Cold-climate features in the vicinity of Clacton-on-Sea, Essex (England), *Quaternaria*, 16, 121–35.
- Gladfelter, B.G. (1975) Middle Pleistocene sedimentary sequences in East Anglia (UK), In *After the Australopithecines: Stratigraphy, Ecology and Culture Change in the Middle Pleistocene* (eds K.W. Butzer and G.L. Isaac), Mouton, The Hague, pp. 225–58.
- 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. Cresswell), Selected papers from IX INQUA Congress, Christchurch, New Zealand, 2–10 December 1973. *Bulletin of the Royal Society of New Zealand*, 13, 139–45.
- Goudie, A.S. (1976) The Oxford region. In *Field Guide to the Oxford Region* (ed. D.A. Roe), Quaternary Research Association, Oxford, pp. 1–5.
- Goudie, A.S. and Hart, M.G. (1975) Pleistocene events and forms in the Oxford region. In *Oxford and its Region* (eds C.G. Smith and D.I. Scargill), Oxford University Press, pp. 3–13.
- Gray, J.W. (1911) The north and mid Cotteswolds and the Vale of Moreton during the Glacial Epoch. *Proceedings of the Cotteswolds Naturalists Field Club*, **17**, 257–74.
- Green, A.H. (1864) The Geology of Banbury, Woodstock, Bicester and Buckingham, Memoir of the Geological Survey of Great Britain, 62 pp.
- Green, C.P. and McGregor, D.F.M. (1978a) Pleistocene gravel trains of the River Thames. *Proceedings of the Geologists' Association*, **89**, 143–56.
- Green, C.P. and McGregor, D.F.M. (1978b) Pleistocene gravel deposits of the Vale of St Albans and the Middle Thames. In *Field Guide to the Vale of St Albans* (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, pp. 31–7.
- Green, C.P. and McGregor, D.F.M. (1978c) Westwood. In *Field Guide to the Vale of St Albans* (eds J. Rose and P.L. Gibbard), Quaternary Research Association, London, p. 91.
- Green, C.P. and McGregor, D.F.M. (1980) Quaternary evolution of the River Thames. In *The Shaping of Southern England* (ed. D.K.C. Jones), Institute of British Geographers

Special Publication 11, Academic Press, London, pp. 177–202.

- Green, C.P. and McGregor, D.F.M. (1983) Lithology of the Thames gravels. In *Diversion* of the Thames (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 24–8.
- Green, C.P. and McGregor, D.F.M. (1986) The utility of intercomponent ratios in the interpretation of stone count data. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide No.3, Quaternary Research Association, Cambridge, pp. 83–93.
- Green, C.P. and McGregor, D.F.M. (1987) River terraces: a stratigraphic record of environmental change. In *International Geomorphology 1986 Part 1* (ed. V. Gardiner), Wiley, Chichester, pp. 977–87.
- Green, C.P., Hey, R.W. and McGregor, D.F.M. (1980) Volcanic pebbles in Pleistocene gravels of the Thames in Buckinghamshire and Hertfordshire. *Geological Magazine*, **117**, 59–64.
- Green, C.P., McGregor, D.F.M. and Evans, A. (1982) Development of the Thames drainage system in Early and Middle Pleistocene times. *Geological Magazine*, **119**, 281–90.
- Green, C.P., Coope, G.R., Currant, A.P., *et al.*, (1984) Evidence for two temperate episodes in late Pleistocene deposits at Marsworth, Buckinghamshire. *Nature*, *London*, **309**, 778–81.
- Green, H.S. (1984) Pontnewydd Cave. A Lower Palaeolithic Hominid Site in Wales: the First Report, National Museum of Wales, Cardiff, 227 pp.
- Greensmith, J.T. and Tucker, E.V. (1980) Evidence for differential subsidence on the Essex coast. *Proceedings of the Geologists' Association*, **91**, 169–75.
- Gregory, J.W. (1894) Evolution of the Thames. *Natural Science*, **5**, 97–108.
- Gregory, J.W. (1922) Evolution of the Essex Rivers and of the Lower Thames, Benham, Colchester, 64 pp.
- Grube, F., Christensen, S. and Vollmer, T. (1986) Glaciations in north west Germany. *Quaternary Science Reviews*, **5**, 347–57.
- Gruhn, R., Bryan, A.L. and Moss, A.J. (1974) A contribution to Pleistocene chronology in south east Essex, England. *Quaternary Research*, 4, 53–71.
- Grün, R., Schwarcz, H.P. and Chadwin, J. (1988) ESR dating of tooth enamel: coupled cor-

rection for U-uptake and U-series disequilibrium. *Nuclear Tracks and Radiation Measures*, 14, 237–41.

- Harding, P. and Gibbard, P.L. (1984) Excavations at Northwold Road, Stoke Newington, north east London, 1981. *Transactions of the Middlesex Archaeological Society*, 34, 1–18.
- Harding, P., Bridgland, D.R., Madgett, P.A. et al. (1991) Recent investigations of Pleistocene sediments near Maidenhead, Berkshire, and their archaeological content. Proceedings of the Geologists' Association, 102, 25–53.
- Hare, F.K. (1947) The geomorphology of a part of the Middle Thames. *Proceedings of the Geologists' Association*, **58**, 294–339.
- Harmer, F.W. (1902) A sketch of the later Tertiary history of East Anglia. *Proceedings of the Geologists' Association*, **17**, 416–79.
- Harmer, F.W. (1907) On the origin of certain cañon-like valleys associated with lake-like areas of depression. *Quarterly Journal of the Geological Society of London*, 63, 470–514.
- Harries, W.J.R. (1977) *The Sand and Gravel Resources of the Country around Eynsham, Oxfordsbire.* Mineral Assessment Report of the Institute of Geological Sciences 28, 88 pp.
- Hart, J. McA. (1960), Field meeting at Grays Thurrock. *Proceedings of the Geologists' Association*, **71**, 242–4.
- Hawkins, H.L. (1922) The relation of the River Thames to the London Basin. *Report of the British Association for the Advancement of Science* [for 1922], 365–6.
- Hawkins, H.L (1928) Excursion to Kingsclere. Proceedings of the Geological Society of London, 39, 98–102.
- Hedberg, H.D. (1976) International Stratigraphic Guide. Wiley, New York, 200 pp.
- Hey, R.W. (1965) Highly quartzose pebble gravels in the London Basin. *Proceedings of the Geologists' Association*, **76**, 403–20.
- Hey, R.W. (1967) The Westleton Beds reconsidered. *Proceedings of the Geologists' Association*, **78**, 427–45.
- Hey, R.W. (1976a) The terraces of the Middle and Lower Thames. *Studia Societatis Scientiarum Torunensis*. Torun-Polonia, **8C**, 115–22.
- Hey, R.W. (1976b) Provenance of far-travelled pebbles in the pre-Anglian Pleistocene of East Anglia. *Proceedings of the Geologists' Association*, **87**, 69–82.
- Hey, R.W. (1980) Equivalents of the Westland

Green Gravels in Essex and East Anglia. Proceedings of the Geologists' Association, 91, 279–90.

- Hey, R.W. (1982) Composition of Pre-Anglian gravels in Norfolk. *Bulletin of the Geological Society of Norfolk*, **32**, 51–9.
- Hey, R.W. (1983) Ferneux Pelham. In *Diversion* of the Thames (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 94–5.
- Hey, R.W. (1986) A re-examination of the Northern Drift of Oxfordshire. *Proceedings* of the Geologists' Association, 97, 291–302.
- Hey, R.W. and Auton, C.A. (1988) Compositions of pebble-beds in the Neogene and pre-Anglian Pleistocene of East Anglia. In *Pliocene-Middle Pleistocene of East Anglia* (eds P.L. Gibbard and J.A. Zalasiewicz), Field Guide, Quaternary Research Association, Cambridge, pp. 35–41.
- Hey, R.W. and Brenchley, P.J. (1977) Volcanic pebbles from Pleistocene gravels in Norfolk and Essex. *Geological Magazine*, **114**, 219–25.
- Hey, R.W., Krinsley, D.H. and Hyde, P.J.W. (1971) Surface textures of sand grains from the Hertfordshire pebble gravels. *Geological Magazine*, **108**, 377–82.
- Hiller, D. (1972) Untersuchungen zur Biologie und zur Ökologie limnischer Ostracoden aus der Umbebung von Hamburg. Archiv für Hydrobiologie, Supplementband 40 (Stuttgart), Heft 4, 400–97.
- Hinton, M.A.C. (1900a) The Pleistocene deposits of the Ilford and Wanstead district, Essex. *Essex Naturalist*, **11**, 161–5.
- Hinton, M.A.C. (1900b) The Pleistocene deposits of the Ilford and Wanstead district. *Proceedings of the Geologists' Association*, 16, 271–81.
- Hinton, M.A.C. (1901) Excursion to Grays Thurrock. Proceedings of the Geologists' Association, 17, 141–4.
- Hinton, M.A.C. (1910) A preliminary account of the British voles and lemmings; with some remarks on the Pleistocene climate and geography. *Proceedings of the Geologists' Association*, 21, 489–507.
- Hinton, M.A.C. (1911) The British fossil shrews. Geological Magazine, 8, 529–39.
- Hinton, M.A.C. (1923) Note on the rodent remains from Clacton-on-Sea. Quarterly Journal of the Geological Society of London, 79, 626.

- Hinton, M.A.C. (1926a) The Pleistocene mammalia of the British Isles and their bearing upon the date of the Glacial Period. *Proceedings of the Yorksbire Geological Society New Series*, **20**, 325–48.
- Hinton, M.A.C. (1926b) Monograph of the Voles and Lemmings (Microtinae), Living and Extinct, Volume 1 [Volume 2 not published], British Museum, London, 488 pp.
- 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**, 336–70.
- Hinton, M.A.C. and Kennard, A.S. (1905) The relative ages of the stone implements of the Lower Thames valley. *Proceedings of the Geologists' Association*, 19, 76–100.
- Hinton, M.A.C. and Kennard, A.S. (1907) Contributions to the Pleistocene geology of the Thames valley I. The Grays Thurrock area, Part II (Revised), *Essex Naturalist*, 15, 56–88.
- Holland, C.H., Audley-Charles, M.G., Bassett, M.G., et al. (1978) A Guide to Stratigraphic Procedure, Special Report for the Geological Society of London, No. 10, 18 pp.
- Hollin, J.T. (1971) Ice-sheet surges and interglacial sea levels. Unpublished Ph.D. thesis, Princeton University, 179 pp.
- Hollin, J.T. (1977) Thames interglacial sites, Ipswichian sea levels and Antarctic ice surges. *Boreas*, 6, 33–52.
- Hollyer, S.E. and Simmons, M.B. (1978) The Sand and Gravel Resources of the Country around Southend-on-Sea, Essex. Mineral Assessment Report of the Institute of Geological Sciences 36, 212 pp.
- Holman, J.A. (1987) Middle Pleistocene herpetological records from interglacial deposits at Sugworth near Oxford. British Herpetological Society Bulletin, 21, 5–7.
- Holman, J.A. and Clayden, J.D. (1988) Pleistocene interglacial herpetofauna from the Greenlands Pit, Purfleet, Essex. British Herpetological Society Bulletin, 26, 26–7.
- Holman, J.A., Stuart, A.J. and Clayden, J.D. (1990) A Middle Pleistocene herpetofauna from Cudmore Grove, Essex, England, and its paleogeographic and paleoclimatic implications. *Journal of Vertebrate Paleontology*, **10**, 86–94.
- Holmes, T.V. (1890) Some sections between West Thurrock and Stifford on the Grays and Upminster railway. *Essex Naturalist*, 4, 143–9.

- Holmes, T.V. (1892a) The new railway from Grays Thurrock to Romford: sections between Upminster and Romford. Quarterly Journal of the Geological Society of London, 48, 365–72.
- Holmes, T.V. (1892b) Excursion to the cuttings on the new railway between Upminster and Romford. *Proceedings of the Geologists' Association*, 12, 316–9.
- Holmes, T.V. (1892c) Recent excursions of the Geologists' Association in Essex. Upminster and Hornchurch. *Essex Naturalist*, 6, 96–7.
- Holmes, T.V. (1893) The new railway between Upminster and Romford. Boulder Clay beneath old river gravel at Hornchurch. Conclusions therefrom. *Essex Naturalist*, 7, 1–14.
- Holmes, T.V. (1894) Further notes on some sections of the new railway from Romford to Upminster, and on the relations of the Thames valley beds to the boulder clay. *Quarterly Journal of the Geological Society* of London, 50, 443–52.
- Holmes, T.V. (1896) Notes on the ancient physiography of south Essex. *Essex Naturalist*, 9, 193–200.
- Holyoak, D.T. (1983) A late Pleistocene interglacial flora and molluscan fauna from Thatcham, Berkshire, with notes on the Mollusca from the interglacial deposits at Aveley, Essex. *Geological Magazine*, **120**, 623–9.
- Hopson, P.M. (1981) The Sand and Gravel Resources of the Country around Stansted Mountfitchet, Essex, Mineral Assessment Report of the Institute of Geological Sciences, 104, 110 pp.
- Horton, A. (1977) Nettlebed. In South East England and the Thames Valley (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for Excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 16–8.
- Horton, A. (1983) Nettlebed. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 63–5.
- Howell, F.C. (1960) European and northwest African Middle Pleistocene hominids. *Current Anthropologist*, **1**, 195–232.
- Hubbard, R.N.L.B. (1972) An interim report of the pollen record at Swanscombe. *Proceedings of the Royal Anthropological Institute* [for 1971], p. 79.

- Hubbard, R.N.L.B. (1982) The environmental evidence from Swanscombe and its implications for Palaeolithic archaeology. In Archaeology in Kent to AD 1500 (ed. P.E. Leach), Council for British Archaeology, Research Report 48, pp. 3–7.
- Hughes, T.McK. (1868) On the two plains of Hertfordshire and their gravels. Quarterly Journal of the Geological Society of London, 24, 283–7.
- Hull, E. (1855) On the physical geography and Pleistocene phenomena of the Cotteswold Hills. Quarterly Journal of the Geological Society of London, 11, 475–96.
- Hull, E. (1859) *The Geology of the Country around Woodstock, Oxfordshire*, Memoir of the Geological Survey of Great Britain, 30 pp.
- Hull, E. and Whitaker, W. (1861) *The Geology of Parts of Oxfordshire and Berkshire*, Memoir of the Geological Survey of Great Britain, 57 pp.
- Hunt, C.O. (1985) Pollen from the Eynsham Gravel at Magdalen College, Oxford. *In* The chronology and environmental framework of Early Man in the Upper Thames Valley: a new model (eds D.J. Briggs, G.R. Coope and D.D. Gilbertson), *British Archaeological Report*, *British Series*, 137, 85–7.
- Janossy, D. (1975) Mid-Pleistocene microfauna of Continental Europe. In After the Australopithecines: Stratigraphy, Ecology and Culture Change in the Middle Pleistocene (eds K.W. Butzer and G.L. Isaac), Mouton, The Hague, pp. 375–397.
- Janossy, D. (1987) Pleistocene Vertebrate Faunas of Hungary, Elsevier, Amsterdam, 208 pp.
- Jessop, R.F. (1930) *The Archaeology of Kent*. Methuen, London, 272 pp.
- John, D.T. (1980) The soils and superficial deposits on the North Downs of Surrey. In *The Shaping of Southern England* (ed. D.K.C. Jones), Institute of British Geographers Special Publication 11, Academic Press, London, pp. 101–30.
- John, D.T. and Fisher, D.F. (1984) The stratigraphical and geomorphological significance of the Red Crag fossils at Netley Heath, Surrey: a review and re-appraisal. *Proceedings of the Geologists' Association*, **95**, 235–47.
- Johnson, J.P. (1901) Additions to the Palaeolithic fauna of the Uphall Brickyard, Ilford, Essex. *Essex Naturalist*, 11, 209–12.
- Jones, D.K.C. (1974) The influence of the

Calabrian transgression on the drainage evolution of south-east England. In *Progress in Geomorphology* (eds E.H. Brown and R.S. Waters), Institute of British Geographers, Special Publication 7, Academic Press, London, pp. 139–158.

- Jones, D.K.C. (1981) The Geomorphology of the British Isles: Southeast and Southern England. Methuen, London and New York, 332 pp.
- Jones, T.R. (1850) Description of the Entomostraca of the Pleistocene beds of Newbury, Copford, Clacton and Grays. *Annals and Magazine of Natural History, Series 2*, 6, 25–71.
- De Jong, J. (1988) Climatic variability during the past three million years, as indicated by vegetational evolution in northwest Europe and with emphasis on data from the Netherlands. *Philosophical Transactions of the Royal Society of London*, **B318**, 603–17.
- Jukes-Browne, A.J. and White, H.J.O. (1908) *The Geology of the Country around Henley-on-Thames and Wallingford*, Memoir of the Geological Survey of Great Britain, 113 pp.
- Kahlke, H.D. (ed.) (1965) Das Pleistozän von Voigtstedt. Paläeontologische Abhandlungen, A11 2/3, 227–692.
- Kahlke, H.D. (1969) Das Pleistozän von Süssenborn. Paläeontologische Abhandlungen, A111 3/4, 367–788.
- Kahlke, H.D. (1975) The macrofaunas of continental Europe during the Middle Pleistocene: stratigraphic sequence and problems of intercorrelation. In After the Australopithecines: Stratigraphy, Ecology and Culture Change in the Middle Pleistocene (eds K.W. Butzer and G.L. Isaac), Mouton, The Hague, pp. 309–74.
- Keen, D.H. (1990) Significance of the record provided by Pleistocene fluvial deposits and their included molluscan faunas for palaeoenvironmental reconstruction and stratigraphy: case study from the English Midlands. *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology*, **80**, 25–34.
- Keith, A. (1939) A resurvey of the anatomical features of the Piltdown Skull with some observations on the recently discovered Swanscombe Skull. Parts I and II. *Journal of Anatomy, London*, 73, 155–85 and 234–54.
- Kellaway, G.A., Horton, A. and Poole, G. (1971) The development of some Pleistocene structures in the Cotswolds and Upper Thames

Basin. Bulletin of the Geological Survey of Great Britain, 37, 1–28.

- Kelly, M.R. (1964) The Middle Pleistocene of north Birmingham. *Philosophical Transactions of the Royal Society of London*, B247, 533–92.
- Kemp, R.A. (1983) Stebbing: the Valley Farm palaeosols layer. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 154–8.
- Kemp, R.A. (1984) Quaternary soils in southern East Anglia and the Lower Thames Basin. Unpublished Ph.D. thesis, University of London.
- Kemp, R.A. (1985a) The Valley Farm Soil in southern East Anglia. In Soils and Quaternary Landscape Evolution (ed. J. Boardman), Wiley, Chichester, pp. 179–96.
- Kemp, R.A. (1985b) The decalcified Lower Loam at Swanscombe, Kent: a buried Quaternary soil. Proceedings of the Geologists' Association, 96, 343–55.
- Kemp, R.A. (1987a) Genesis and environmental significance of a buried Middle Pleistocene soil in eastern England. *Geoderma*, 41, 49–77.
- Kemp, R.A. (1987b) The interpretation and environmental significance of a buried soil near Ipswich airport, Suffolk. *Philosophical Transactions of the Royal Society of London*, B317, 365–91.
- Kemp, R.A. (1991) Micromorphology of the buried Quaternary soil within Burchell's 'Ebbsfleet Channel', Kent. *Proceedings of the Geologists' Association*, 102, 275–87.
- Kennard, A.S. (1904) Notes on a palaeolith from Grays, Essex. *Essex Naturalist*, 13, 112–13.
- Kennard, A.S. (1916) The Pleistocene succession in England. Proceedings of the Prehistoric Society of East Anglia, 2, 249–67.
- Kennard, A.S. (1924) The Pleistocene nonmarine Mollusca of England. Proceedings of the Malacological Society of London, 16, 84–97.
- Kennard, A.S. (1938) Report on the non-marine Mollusca from the Middle Gravels of the Barnfield Pit. Journal of the Royal Anthropological Institute of London, 68, 28–30.
- Kennard, A.S. (1942) Faunas of the High Terrace at Swanscombe. Proceedings of the Geologists' Association, 53, 105.
- Kennard, A.S. (1944) The Crayford Brickearths. Proceedings of the Geologists' Association, 55, 121–69.

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- Kennard, A.S. and Woodward, B.B. (1897) The post-Pliocene non-marine Mollusca of Essex. *Essex Naturalist*, **10**, 87–109.
- Kennard, A.S. and Woodward, B.B. (1900) The Pleistocene non-marine Mollusca of Ilford. *Proceedings of the Geologists' Association*, 16, 282–6.
- Kennard, A.S. and Woodward, B.B. (1907) Notes on the post-Pliocene Mollusca of the Milne collection. *Proceedings of the Malacological Society of London*, 7, 261–3.
- Kennard, A.S. and Woodward, B.B. (1923) On the non-marine Mollusca of Clacton-on-Sea. *Quarterly Journal of the Geological Society* of London, 79, 629–34.
- Kennard, A.S. and Woodward, B.B. (1924) Appendix 3: The Pleistocene non-marine Mollusca. *In* Sandford, K.S., The river gravels of the Oxford district, *Quarterly Journal of the Geological Society of London*, **80**, 170–5.
- Kerney, M.P. (1959a) An interglacial tufa near Hitchin, Hertfordshire. *Proceedings of the Geologists' Association*, 70, 322-37.
- Kerney, M.P. (1959b) Pleistocene non-marine Mollusca of the English interglacial deposits. Unpublished Ph.D. thesis, University of London.
- Kerney, M.P. (1971) Interglacial deposits at Barnfield Pit, Swanscombe, and their molluscan fauna. *Journal of the Geological Society of London*, 127, 69–86.
- Kerney, M.P. and Sieveking, G. deG. (1977) Northfleet. In South East England and the Thames Valley (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 44–6.
- Kerney, M.P., Gibbard, P.L., Hall, A.R., et al. (1982) Middle Devensian river deposits beneath the 'Upper Floodplain' terrace of the River Thames at Isleworth, West London. Proceedings of the Geologists' Association, 93, 385–93.
- King, W.B.R. and Oakley, K.P. (1936) The Pleistocene succession in the lower part of the Thames valley. *Proceedings of the Prebistoric Society*, 1, 52–76.
- Klie, W. (1938) Krebstiere oder Crustacea III; Ostracoda, Muschelkrebse. In *Die Tierwelt Deutschlands* (ed. F. Dahl), **Band 34**, Jena, pp. 1–130.
- Koenigswald, W. von. (1973) Veranderungen in der Kleinäugerfauna von Mitteleuropa zwischen Cromer und Eem (pleistozaen),

Eiszeitalter und Gegenwart, 23-24, 159-67.

- Van Kolfschoten, T. (1988) The Pleistocene mammalian faunas from Zuurland boreholes at Brielle, The Netherlands. *Mededelingen Werkgroep Tertiaire and Kwartaire Geologie*, 25, 73–86.
- Kukla, G.J. (1975) Loess stratigraphy of Central Europe. In After the Australopithecines: Stratigraphy, Ecology and Culture Change in the Middle Pleistocene (eds K.W. Butzer and G.L. Isaac), Mouton, The Hague, pp. 99–188.
- Kukla, G.J. (1977) Pleistocene land-sea correlations. I. Europe. *Earth Science Reviews*, 13, 307–74.
- Kurtén, B. (1959) On the bears of the Holsteinian Interglacial. Acta Universitatis Stockholmiensis, Stockholm Contributions in Geology, 2, 73–102.
- Lacaille, A.D. (1940) The palaeoliths from the gravels of the Lower Boyn Hill Terrace around Maidenhead. *Antiquaries Journal*, 20, 245–71.
- Lacaille, A.D. (1960) On Palaeolithic choppers and cleavers (notes suggested by some Buckinghamshire examples) *Records of Bucks*, 16, 330–41.
- Lake, R.D., Ellison, R.A., Hollyer, S.E., et al. (1977) Buried channel deposits in the southeast Essex area: their bearing on Pleistocene palaeogeography. Report of the Institute of Geological Sciences, 77/21.
- Lake, R.D., Ellison, R.A., Henson, M.R., *et al.* (1986) *The Geology of the Country around Southend and Foulness*, Memoir of the Geological Survey of Great Britain, 85 pp.
- Lautridou, J-P. (1982) The Quaternary of Normandy. Field Guide, Quaternary Research Association, Cambridge, 88 pp.
- Lautridou, J-P., Masson, M., Paepe, R., et al. (1974) Loess, nappes aluviales et tuf de St-Pierre-les-Elbeuf, près de Rouen; les terraces de la Seine de Muids à Caudebec. Bulletin de l'Association Francaise pour l'Etude Quaternaire, Supplément, 3–4, 193–201.
- Lautridou, J-P., Monnier, J-L., Mortazec-Kerfourn, M-T., et al. (1983) Les subdivisions du Pléistocène de la France septentrionale: stratigraphie et paléolithique. In Quaternary Glaciations in the Northern Hemisphere (eds O. Billards, O. Conchon and F.W. Shotton), UNESCO – International Geological Correlation Programme, Project 73/1/24 Report 9, Paris 1982, pp. 148–70.

Leach, A.L. (1913) On buried channels in the

Dartford Heath Gravel. Proceedings of the Geologists' Association, 24, 337–44.

- Leakey, L.S.B. (1972) Homo sapiens in the Middle Pleistocene and the evidence of Homo sapiens evolution. In *The Origin of Homosapiens* (ed. F. Bordes), UNESCO, Paris, pp. 25–9.
- Leonardi, G. and Petronio, C. (1976) The fallow deer of European Pleistocene. *Geologica Roma*, **15**, 1–67.
- Lindroth, C.H. (1985) The Carabidae (Coleoptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica* (Copenhagen), **15**, 1–228.
- Linke, G., Katzenberg, O. and Grün, R. (1985) Description and ESR dating of the Holsteinian interglaciation. *Quaternary Science Reviews*, 4, 319–31.
- Lister, A.M. (1986) New results on deer from Swanscombe, and the stratigraphical significance of deer in the Middle and Upper Pleistocene of Europe. *Journal of Archaeological Science*, 13, 319–38.
- Lister, A.M. (1989) Mammalian faunas and the Wolstonian debate. In West Midlands (ed. D.H. Keen), Field Guide, Quaternary Research Association, Cambridge, pp. 5–11.
- Lister, A.M., McGlade, J.M. and Stuart, A.J. (1990) The early Middle Pleistocene vertebrate fauna from Little Oakley, Essex. *Philo*sophical Transactions of the Royal Society of London, B328, 359–85.
- Lonsdale, C.A. (1978) A sedimentological investigation of a supposed Ipswichian Interglacial site at Purfleet, Essex. Unpublished M.Sc. thesis, City of London Polytechnic and Polytechnic of North London.
- Lucht, W.H. (1987) *Die Käfer Mitteleuropas, Katalog*, Geoke and Evers, Kreleid, 342 pp.
- Lyell, C. (1865) *Elements of Geology*, 6th edn, John Murray, London, 294 pp.
- McGregor, D.F.M. and Green, C.P. (1978) Gravels of the River Thames as a guide to Pleistocene catchment changes. *Boreas*, 7, 197–203.
- McGregor, D.F.M. and Green, C.P. (1983a) Postdepositional modification of Pleistocene terraces of the River Thames. *Boreas*, 12, 23–33.
- McGregor, D.F.M. and Green, C.P. (1983b) Gerrards Cross. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 80–4.
- McGregor, D.F.M. and Green, C.P. (1983c) Lithostratigraphic subdivisions in the gravels

of the proto-Thames between Hemel Hempstead and Watford. *Proceedings of the Geologists' Association*, 94, 83–5.

- McGregor, D.F.M. and Green, C.P. (1986) Early and Middle Pleistocene gravel deposits of the Thames – development of a lithostratigraphic model. In *Clast Lithological Analysis* (ed. D.R. Bridgland), Technical Guide No. 3, Quaternary Research Association, Cambridge, pp. 95–115.
- McKeown, M.C. and Samuel, M.D.A. (1985) Regional Study of the Sand and Gravel Resources of Essex and South Suffolk. British Geological Survey, Keyworth.
- McNabb J. (1989) Sticks and stones: a possible experimental solution to the question of how the Clacton spear point was made. *Proceedings of the Prehistoric Society*, **55**, 251–71.
- MacRae, R.J. (1982) Palaeolithic artefacts from Berinsfield, Oxfordshire. Oxoniensa, 47, 1–11.
- MacRae, R.J. (1985) Palaeolithic archaeology of the Upper Thames Basin. *In* The chronology and environmental framework of early Man in the Upper Thames Valley (eds D.J. Briggs, G.R. Coope and D.D. Gilbertson), *British Archaeological Reports, British Series*, 137, 8–25.
- MacRae, R.J. (1987) The great giant handaxe stakes. *Lithics*, 8, 15–7.
- MacRae, R.J. (1988) The Palaeolithic of the Upper Thames and its quartzite implements. In Non-flint stone tools and the Palaeolithic occupation of Britain (eds R.J. MacRae and N. Moloney), British Archaeological Reports, British Series, 189, 123–54.
- MacRae, R.J. (1989) Belt, shoulder-bag or basket? An enquiry into handaxe transport and flint sources. *Lithics*, **10**, 2–8.
- MacRae, R.J. (1991) New finds and old problems in the Lower Palaeolithic of the Upper Thames valley. *Lithics*, **11**, 3–15.
- MacRae, R.J. and Moloney, N. (1988) Gazetteer of Lower Palaeolithic non-flint artefacts in Great Britain. *In* Non-flint stone tools and the Palaeolithic occupation of Britain (eds R.J. MacRae and N. Moloney), *British Archaeological Reports, British Series*, 189, 243-63.
- Maddy, D. (1989) The Middle Pleistocene of the Rivers Severn and Avon. Unpublished Ph.D. thesis, University of London.
- Maddy, D., Keen, D.H., Bridgland, D.R., et al. (1991a) A revised model for the Pleistocene

development of the River Avon, Warwickshire. Journal of the Geological Society of London, 148, 473–84.

- Maddy, D., Lewis, S.G. and Green, C.P. (1991b) A review of the stratigraphic significance of the Wolvercote Terrace of the Upper Thames valley. *Proceedings of the Geologists' Association*, **102**, 217–25.
- Manning, P. and Leeds, E.T. (1921) An archaeological survey of Oxfordshire. Archaeologia, 71, 227–65.
- Marston, A.T. (1937) The Swanscombe Skull. Journal of the Royal Anthropological Institute, 67, 339–406.
- Marston, A.T. (1942) Flint industries of the High Terrace at Swanscombe. *Proceedings of the Geologists' Association*, **53**, 106.
- Martinson, D.G., Pisias, N.J., Hayes, J.D., *et al.* (1987) Age dating and the orbital theory of the ice ages, development of a high resolution nought to 300,000 year chronostratigraphy. *Quaternary Research*, **27**, 1–29.
- Meijer, T. (1985) Maastricht-Belvedere: stratigraphy, palaeoenvironment and archaeology of the Middle and Late Pleistocene deposits. *Mededelingen Rijks Geologische Dienst*, 39, 76–103.
- Meijer, T. and Preece, R.C. (in press) Malacological evidence relating to the stratigraphical position of the Cromerian. In *The Early Middle Pleistocene of Europe* (eds P.L. Gibbard and C. Turner), A.A. Balkema, Rotterdam.
- Miall, A.D. (1977) A review of the braided river depositional environment. *Earth Science Reviews*, 13, 1–62.
- Miller, G.H. and Mangerud, J. (1985) Aminostratigraphy of European marine interglacial deposits. *Quaternary Science Reviews*, 4, 215–78.
- Miller, G.H., Hollin, J.T. and Andrews, J. (1979) Aminostratigraphy of UK Pleistocene deposits. *Nature, London*, 281, 539–43.
- Mitchell, G.F., Penny, L.F., Shotton, F.W., et al. (1973) A Correlation of Quaternary Deposits in the British Isles. Geological Society of London Special Report, No. 4, 99 pp.
- Moffat, A.J. (1980) The Plio-Pleistocene transgression in the northern part of the London Basin – a re-examination. Unpublished Ph.D. thesis, University of London.
- Moffat, A.J. (1986) Quartz signatures in Plio-Pleistocene gravels in the northern part of the London Basin. In *Clast Lithological*

Analysis (ed. D.R. Bridgland), Technical Guide No. 3, Quaternary Research Association, Cambridge, pp. 117–28.

- Moffat, A.J. and Catt, J.A. (1982) The nature of the pebbly clay drift at Epping Green, southeast Hertfordshire. *Transactions of the Hertfordshire Natural History Society*, **28**, 16–24.
- Moffat, A.J. and Catt, J.A. (1983) A new excavation in Plio-Pleistocene deposits at Little Heath. *Transactions of the Hertfordshire Natural History Society*, **29**, 5–10.
- Moffat, A.J. and Catt, J.A. (1986a) A re-examination of the evidence for a Plio-Pleistocene marine transgression on the Chiltern Hills. II. Drainage patterns. *Earth Surface Processes and Landforms*, **11**, 169–80.
- Moffat, A.J. and Catt, J.A. (1986b), A re-examination of the evidence for a Plio-Pleistocene marine transgression on the Chiltern Hills, III. Deposits. *Earth Surface Processes and Landforms*, 11, 233–47.
- Moffat, A.J., Catt, J.A., Webster, R. *et al.* (1986) A re-examination of the evidence for a Plio-Pleistocene marine transgression on the Chiltern hills, I. Structures and surfaces. *Earth Surface Processes and Landforms*, **11**, 95–106.
- Monckton, H.W. (1892) On the gravels south of the Thames from Guildford to Newbury. *Quarterly Journal of the Geological Society* of London, **48**, 29–59.
- Monckton, H.W. and Herries, R.S. (1891) On some hill gravels north of the Thames. *Proceedings of the Geologists' Association*, 12, 108–14.
- Montagu, M.F.A. (1960) An Introduction to Physical Anthropology, 3rd edn, Charles G. Thomas, Springfield, Illinois.
- Morant, G.M. (1938) The form of the Swanscombe Skull. *Journal of the Royal Anthropological Institute of London*, **68**, 67–97.
- Morgan, A. (1969) A Pleistocene fauna and flora from Great Billing, Northamptonshire, England. Opuscula Entomologica, Lund, 34, 109–29.
- Morgan, A.V. (1973) Late Pleistocene environmental changes indicated by fossil insect faunas of the English Midlands. *Boreas*, 2, 173–212.
- Morris, J. (1836) On a freshwater deposit containing mammalian remains, recently discovered at Grays, Essex. *Magazine of Natural History, Series 1*, 9, 261–4.
- Newcomer, M.H. (1971) Conjoined flakes from

the Lower Loam, Barnfield Pit, Swanscombe. Proceedings of the Royal Anthropological Institute of London [for 1970], pp. 51-59.

- Newton, E.T. (1895) On a human skull and limb bones found in the Palaeolithic terrace gravel at Galley Hill, Kent. *Quarterly Journal of the Geological Society of London*, **51**, 505–27.
- Newton, E.T. (1907) Note on specimens of 'Rhaxella-chert' or 'Arngrove stone' from Dartford Heath. *Proceedings of the Geologists' Association*, 20, 127–8.
- Newton, R.B. (1916) On the conchological features of the Lenham Sandstone of Kent. *Journal of Conchology, London*, **15**, 56–84, 97–118 and 137–49.
- Newton, W.M. (1901) Kent: flint implements. The occurrence in a very limited area of the rudest with the finest forms of worked stones. *Man*, 1, 81–2.
- Newton, W.M. (1930) A remarkable gravel pit. Man, 30, 41-4.
- Oakley, K.P. (1937) Field meeting at Taplow, Burnham and Iver, Bucks. *Proceedings of the Geologists' Association*, **48**, 276–9.
- Oakley, K.P. (1939) A Survey of the Prehistory of the Farnham District (Surrey), Part 1 Geology and Palaeolithic Studies, Surrey Archaeological Society, Guildford, pp. 3–58.
- Oakley, K.P. (1943) The future of Quaternary research in Britain. *South East Naturalist*, 48, 25–32.
- Oakley, K.P. (1949) *Man the Toolmaker*, 1st edn, British Museum (Natural History), London, 98 pp.
- Oakley, K.P. (1952) Swanscombe Man. Proceedings of the Geologists' Association, 63, 271–300.
- Oakley, K.P. (1964) The evidence of fire at Swanscombe. In *The Swanscombe Skull: a Survey of Research on a Pleistocene Site* (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, pp. 63–6.
- Oakley, K.P. and Gardiner, E. (1964) Analytical data on the Swanscombe bones. In *The Swanscombe Skull: A Survey of Research on a Pleistocene Site* (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, pp. 117–23.
- Oakley, K.P. and King, W.B.R. (1945) Age of the Baker's Hole Coombe Rock, Northfleet, Kent. *Nature, London*, **155**, 51–2.
- Oakley, K.P. and Leakey, M. (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. *Proceedings of the Prehistoric Society*, **3**, 217–60.

- Oakley, K.P., Andrews, P., Keeley, L.H., *et al.* (1977) A reappraisal of the Clacton spearpoint. *Proceedings of the Prehistoric Society*, **43**, 13–30.
- Ohel, M.Y. (1977) On the Clactonian reexamined, redefined, reinterpreted. *Current Antbropologist*, **18:2**, 329–31.
- Ohel, M.Y. (1979) The Clactonian: an independent complex or an integral part of the Acheulian? *Current Anthropologist*, **20**:4, 685–744.
- Osborne, P.J. (1980) The insect fauna of the organic deposits at Sugworth and its environmental and stratigraphic implications. *In* Shotton, F.W., Goudie, A.S., Briggs, D.J. *et al.* Cromerian interglacial deposits at Sugworth, near Oxford, England, and their relation to the Plateau Drift of the Cotswolds and the terrace sequence of the Upper and Middle Thames. *Philosophical Transactions of the Royal Society of London*, **B289**, 119–33.
- Ovey, C.D. (ed.) (1964) *The Swanscombe Skull: a Survey of Research on a Pleistocene Site*, Royal Anthropological Institute, Occasional Paper No. 20, 215 pp.
- Owen, R. (1846) *History of the British Fossil Mammals and Birds*, John Van Voorst, London, 560 pp.
- Owen, R. (1855) Description of a fossil cranium of the musk-buffalo from the 'lower level drift' at Maidenhead, Bucks. *Quarterly Journal of the Geological Society of London*, 12, 124–31.
- Palmer, S. (1975) A Palaeolithic site at North Road, Purfleet, Essex. *Transactions of the Essex Archaeological Society*, 7, 1–13.
- Parks, D.A. and Rendell, H.M. (1988) TL dating of brickearths from SE England. *Quaternary Science Reviews*, 7, 305–8.
- Paterson, T.T. (1940) The Swanscombe Skull: a defence. Proceedings of the Prehistoric Society, 6, 166–9.
- Penck, A and Brückner, E. (1909) *Die Alpen im Eiszeitalter*, Tauchmitz, Leipzig, 3 vols, 1199 pp.
- Perrin, R.M.S., Davies, H. and Fysh, M.D. (1973) Lithology of the Chalky Boulder Clay. *Nature, London*, **245**, 101–4.
- Perrin, R.M.S., Rose, J. and Davies, H. (1979) The distribution, variation and origins of pre-

Devensian tills in eastern England. *Philosophical Transactions of the Royal Society of London*, **B287**, 535–70.

- Pettit, M. and Gibbard, P.L. (1980) Palaeobotany. In Shotton, F.W., Goudie, A.S., Briggs, D.J. et al. Cromerian interglacial deposits at Sugworth, near Oxford, England, and their relation to the Plateau Drift of the Cotswolds and the terrace sequence of the Upper and Middle Thames, Philosophical Transactions of the Royal Society of London, B289, 63.
- Phillips, J. (1871) *The Geology of Oxford and the Valley of the Thames*, Clarendon Press, Oxford, 523 pp.
- Phillips, L.M. (1976) Pleistocene vegetational history and geology in Norfolk. *Philosophical Transactions of the Royal Society of London*, B275, 215–86.
- Picton, H. (1912) Observations on the bone bed at Clacton. *Proceedings of the Prehistoric Society*, 1, 158–9.
- Pike, K. and Godwin, H. (1953) The interglacial at Clacton-on-Sea, Essex. *Quarterly Journal* of the Geological Society of London, 108, 261–72.
- Pinchemel, P. H. (1954) Les Plaines de Craie du Nord-ouest du Bassin Parisien et du Sud-est du Bassin de Londres et leurs Bordures. Librairie Armand Collin, Paris, 502 pp.
- Pocock, T.I. (1903) On the drifts of the Thames valley near London. *Summary of Progress, Geological Survey of Great Britain*, for 1902, 199–207.
- Pocock, T.I. (1908) *The Geology of the Country around Oxford*. Memoir of the Geological Survey of Great Britain, 142 pp.
- Podmore, J.A. (1976) The geomorphology of a selected archaeological site in South Essex; Botany Pit, Purfleet, Essex, Unpublished B.Sc. thesis, City of London Polytechnic, 34 pp.
- Porrenga, D.H. (1967) Glauconite and chamosite as depth indicators in the marine environment. *Marine Geology*, 5, 495–501.
- Poulton, E.B. (1880) On mammalian remains and tree trunks in Quaternary sands and gravels at Reading. *Quarterly Journal of the Geological Society of London*, **36**, 296–306.
- Preece, R.C. (1988) A second British interglacial record of *Margitifera auricularia*. *Journal of Conchology*, **33**, 50–1.
- Preece, R.C. (1989) Additions to the molluscan fauna of the early Middle Pleistocene deposits at Sugworth, near Oxford, including the

first British Quaternary record of *Perforatella bidentata* (Gmelin), *Journal of Conchology*, 33, 179–82.

- Preece, R.C. (1990a) Alfred Santer Kennard (1870–1948): his contribution to malacology, Quaternary research and to the Geologists' Association. *Proceedings of the Geologists' Association*, **101**, 239–58.
- Preece, R.C. (1990b) The molluscan fauna of the Middle Pleistocene interglacial deposits at Little Oakley, Essex, and its environmental and stratigraphic implications. *Philosophical Transactions of the Royal Society of London*, B328, 387–407.
- Prestwich, J. (1854) On the structure of the strata between the London Clay and the Chalk in the London and Hampshire Tertiary systems. Part II. The Woolwich and Reading Series. *Quarterly Journal of the Geological Society of London*, **10**, 75–170.
- Prestwich, J. (1855) Note on the gravel near Maidenhead in which the skull of the muskbuffalo was found. *Quarterly Journal of the Geological Society of London*, **12**, 131–3.
- Prestwich, J. (1858a) On the age of the sands and iron-sandstones on the North Downs. *Quarterly Journal of the Geological Society* of London, 14, 322–35.
- Prestwich, J. (1858b) On the occurrence of the boulder clay or Northern Clay Drift, at Bricket Wood, near Watford. *Geologist*, **1**, 241.
- Prestwich, J. (1881) On the extension into Essex, Middlesex and other inland counties, of the Mundesley and Westleton Beds, in relation to the age of certain hill-gravels of some of the valleys of the south of England. *Geological Magazine*, **8**, 466–8.
- Prestwich, J. (1882) The occurrence of *Cyrena fluminalis* at Summertown near Oxford. *Geological Magazine*, 9, 49–51.
- Prestwich, J. (1890a) On the relation of the Westleton Beds, or pebbly sands of Suffolk, to those of Norfolk, and on their extension inland; with some observations on the period of the final elevation and denudation of the Weald and of the Thames valley. Part I. Quarterly Journal of the Geological Society of London, 46, 84–119.
- Prestwich, J. (1890b) On the relation of the Westleton Beds, or pebbly sands of Suffolk, to those of Norfolk, and on their extension inland; with some observations on the period of the final elevation and denudation of the Weald and of the Thames valley. Part II.

Quarterly Journal of the Geological Society of London, 46, 120–54.

- Prestwich, J. (1890c) On the relation of the Westleton Beds, or pebbly sands of Suffolk, to those of Norfolk, and on their extension inland; with some observations on the period of the final elevation and denudation of the Weald and of the Thames valley. Part II. Quarterly Journal of the Geological Society of London, 46, 155–81.
- Prestwich, J. (1891) On the age, formation and successive drift-stages of the valley of the Darent; with remarks on the Palaeolithic implements of the district and on the origin of its Chalk escarpment. *Quarterly Journal of the Geological Society of London*, 47, 126–63.
- Ransome, E.R. (1890) Fossil Mammalia at Clacton-on-Sea. *Essex Naturalist*, 4, 201.
- Reading, H.G. (1978) Sedimentary Environments and Facies. Blackwell Scientific, Oxford, 557 pp.
- Reid, C. (1890) *The Pliocene Deposits of Britain*, Memoir of the Geological Survey of England and Wales, 326 pp.
- Reid, C. (1897) On Pleistocene plants from Casewick, Shacklewell and Grays. *Quarterly Journal of the Geological Society of London*, 53, 463–4.
- Reid, C. (1899) The origin of the British flora. Dalau, London, 191 pp.
- Reid, C. (1900) [untitled comments on the high-level gravel at Stanmore]. In Anon (ed.) Field work, Tertiary, London Basin, Summary of Progress, Geological Survey of Great Britain [for 1899], p. 140.
- Reid, C. and Chandler, M.E.J. (1923) The fossil flora of Clacton-on-Sea. *Quarterly Journal of the Geological Society of London*, 79, 619–23.
- Reineck, H-E. and Singh, I.B. (1975) Depositional Sedimentary Environments, Springer-Verlag, Berlin, 439 pp.
- Richardson, L. (1935) Weekend field meeting in the Witney district. *Proceedings of the Geologists' Association*, 46, 403–11.
- Richardson, L. and Sandford, K.S. (1963) Ditchford Gravel Pit near Stretton-on-Fosse, Gloucestershire and the occurrence of a mammoth tooth. *Proceedings of the Cotteswolds Naturalists Field Club*, 33, 172–6.
- Richmond, G.M. and Fullerton, D.S. (1986) Introduction to Quaternary glaciations in the United States of America. *Quaternary Sci*-

ence Reviews, 5, 3-10.

- Roberts, M.B. (1986) Excavation of the Lower Palaeolithic site at Amey's Eartham Pit, Boxgrove, West Sussex: a preliminary report. *Proceedings of the Prehistoric Society*, **52**, 215–45.
- Robinson, J.E. (1978) Ostracods from deposits in the Vale of St Albans. *Quaternary Newsletter*, 2, 8–9.
- Robinson, J.E. (1980) The ostracod fauna of the interglacial deposits at Sugworth, Oxfordshire. *Philosophical Transactions of the Royal Society of London*, **B289**, 99–106.
- Robinson, J.E. (1983) Ostracods from the Westmill Lower Gravels, Westmill. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 132.
- Robinson, J.E. (1990) The Ostracod fauna of the interglacial deposits at Little Oakley, Essex. *Philosophical Transactions of the Royal Society of London*, **B328**, 409–23.
- Robson, P. (1976) The Sand and Gravel Resources of the Thames Valley, the Country between Lechlade and Standlake, Mineral Assessment Report of the Institute of Geological Sciences 23, 141 pp.
- Roe, D.A. (1964) The British Lower and Middle Palaeolithic: some problems, methods of study and preliminary results. *Proceedings of the Prebistoric Society*, 30, 245–67.
- Roe, D.A. (1968a) British Lower and Middle Palaeolithic hand-axe groups. *Proceedings of* the Prehistoric Society, 34, 1–82.
- Roe, D.A. (1968b) A Gazetteer of British Lower and Middle Palaeolithic Sites, Council for British Archaeology Research Report No. 8, 355 pp.
- Roe, D.A. (1975) Some Hampshire and Dorset hand-axes and the question of Early Acheulian in Britain. *Proceedings of the Prebistoric Society*, 41, 1–9.
- Roe, D.A. (1976) Palaeolithic industries in the Oxford Region. In *Field Guide to the Oxford Region* (ed. D.A. Roe), Quaternary Research Association, Oxford, pp. 36–43.
- Roe, D.A. (1977) Fordwich and Sturry. In *South East England and the Thames Valley* (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for Excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 53–4.
- Roe, D.A. (1981) The Lower and Middle Palaeolithic Periods in Britain. Routledge

and Kegan Paul, London, 324 pp.

- Rolfe, W.D.I. (1958) A recent temporary section through Pleistocene deposits at Ilford. *Essex Naturalist*, **30**, 93–103.
- Rose, J. (1974) Small scale variability of some sedimentary properties of lodgement and slumped till. *Proceedings of the Geologists' Association*, 85, 223–37.
- Rose, J. (1979) River terraces and sea level change. Brighton Polytechnic Geographic Society Magazine, 3, 13–30.
- Rose, J. (1983a) Early and Middle Pleistocene sediments and palaeosols in west and central Essex. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 135–9.
- Rose, J. (1983b) Introduction. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 1–7.
- Rose, J. (1987) Status of the Wolstonian glaciation in the British Quaternary. *Quaternary Newsletter*, 53, 1–9.
- Rose, J. (1988) Stratigraphic nomenclature for the British Middle Pleistocene – procedural dogma or stratigraphic common sense. *Quaternary Newsletter*, 54, 15–20.
- Rose, J. (1989) Tracing the Baginton–Lillington Sands and Gravels from the West Midlands to East Anglia. In *West Midlands* (ed. D.H. Keen), Field Guide, Quaternary Research Association, Cambridge, pp. 102–10.
- Rose, J. (1991) Stratigraphic basis of the 'Wolstonian glaciation', and retention of the term 'Wolstonian' as a chronostratigraphic stage name a discussion. In *Central East Anglia and the Fen Basin* (eds S.G. Lewis, C.A. Whiteman and D.R. Bridgland), Field Guide, Quaternary Research Association, London, pp. 15–20.
- Rose, J. and Allen, P. (1977) Middle Pleistocene stratigraphy in south-east Suffolk. *Journal of the Geological Society of London*, 133, 83–102.
- Rose, J., Allen, P. and Hey, R.W. (1976) Middle Pleistocene stratigraphy in southern East Anglia. *Nature, London*, **263**, 492–4.
- Rose, J., Sturdy, R.G., Allen, P., et al. (1978) Middle Pleistocene sediments and palaeosols near Chelmsford, Essex. Proceedings of the Geologists' Association, 89, 91–6.
- Rose, J., Allen, P., Kemp, R.A., *et al.* (1985a) The early Anglian Barham Soil of eastern England. In *Soils and Quaternary Landscape*

Evolution (ed. J. Boardman), Wiley, Chichester, pp. 197–229.

- Rose, J., Boardman, J., Kemp, R.A., *et al.* (1985b) Palaeosols and the interpretation of the British Quaternary stratigraphy. In *Geomorphology and Soils* (eds K. Richards, R. Arnett and S. Ellis), Allen and Unwin, London, p. 348–75.
- Ross, B.R.M. (1932) The physiographic evolution of the Kennet-Thames. *Report of the British Association, London* [for 1931], p. 368.
- Rossiter, J.R. (1972) Sea level observations and their secular variations. *Philosophical Transactions of the Royal Society of London*, A272, 131–9.
- Ruddiman, W.F., Raymo, M.E., Martinson, D.G., et al. (1989) Pleistocene evolution: Northern Hemisphere ice sheets and North Atlantic Ocean. Palaeoceanography, 4, 353–412.
- Salter, A.E. (1896) 'Pebbly gravel' from the Goring Gap to the Norfolk Coast. Proceedings of the Geologists' Association, 14, 389–404.
- Salter, A.E. (1898) Pebbly and other gravels in southern England. *Proceedings of the Geologists' Association*, **15**, 264–86.
- Salter, A.E. (1901) Excursion to Stanmore. Proceedings of the Geologists' Association, 17, 175–6.
- Salter, A.E. (1903) Excursion to Erith and Crayford. *Proceedings of the Geologists' Association*, **18**, 165–6.
- Salter, A.E. (1905) On the superficial deposits of central and parts of southern England. Proceedings of the Geologists' Association, 19, 1–56.
- Sandford, K.S. (1924) The river gravels of the Oxford district. Quarterly Journal of the Geological Society of London, 80, 113–79.
- Sandford, K.S. (1925) The fossil elephants of the Upper Thames basin. *Quarterly Journal of the Geological Society of London*, **81**, 62–86.
- Sandford, K.S. (1926) Pleistocene deposits. In *The Geology of the Country around Oxford* (ed. J. Pringle), Memoir of the Geological Survey of Great Britain, pp. 104–172.
- Sandford, K.S. (1932) Some recent contributions to the Pleistocene succession in England. *Geological Magazine*, **69**, 1–18.
- Sandford, K.S. (1939) Early Man. The Quaternary geology of Oxfordshire with reference to Palaeolithic Man. In *The Victoria County History of Oxfordshire*, **1**, 223–38.
- Sandford, K.S. (1954) River development and

superficial deposits. In *The Oxford Region. A Scientific and Historical Survey* (eds A.F. Martin and R.W. Steel), University Press, Oxford, pp. 21–4.

- Sandford, K.S. (1965) Notes on the gravels of the Upper Thames floodplain between Lechdale and Dorchester. *Proceedings of the Geologists' Association*, 76, 61–75.
- Saner, B.R.M. and Wooldridge, S.W. (1929) River development in Essex. *Essex Naturalist*, 22, 244–50.
- Sarnthein, M., Stremme, H.E. and Mangini, A. (1986) The Holstein interglaciation: time stratigraphic position and correlation to stable-isotope stratigraphy of deep-sea sediments. *Quaternary Research*, 26, 283–96.
- Schreuder, A. (1950) Microtinae from the Middle Gravels of Swanscombe. Annals and Magazine of Natural History, London, Series 12, 3, 629–35.
- Schwarcz, H.P. and Grün, R. (1988) Comment on Sarnthein, M., Stremme, H.E. and Mangini, A. 'The Holstein interglaciation: time stratigraphic position and correlation to stable-isotope stratigraphy of deep-sea sediments'. *Quaternary Research*, 29, 75–9.
- Schwertmann, U., Murad, E. and Schulze, D.G. (1982) Is there Holocene reddening (hematite formation) in soils of axeric temperate areas? *Geoderma*, 27, 209–23.
- Sealy, K.R. and Sealy, C.E. (1956) The terraces of the Middle Thames. *Proceedings of the Geologists' Association*, 67, 369–92.
- Seddon, M.B. and Holyoak, D.T. (1985) Evidence of sustained regional permafrost during deposition of fossiliferous Late Pleistocene sediments at Stanton Harcourt, Oxfordshire, England. *Proceedings of the Geologists' Association*, **96**, 53–73.
- Shackleton, N.J. (1969) The last interglacial in the marine and terrestrial records. *Proceedings of the Royal Society of London*, **B174**, 135–54.
- Shackleton, N.J. (1987) Oxygen isotopes, ice volume and sea level. *Quaternary Science Reviews*, 6, 1835–90.
- Shackleton, N.J. and Opdyke, N.D. (1973) Oxygen Isotope and palaeomagnetic stratigraphy of Equatorial Pacific Core V28–238, Oxygen Isotope temperatures and ice volumes on a 10⁵ year – 10⁶ year scale. *Quaternary Research*, 3, 39–55.
- Shackleton, N.J. and Opdyke, N.D. (1976) Oxygen-isotope and palaeomagnetic strati-

graphy of Pacific core V28–239: Late Pliocene to latest Pleistocene. *Geological Society of America Memoir*, 145, 449–64.

- Shackleton, N.J., Berger, A. and Peltier, W.R. (1990) An alternative astronomical calibration of the lower Pleistocene time scale based on ODP site 677. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, **81**, 251–61.
- Shephard, R.W. (1976) The geomorphology of a part of the Taplow and Boyn Hill Terrace sequence in south Essex. Unpublished B.Sc. thesis, City of London Polytechnic, 35 pp.
- Sherlock, R.L. (1919) Discussion of the two foregoing papers [Barrow (1919b) and Gilbert (1919a)]. Quarterly Journal of the Geological Society of London, **75**, 46–8.
- Sherlock, R.L. (1922) *The Geology of the Country around Aylesbury and Hemel Hempstead*, Memoir of the Geological Survey of Great Britain, 66 pp.
- Sherlock, R.L. (1924) The superficial deposits of south Buckinghamshire and south Hertford-shire and the old course of the Thames. *Proceedings of the Geologists' Association*, **35**, 1–28.
- Sherlock, R.L. (1929) Discussion on the alleged Pliocene of Buckinghamshire and Hertfordshire. *Proceedings of the Geologists' Association*, 40, 357–70.
- Sherlock, R.L. and Noble, A.H. (1912) On the glacial origin of the clay-with-flints of Buckinghamshire, and on the former course of the Thames. *Quarterly Journal of the Geological Society of London*, **68**, 199–212.
- Sherlock, R.L. and Noble, A.H. (1922) The Geology of the Country around Beaconsfield, Memoir of the Geological Survey of Great Britain, 59 pp.
- Sherlock, R.L. and Pocock, R.M. (1924) *The Geology of the Country around Hertford*, Memoir of the Geological Survey of Great Britain, 66 pp.
- Shotton, F.W. (1953) The Pleistocene deposits of the area between Coventry, Rugby and Leamington and their bearing upon the topographic development of the Midlands. *Philosophical Transactions of the Royal Society of London*, **B237**, 209–60.
- Shotton, F.W. (1968) The Pleistocene succession around Brandon, Warwickshire. *Philosophical Transactions of the Royal Society of London*, **B254**, 387–400.

Shotton, F.W. (1973a) The English Midlands. In

A Correlation of Quaternary Deposits in the British Isles (eds G.F. Mitchell, L.F. Penny, F.W. Shotton and R.G. West), Geological Society of London Special Report, No.4, pp. 18–22.

- Shotton, F.W. (1973b) General principles governing the subdivision of the Quaternary system. In A Correlation of Quaternary Deposits in the British Isles (eds G.F. Mitchell, L.F. Penny, F.W. Shotton and R.G. West), Geological Society of London Special Report, No.4, pp. 1–7.
- Shotton, F.W. (1977) Chronology, climate and marine record, the Devensian stage: its development, limits and substages. *Philosophical Transactions of the Royal Society of London*, **B280**, 107–18.
- Shotton, F.W. (1981) A Lower Pleistocene glaciation in England. In *Quaternary Glaciations in the Northern Hemisphere* (eds D.J. Easterbrook, P. Hansliêk, K-D. Jäger and F.W. Shotton), UNESCO International Geological Correlation Programme, Project 73/1/24, Report 7, Prague 1981, pp. 203–13.
- Shotton, F.W. (1983) Interglacials after the Hoxnian in Britain. In *Quaternary Glaciations in the Northern Hemisphere* (eds O. Billards, O. Conchon and F.W. Shotton), UNESCO – International Geological Correlation Programme, Project 73/1/24, Report 9, Paris 1982, pp. 109–15. Reproduced in *Quaternary Newsletter*, 39, 20–5.
- Shotton, F.W. (1986) Glaciations in the United Kingdom. Quaternary Science Reviews, 5, 293-7.
- Shotton, F.W. and Osborne, P.J. (1965) The fauna of the Hoxnian interglacial deposits of Nechells, Birmingham. *Philosophical Transactions of the Royal Sociey of London*, B248, 353–78.
- Shotton, F.W., Goudie, A.S., Briggs, D.J., *et al.* (1980) Cromerian interglacial deposits at Sugworth near Oxford, England, and their relation to the Plateau Drift of the Cotswolds and the terrace sequence of the Upper and Middle Thames. *Philosophical Transactions of the Royal Society of London*, **B289**, 55–86.
- Shrubsole, O.A. (1898) On some high level gravels in Berkshire and Oxfordshire. *Quarterly Journal of the Geological Society of London*, 54, 585–600.
- Shrubsole, O.A. (1906) Early Man the Palaeolithic age. In A History of the County of Berksbire (ed. W. Page), Victoria History of

the Counties of England, Vol. 1, Archibald Constable, Westminster, pp. 173–80.

- Shrubsole, O.A. and Whitaker, W. (1902) Excursion to Reading. *Proceedings of the Geologists' Association*, 17, 381–3.
- Sibrava, V. (1986a) Scandinavian glaciations in the Bohemian Massif and Carpathian foredeep and their relation to the extraglacial areas. *Quaternary Science Reviews*, 5, 381–6.
- Sibrava, V. (1986b) Correlations of European glaciations and their relation to the deep sea record. *Quaternary Science Reviews*, 5, 433–42.
- Siddiqui, Q.A. (1971) The palaeoecology of nonmarine Pleistocene Ostracoda from Fladbury, Worcestershire and Isleworth, Middlesex. In *Colloque sur la Paléoécologie des Ostracodes* (ed. H.J. Oertli), Bulletin du Centre de Recherches, Société Nationale des Pétroles d'Aquitaine, Pau, Supplément 5, pp. 331–9.
- Simmons, M.B. (1978) *The Sand and Gravel Resources of the Dengie Peninsula*. Mineral Assessment Report of the Institute of Geological Sciences 34, 90 pp.
- Simpson, I.M. and West, R.G. (1958) On the stratigraphy and palaeobotany of a Late Pleistocene organic deposit at Chelford, Cheshire. New Phytologist, 57, 239–50.
- Singer, R., Wymer, J.J., Gladfelter, B.G., et al. (1973) Excavation of the Clactonian Industry at the golf course, Clacton-on-Sea, Essex. *Proceedings of the Prehistoric Society*, 39, 6-74.
- Smith, R.A. (1911) A Palaeolithic industry at Northfleet, Kent. Archaeologia, 62, 515–32.
- Smith, R.A. (1915) Prehistoric problems in geology. Proceedings of the Geologists' Association, 26, 1-20.
- Smith R.A. (1917) Plateau deposits and implements. Proceedings of the Prehistoric Society of East Anglia, 2, 392–408.
- Smith, R.A. (1922) Flint implements of special interest. Archaeologia, 72, 25-40.
- Smith, R.A. (1923) Prehistoric Man in Kent. South East Naturalist, 28, 32-7.
- Smith, R.A. (1926) A Guide to Antiquities of the Stone Age. 3rd edn, British Museum, London, 204 pp.
- Smith, R.A. (1933) Implements from high-level gravels near Canterbury. Proceedings of the Prebistoric Society of East Anglia, 7, 165-70.
- Smith, R.H. and Dewey, H. (1913) Stratification at Swanscombe: report on excavation

made on behalf of the British Museum and HM Geological Survey. *Archaeologia*, 64, 177–204.

- Smith, R.H. and Dewey, H. (1914) The High Terrace of the Thames: report on investigations made on behalf of the British Museum and H.M. Geological Survey in 1913. *Arcbaeologia*, 65, 187–212.
- Smith, W.G. (1883) On a Palaeolithic floor at North East London. Journal of the Anthropological Institute, 13, 357–84.
- Smith, W.G. (1894) Man the Primaeval Savage: His Haunts and Relics from the Hill Tops of Bedfordshire to Blackwall. E. Stanford, London, 349 pp.
- Snelling, A.J.R. (1964) Excavations at the Globe Pit, Little Thurrock, Grays, Essex 1961. *Essex Naturalist*, **31**, 199–208.
- Snelling, A.J.R. (1975) A fossil molluscan fauna at Purfleet, Essex. *Essex Naturalist*, **33**, 104–8.
- Solomon, J.D. (1935) The Westleton Series of East Anglia; its age, distribution and relations. Quarterly Journal of the Geological Society of London, 91, 216–38.
- Sparks, B.W., West, R.G., Williams, R.B.G., et al. (1969) Hoxnian interglacial deposits near Hatfield, Herts. Proceedings of the Geologists' Association, 80, 243–67.
- Spencer, H.E.P. (1966) An Essex fossil ziphoid whale and its implications of the geographical changes in geological times. *Essex Naturalist*, **31**, 348–53.
- Spurrell, F.J.C. (1880) On the discovery of the place where Palaeolithic implements were made at Crayford. *Quarterly Journal of the Geological Society of London*, **36**, 544–8.
- Spurrell, F.J.C. (1883a) Palaeolithic knapping tools and modes of using them. *Journal of the Anthropological Institute*, **13**, 109–18.
- Spurrell, F.J.C. (1883b) Palaeolithic implements found in West Kent. Archaeologia Cantiana, 15, 89–103.
- Spurrell, F.J.C. (1886) A sketch of the history of the rivers and denudation of West Kent. *Report of the West Kent Natural History Society* [for 1886], 53–104.
- Spurrell, F.J.C. (1892) Excursion to Grays Thurrock, Essex. Proceedings of the Geologists' Association, 12, 194.
- Spurrell, F.J.C. (1893) Excursion to Dartford Heath. Proceedings of the Geologists' Association, 13, 70.
- Squirrell, H.C. (1978) The Sand and Gravel

Resources of the Country around Sonning and Henley. Berkshire, Oxfordshire and Buckinghamshire. Mineral Assessment Report of the Institute of Geological Sciences 32, 98 pp.

- Stebbing, W.P.D. (1900) Excursion to Netley Heath and Newlands Corner. *Proceedings of the Geologists' Association*, 16, 524–6.
- Stopes, C. (1903) Palaeolithic implements from the shelly gravel pit at Swanscombe, Kent. Report of the British Association for the Advancement of Science, Southport [1903], pp. 803–4.
- Stopes, H. (1900) On the discovery of *Neritina fluviatalis* with a Pleistocene fauna and worked flints in high terrace gravels of the Thames valley. *Journal of the Antbropological Institute*, 29, 302–3.
- Strand, A. (1946) Nord-Norges Coleoptera. Tromsø Museums Årsbefter Naturbistorisk, 67, 1–699.
- Straw, A. (1979) The geomorphological significance of the Wolstonian glaciation in Eastern England. *Transactions of the Institute of British Geographers*, 4, 540–9.
- Straw, A. (1983) Pre-Devensian glaciation of Lincolnshire (eastern England) and adjacent areas. *Quaternary Science Reviews*, 2, 239–60.
- Stringer, C.B. (1974) Population relationships of later Pleistocene hominids: a multivariate study of available crania. *Journal of Archaeological Science*, 1, 317–42.
- Stringer, C.B. (1978) Some problems in Middle and Upper Pleistocene hominid relationships. In *Recent Advances in Primatology*. *Volume 3. Evolution* (eds D.J. Chivers and K. Joysen), Academic Press, London, pp. 395–418.
- Stringer, C.B. (1983) Our Fossil Relatives More About Man's Place in Evolution, British Museum (Natural History), London, 23 pp.
- Stringer, C.B. (1985) The Swanscombe fossil skull. In *The Story of Swanscombe Man* (ed. K.L. Duff), Kent County Council and Nature Conservancy Council, pp. 14–19.
- Stringer, C.B. (1986) The British fossil hominid record. In *Recent Studies in the Palaeolithic* of Britain and its Nearest Neighbours (ed. S.N. Collcutt), J.R. Collis Publications, Department of Archaeology and Prehistory, Sheffield University, pp. 59–61.

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al. (1986) Age of Pleistocene faunas from Bacon Hole, Wales. *Nature*, *London*, 320, 59–62.

- Stringer, C.B., Hublin, J.J. and Vandermeersch, B.V. (1984) The origin of anatomically modern humans. In *The Origins of Modern Humans* (eds F.H. Smith and F. Spencer), Alan Liss, New York, pp. 51–135.
- Stuart, A.J. (1974) Pleistocene history of the British vertebrate fauna. *Biological Reviews*, 49, 225–66.
- Stuart, A.J. (1975) The vertebrate fauna of the type Cromerian. *Boreas*, 4, 63–76.
- Stuart, A.J. (1976) The history of the mammal fauna during the Ipswichian/Last Interglacial in England. *Philosophical Transactions of the Royal Society of London*, **B276**, 221–50.
- Stuart, A.J. (1980) The vertebrate fauna from the interglacial deposits at Sugworth, near Oxford. *Philosophical Transactions of the Royal Society of London*, B289, 87–97.
- Stuart, A.J. (1981) A comparison of the middle Pleistocene mammal faunas of Voigtstedt (Thüringia, German Democratic Republic) and West Runton (Norfolk, England), *Quartärpaläeontologie, Berlin*, 4, 155–63.
- Stuart, A.J. (1982a) Pleistocene Vertebrates of the British Isles, Longman, London, 212 pp.
- Stuart, A.J. (1982b) Pleistocene occurrences of hippopotamus in Britain. *Quartärpaläeontologie, Berlin*, 6, 209–18.
- Stuart, A.J. (1988) Preglacial Pleistocene vertebrate faunas in East Anglia. In *Pliocene-Middle Pleistocene of East Anglia* (eds P.L. Gibbard and J.A. Zalasiewicz), Field Guide, Quaternary Research Association, Cambridge, pp. 57–64.
- Stuart, A.J. (1991) Mammalian extinctions in the Late Pleistocene of northern Eurasia and North America. *Biological Reviews*, 66, 453–562.
- Stuart, A.J. and West, R.G. (1976) Late Cromerian fauna and flora at Ostend, Norfolk. *Geological Magazine*, 113, 469–73.
- Sturdy, R.G., Allen, R.H., Bullock, P., et al. (1978) Palaeosols developed on Chalky Boulder Clay. Journal of Soil Science, 30, 117–37.
- Sumbler, M.G. (1983a) A new look at the type Wolstonian glacial deposits of Central England. *Proceedings of the Geologists' Association*, 94, 23–31.
- Sumbler, M.G. (1983b) The type Wolstonian sequence some further comments. *Quater-*

nary Newsletter, 40, 36-9.

- Sutcliffe, A.J. (1960) Joint Mitnor Cave, Buckfastleigh. *Transactions of the Torquay Natural History Society*, **13**, 1–26.
- Sutcliffe, A.J. (1964) The mammalian fauna. In The Swanscombe Skull: a Survey of Research on a Pleistocene Site (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, pp. 85–111.
- Sutcliffe, A.J. (1974) The caves of south Devon. In *Exeter Field Guide* (ed. A. Straw), Quaternary Research Association, Cambridge, pp. 8–10.
- Sutcliffe, A.J. (1975) A hazard in the interpretation of glacial-interglacial sequences. *Quaternary Newsletter*, 17, 1–3.
- Sutcliffe, A.J. (1976) The British glacial-interglacial sequence: a reply. *Quaternary Newsletter*, 18, 1–7.
- Sutcliffe, A.J. (1985) On the Track of Ice Age Mammals, British Museum (Natural History), London, 224 pp.
- Sutcliffe, A.J. and Bowen, D.Q. (1973) Preliminary report on excavations in Minchin Hole, April–May 1973. *Newsletter of the William Pengelly Cave Studies Trust*, **21**, 12–25.
- Sutcliffe, A.J. and Kowalski, K. (1976) Pleistocene rodents of the British Isles. Bulletin of the British Museum of Natural History (Geology), 27, 33–147.
- Sutcliffe, A.J., Currant, A.P. and Oakley, K.P. (1979) Some little known and potentially important Middle and Upper Pleistocene mammalian localities in Essex. *Quaternary Newsletter*, 29, 5–12.
- Swanscombe Committee (1938) Report on the Swanscombe skull. *Journal of the Royal Anthropological Institute*, **68**, 17–98.
- Szabo, B.J. and Collins, D. (1975) Ages of fossil bones from British interglacial sites. *Nature*, *London*, 254, 680–2.
- Tester, P.J. (1951) Palaeolithic flint implements from Bowman's Lodge Gravel Pit, Dartford Heath. Archaeologia Cantiana, 63, 122–34.
- Tester, P.J. (1953) The discovery of Acheulian implements in the deposits of the Dartford Heath terrace. *Archaeologia Cantiana*, 66, 72-6.
- Tester, P.J. (1955) Destruction of Rickson's Pit, Swanscombe. *Archaeologia Cantiana*, 69, 216–7.
- Tester, P.J. (1958) The age of the Baker's Hole industry. *Archaeological Newsletter*, 6, 123–5.

- Tester, P.J. (1975) Further consideration of the Bowman's Lodge industry. *Archaeologia Cantiana*, **91**, 29–39.
- Thomas, M.F. (1961) River terraces and drainage development in the Reading area. *Proceedings of the Geologists' Association*, 72, 415–36.
- Tomlinson, M.E. (1929) The drifts of the Stour-Evenlode watershed and their extension into the valleys of the Warwickshire Stour and Upper Evenlode. *Proceedings of the Birmingbam Natural History and Philosophical Society*, **15**, 157–96.
- Tomlinson, M.E. (1963) The Pleistocene chronology of the Midlands. Proceedings of the Geologists' Association, 74, 187–202.
- Treacher, L. (1896) Palaeolithic Man in east Berkshire. Berks., Bucks. and Oxon. Archaeological Journal, New Series, 2, 16–8 and 39–43.
- Treacher, L. (1904) On the occurrence of stone implements in the Thames valley between Reading and Maidenhead. *Man*, 4, 17–20.
- Treacher, L. (1909) Excursion to Maidenhead. Proceedings of the Geologists' Association, 21, 198–201.
- Treacher, L. (1916) Excursion to Bourne End. Proceedings of the Geologists' Association, 27, 107–9.
- Treacher, L. (1926) Excursion to Shiplake. Proceedings of the Geologists' Association, 37, 440-1.
- Treacher, L. (1934) Field meeting in the Marlow district. *Proceedings of the Geologists'* Association, 45, 107–8.
- Treacher, M.S., Arkell, W.J. and Oakley, K.P. (1948) On the ancient channel between Caversham and Henley, Oxfordshire, and its contained flint implements. *Proceedings of the Prebistoric Society*, 14, 126–54.
- Trimmer, J. (1853) On the origin of the soils which cover the Chalk of Kent. Part 3. Quarterly Journal of the Geological Society of London, 9, 286–96.
- Trimmer, W.K. (1813) An account of some organic remains found near Brentford, Middlesex. *Philosophical Transactions of the Royal Society of London*, **53**, 131–7.
- Tucker, E.V. and Greensmith, J.T. (1973) South East Essex. A. East Mersea. In *The Estuarine Region of Suffolk and Essex* (eds J.T. Greensmith, R.G. Blezard, C.R. Bristow, *et al.*), Geologists' Association Guide 12, pp. 12–7.

Turner, C. (1970) The Middle Pleistocene

deposits at Marks Tey, Essex. *Philosophical Transactions of the Royal Society of London*, **B257**, 373–440.

- Turner, C. (1973) Eastern England. In A Correlation of Quaternary Deposits in the Britisb Isles (eds G.F. Mitchell, L.F. Penny, F.W. Shotton and R.G. West), Geological Society of London Special Report, No.4, pp. 8–18.
- Turner, C. (1975) The correlation and duration of the Middle Pleistocene interglacial periods in North-west Europe. In After the Australopithecines: Stratigraphy, Ecology and Culture Change in the Middle Pleistocene (eds K.W. Butzer and G.L. Isaac), Mouton, The Hague, pp. 259–308.
- Turner, C. (1983) Nettlebed interglacial deposits. In *Diversion of the Thames* (ed. J. Rose), Field Guide, Quaternary Research Association, Cambridge, pp. 66–8.
- Turner, C. (1985) Problems and pitfalls in the application of palynology to Pleistocene archaeological sites in western Europe. In *Palynologie Archéologique* (eds J. Renault-Miskovsky, Bui-Thi-Mai and M. Girard), Actes des Journées du 25-26-27 janvier 1984, Éditions du Centre National de la Recherche Scientifique, Paris, pp. 347–73.
- Turner, C. and Kerney, M.P. (1971) The age of the freshwater beds of the Clacton Channel. *Journal of the Geological Society of London*, 127, 87–93.
- Tyldesley, J.A. (1986a) The Wolvercote Channel handaxe assemblage: a comparative study. *British Archaeological Report, British Series*, **153**, 211 pp.
- Tyldesley, J.A. (1986b) A re-assessment of the handaxe assemblage recovered from the Wolvercote Channel, Oxford. In *Recent Studies in the Palaeolithic of Britain and its Nearest Neighbours* (ed. S.N. Collcutt), J.R. Collis Publications, Department of Archaeology and Prehistory, Sheffield University, pp. 23–5.
- Tyldesley, J.A. (1988) Quartzite implements recovered from the Wolvercote Channel, Oxfordshire. *In* Non-flint stone tools and the Palaeolithic occupation of Britain (eds R.J. MacRae and N. Moloney), *British Archaeological Report, British Series*, **189**, 159–66.
- Tylor, A. (1869) On Quaternary gravels. Quarterly Journal of the Geological Society of London, 25, 57–100.
- Underwood, W. (1913) A discovery of Pleisto-

cene bones and flint implements in a gravel pit at Dovercourt, Essex. *Proceedings of the Prehistoric Society of East Anglia*, 1, 360–8.

- Vallois, H.V. (1954) Neandertals and Praesapiens. Journal of the Royal Anthropological Institute, 84, 111–30.
- Vallois, H.V. (1958) La Grotte de Fontécherade: Part 2, Anthropologie. Archives de l'Institut de Palaéontologie Humaine, Paris, Memoire No. 29, pp. 157–64.
- Waechter, J. d'A (1969) Swanscombe 1968. Proceedings of the Royal Anthropological Institute [for 1968], pp. 53–8.
- Waechter, J. d'A. (1970) Swanscombe 1969. Proceedings of the Royal Anthropological Institute [for 1969], pp. 83–5.
- Waechter, J. d'A. (1971) Swanscombe 1970. Proceedings of the Royal Anthropological Institute [for 1970], pp. 43–9.
- Waechter, J. d'A. (1972) Swanscombe 1971. Proceedings of the Royal Anthropological Institute [for 1971], pp. 73–8.
- Waechter, J. d'A. (1973) The Late Middle Acheulian industries in the Swanscombe area. In Archaeological Theory and Practice (ed. D.E. Strong), Seminar Press, London and New York, pp. 67–86.
- Walder, P.S. (1967) The composition of the Thames gravels near Reading, Berkshire. *Proceedings of the Geologists' Association*, 78, 107–19.
- Walker, H. (1871) On the glacial drifts of North London. Proceedings of the Geologists' Association, 2, 289–93.
- Ward, G.R. (1984) Interglacial fossils from Upminster, Essex. London Naturalist, 3, 24–6.
- Warren, S.H. (1911) Palaeolithic wooden spear from Clacton. Quarterly Journal of the Geological Society of London, 67, cxix.
- Warren, S.H. (1912) Palaeolithic remains from Clacton-on-Sea, Essex. Essex Naturalist, 17, 15.
- Warren, S.H. (1917) The study of pre-history in Essex as recorded in the publications of the Essex Field Club. *Essex Naturalist*, **18**, 145–52.
- Warren, S.H. (1922) The Mesvinian industry of Clacton-on-Sea. Proceedings of the Prebistoric Society of East Anglia, 3, 597–602.
- Warren, S.H. (1923a) The Elephas-antiquus bed of Clacton-on-Sea (Essex) and its flora and fauna. Quarterly Journal of the Geological Society of London, 79, 606–36.

Warren, S.H. (1923b) The sub-soil flint flaking

sites at Grays. Proceedings of the Geologists' Association, 34, 38–42.

- Warren, S.H. (1923c) Sub-soil pressure flaking. Proceedings of the Geologists' Association, 34, 153–75.
- Warren, S.H. (1924a) Pleistocene classifications. Proceedings of the Geologists' Association, 35, 265–82.
- Warren, S.H. (1924b) The elephant-bed of Clacton-on-Sea. Essex Naturalist, 21, 32–40.
- Warren, S.H. (1926) The classification of the Lower Palaeolithic with especial reference to Essex. South East Naturalist, 31, 38–50.
- Warren, S.H. (1933) The Palaeolithic industries of the Clacton and Dovercourt districts. *Essex Naturalist*, 24, 1–29.
- Warren, S.H. (1940) Geological and prehistoric traps. *Essex Naturalist*, 27, 2–19.
- Warren, S.H. (1942) The drifts of south-western Essex. Parts I and II. Essex Naturalist, 27, 154–79.
- Warren, S.H. (1945) Some geological and prehistoric records on the north-west border of Essex. *Essex Naturalist*, 27, 273–80.
- Warren, S.H. (1951) The Clacton flint industry: a new interpretation. Proceedings of the Geologists' Association, 62, 107–35.
- Warren, S.H. (1955) The Clacton (Essex) channel deposits. Quarterly Journal of the Geological Society of London, 111, 283–307.
- Warren, S.H. (1957) On the early pebble gravels of the Thames Basin from the Hertfordshire-Essex border to Clacton-on-Sea. *Geological Magazine*, 94, 40–6.
- Warren, S.H. (1958) The Clacton flint industry: A supplementary note. *Proceedings of the Geologists' Association*, 69, 123–9.
- Webb, W.M. (1894) Museum notes: Pleistocene non-marine Mollusca from Walton-on-the-Naze. Essex Naturalist, 8, 160–2.
- Webb, W.M. (1900) Pleistocene non-marine Mollusca from Clacton-on-Sea, Essex. Essex Naturalist, 11, 225–9.
- Wehmiller, J.F. (1982) A review of amino acid racemization studies in Quaternary molluscs: stratigraphic and chronological applications in coastal and interglacial sites. Pacific and Atlantic coasts, United States, United Kingdom, Baffin Island and tropical islands. *Quaternary Science Reviews*, 1, 83–120.
- Weidenreich, F. (1940) The *torus occipitalis* and related structures and their transformations in the course of human evolution. *Bulletin of*

the Geological Society of China, 19, 480–558.

- Weidenreich, F. (1943) The skull of Sinantbropus pekinensis: a comparative study on a primitive hominid skull. Palaeontologia Sinica, New Series D, 10, 1–485.
- Weiner, J.S. and Campbell, B.G. (1964) The taxonomic status of the Swanscombe skull. In *The Swanscombe Skull: a Survey of Research on a Pleistocene Site* (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, pp. 175–209.
- Weir, A.H., Catt, J.A. and Madgett, P.A. (1971) Postglacial soil formation in the loess of Pegwell Bay, Kent (England), *Geoderma*, **5**, 131–49.
- Wenban-Smith, F.F. (1990) The location of Baker's Hole. Proceedings of the Prehistoric Society, 56, 11–14.
- West, R.G. (1956) The Quaternary deposits at Hoxne, Suffolk. *Philosophical Transactions* of the Royal Society of London, **B239**, 265–356.
- West, R.G. (1963) Problems of the British Quaternary. *Proceedings of the Geologists' Association*, 74, 147–86.
- West, R.G. (1968) *Pleistocene Geology and Biology*, 1st edn, Longman, London, 379 pp.
- West, R.G. (1969) Pollen analyses from interglacial deposits at Aveley and Grays, Essex. *Proceedings of the Geologists' Association*, **80**, 271–82.
- West, R.G. (1972) Relative land-sea-level changes in south eastern England during the Pleistocene. *Philosophical Transactions* of the Royal Society of London, A272, 87–98.
- West, R.G. (1977) *Pleistocene Geology and Biology*, 2nd edn, Longman, London, 440 pp.
- West, R.G. (1980) *The Pre-glacial Pleistocene of the Norfolk and Suffolk Coasts*, Cambridge University Press, 203 pp.
- West, R.G. (1988) The record of the cold stages. *Philosophical Transactions of the Royal Society of London*, **B318**, 505–22.
- West, R.G. and Donner, J.J. (1956) The glaciations of East Anglia and the East Midlands: a differentiation based on stone orientation measurements of the tills. *Quarterly Journal* of the Geological Society of London, 112, 69–91.
- West, R.G., Lambert, C.A. and Sparks, B.W. (1964) Interglacial deposits at Ilford, Essex.

Philosophical Transactions of the Royal Society of London, B247, 185–212.

- West, R.G., Dickson, C.A., Catt, J.A., et al. (1974) Late Pleistocene deposits at Wretton, Norfolk. II. Devensian deposits. *Philosophical Transactions of the Royal Society of London*, B267, 337–420.
- Whitaker, W. (1862) On the western end of the London Basin; on the westerly thinning of the Lower Eocene beds in that basin; and of the Grey Wethers of Wiltshire. *Quarterly Journal of the Geological Society of London*, 18, 258–74.
- Whitaker, W. (1864) The Geology of Parts of Middlesex, Hertfordshire, Buckinghamshire, Berkshire and Surrey, Memoir of the Geological Survey of Great Britain, 112 pp.
- Whitaker, W. (1875) *Guide to the Geology of London and the Neighbourbood*, Memoir of the Geological Survey of Great Britain, 72 pp.
- Whitaker, W. (1877) *The Geology of the Eastern End of Essex*. Memoir of the Geological Survey of Great Britain, 32 pp.
- Whitaker, W. (1884) *Guide to the Geology of London and the Neighbourhood*, 4th edn, Memoir of the Geological Survey of Great Britain, 98 pp.
- Whitaker, W. (1889) *The Geology of London and Parts of the Thames Valley*, Volume 1, Memoir of the Geological Survey of Great Britain, 556 pp.
- White, H.J.O. (1892) Notes on the Westleton Beds near Henley-on-Thames. *Proceedings of the Geologists' Association*, **12**, 379–84.
- White, H.J.O. (1895) On the distribution and relations of the Westleton and glacial gravels in Oxfordshire and Berkshire. *Proceedings of the Geologists' Association*, 14, 11–23.
- White, H.J.O. (1897) On the origin of the high-level gravel with Triassic debris adjoining the valley of the Upper Thames. *Proceedings of the Geologists' Association*, **15**, 157–74.
- White, H.J.O. (1902) On the peculiarity in the course of certain streams in the London and Hampshire Basins. *Proceedings of the Geologists' Association*, **17**, 399–413.
- White, H.J.O. (1906) On the occurrence of quartzose gravel in the Reading Beds at Lane End, Bucks. *Proceedings of the Geologists' Association*, **19**, 371–7.
- White, H.J.O. (1907) The Geology of the Country around Hungerford and Newbury. Memoir

of the Geological Survey of Great Britain, 150 pp.

- White, H.J.O. (1908a) Eocene. In *The Geology of the Country around Henley on Thames and Wallingford* (eds A.J. Jukes-Browne and H.J.O. White), Memoir of the Geological Survey of Great Britain, pp. 58–76.
- White, H.J.O. (1908b) Scenery and superficial deposits. In *The Geology of the Country around Henley on Thames and Wallingford* (eds A.J. Jukes-Browne and H.J.O. White), Memoir of the Geological Survey of Great Britain, pp. 77–103.
- Whiteman, C.A. (1983) Great Waltham. In *Diversion of the Thames* (ed. J. Rose), Field guide, Quaternary Research Association, Cambridge, pp. 163–9.
- Whiteman, C.A. (1987) Till lithology and genesis near the southern margin of the Anglian ice sheet in Essex, England. In *Tills and Glaciotectonics* (ed. J.J.M. Van der Meer), A.A. Balkema, Rotterdam, pp. 55–66.
- Whiteman, C.A. (1990) Early and Middle Pleistocene stratigraphy and soils in central Essex, England. Unpublished Ph.D. thesis, University of London.
- Whiteman, C.A. and Kemp, R.A. (1990) Pleistocene sediments, soils and landscape evolution at Stebbing, Essex. *Journal of Quaternary Science*, **5**, 145–61.
- Wiegank, K. Von.F. (1972) Ekologische Analyse quartärer Foraminiferen. *Geologie* 21, 7, 1–111.
- Wilson, D. and Lake, R.D. (1983) Field meeting to north Essex and west Suffolk, 20–22 June, 1980. Proceedings of the Geologists' Association, 94, 75–9.
- Wiseman, C.R. (1978) A palaeoenvironmental reconstruction of part of the Lower Thames terrace sequence based on sedimentological studies from Aveley, Essex. Unpublished M.Sc. thesis, City of London Polytechnic and Polytechnic of North London.
- Wolpoff, M.H. (1971) Is Vértessozöllös an occipital of *Homo erectus*? *Nature*, *London*, 232, 867–8.
- Wood, S.V. (1848) Introduction, v-xii. In A Monograph of the Crag Mollusca, or Descriptions of Shells from the Middle and Upper Tertiaries of the East of England, Part 1 Univalves (S.V. Wood), Monograph of the Palaeontographical Society, London, 208 pp.
- Wood, S.V., Jun. (1866a) On the structure of the Thames valley and its contained deposits. I

and II. Geological Magazine, 3, 57-63 and 99-107.

- Wood, S.V., Jun. (1866b) On the structure of the valleys of the Blackwater and the Crouch and of the East Essex Gravel, and on the relation of this gravel to the denudation of the Weald. *Geological Magazine*, **3**, 348–54 and 398–406.
- Wood, S.V., Jun. (1867) On the structure of the Postglacial deposits of the south-east of England. Quarterly Journal of the Geological Society of London, 23, 394–417.
- Wood, S.V., Jun. (1868) On the pebble-beds of Middlesex, Essex and Herts. Quarterly Journal of the Geological Society of London, 24, 464–72.
- Wood, S.V., Jun. (1870) Observations on the sequence of the glacial beds. *Geological Magazine*, 7, 17–22 and 61–8.
- Wood, S.V., Jun. (1872) On the climate of the Post-Glacial Period. *Geological Magazine*, 9, 153–61.
- Wood, S.V., Jun. and Harmer, F.W. (1868) On the Glacial and Post-Glacial structure of Norfolk and Suffolk. *Geological Magazine*, 5, 452.
- Wood, S.V., Jun. and Harmer, F.W. (1872) An outline of the geology of the Upper Tertiaries of East Anglia. *In* Supplement to the Monograph of the Crag Mollusca (ed. S.V. Wood), *Monograph of the Palaeontolographical Society*, 3, 2–31.
- Woodland, A.W. (1970) The buried tunnelvalleys of East Anglia. Proceedings of the Yorkshire Geological Society, 37, 521–78.
- Woodward, B.B. (1890) On the Pleistocene (non-marine) Mollusca of the London district. Proceedings of the Geologists' Association, 11, 335–87.
- Woodward, H.B. (1904) Excursion to Upminster, Great Warley and Brentwood. Proceedings of the Geologists' Association, 18, 479–86.
- Woodward, H.B. (1909) *The Geology of the London District*, 1st edn, Memoir of the Geological Survey of Great Britain, 142 pp.
- Woodward, H.B. and Davies, W. (1874) Note on the Pleistocene deposits yielding mammalian remains in the vicinity of Ilford, Essex. *Geological Magazine*, 1, 390–8.
- Woodward, H.B., Bromehead, C.E.N. and Chatwin, C.P. (1922) *The Geology of the London District*, 2nd edn, Memoir of the Geological Survey of Great Britain, 99 pp.

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- Wooldridge, S.W. (1927a) The Pliocene history of the London Basin. *Proceedings of the Geologists' Association*, **38**, 49–132.
- Wooldridge, S.W. (1927b) The Pliocene Period in western Essex and the Pre-glacial topography of the district. *Essex Naturalist*, **21**, 247–68.
- Wooldridge, S.W. (1928) The 200-foot platform in the London Basin. *Proceedings of the Geologists' Association*, 39, 1–26.
- Wooldridge, S.W. (1938) The glaciation of the London Basin, and the evolution of the Lower Thames drainage system. *Quarterly Journal of the Geological Society of London*, 94, 627–64.
- Wooldridge, S.W. (1957) Some aspects of the physiography of the Thames valley in relation to the Ice Age and early Man. *Proceedings of the Prebistoric Society*, 23, 1–19.
- Wooldridge, S.W. (1960) The Pleistocene succession in the London Basin. Proceedings of the Geologists' Association, 71, 113–29.
- Wooldridge, S.W. and Ewing, C.J.C. (1935) The Eocene and Pleistocene deposits of Lane End, Bucks. *Quarterly Journal of the Geological Society of London*, 41, 293–317.
- Wooldridge, S.W. and Gill, D.M.C. (1925) The Reading Beds of Lane End, Bucks., and their bearing on some unsolved questions of London geology. *Proceedings of the Geologists' Association*, 36, 146–73.
- Wooldridge, S.W. and Henderson, H.C.K. (1955) Some aspects of the physiography of the eastern part of the London Basin. *Transactions of the Institute of British Geographers*, 21, 19–31.
- Wooldridge, S.W. and Linton, D.L. (1939) Structure, Surface and Drainage in South-east England. Transactions of the Institute of British Geographers, No. 10, 124 pp.
- Wooldridge, S.W. and Linton, D.L. (1955) Structure, Surface and Drainage in Southeast England, 2nd edn, G. Phillip, London, 176 pp.
- Wright, W.B. (1937) *The Quaternary Ice Age*, Macmillan, London, 478 pp.
- Wymer, B.O. (1955) The discovery of the right pariental bone at Swanscombe. *Man*, 55, 124.
- Wymer, J.J. (1956) Palaeoliths from the gravel of the Ancient Channel between Caversham and Henley at Highlands, near Henley. *Proceedings of the Prehistoric Society*, 22, 29–36.

- Wymer, J.J. (1957) A Clactonian flint industry at Little Thurrock, Grays, Essex. Proceedings of the Geologists' Association, 68, 159–77.
- Wymer, J.J. (1958) Archaeological notes from Reading Museum: Highlands, Henley. Berkshire Archaeological Journal, 56, 56–7.
- Wymer, J.J. (1959) Archaeological notes from the Reading Museum: Henley. *Berkshire Archaeological Journal*, **57**, 121–2.
- Wymer, J.J. (1960) Archaeological notes from the Reading Museum: Henley. *Berksbire Archaeological Journal*, **58**, 52–8.
- Wymer, J.J. (1961) The Lower Palaeolithic succession in the Thames valley and the date of the Ancient Channel between Caversham and Henley, Oxfordshire. *Proceedings of the Prebistoric Society*, **27**, 1–27.
- Wymer, J.J. (1962) Archaeological notes from the Reading Museum: Rotherfield Peppard, Oxon. *Berkshire Archaeological Journal*, 60, 114–5.
- Wymer, J.J. (1964a) Archaeological notes from the Reading Museum: Rotherfield Peppard, Oxon. Berkshire Archaeological Journal, 61, 96–7.
- Wymer, J.J. (1964b) Excavations at Barnfield Pit, 1955–1960. In *The Swanscombe Skull: a Survey of Research on a Pleistocene Site* (ed. C.D. Ovey), Royal Anthropological Institute, Occasional Paper No. 20, pp. 19–60.
- Wymer, J.J. (1968) Lower Palaeolithic Archaeology in Britain, as Represented by the Thames Valley, John Baker, London, 429 pp.
- Wymer, J.J. (1974) Clactonian and Acheulian industries in Britain – their chronology and significance. *Proceedings of the Geologists'* Association, 85, 391–421.
- Wymer, J.J. (1976) Highlands Farm Pit, Rotherfield Peppard. In *Field Guide to the Oxford Region* (ed. D.A. Roe), Quaternary Research Association, Oxford, pp. 48–9.
- Wymer, J.J. (1977a) Highlands Farm, Rotherfield Peppard. In South East England and the Thames Valley (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 24–8.
- Wymer, J.J. (1977b) Sulhamstead. In *South East England and the Thames Valley* (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 11–2.

- Wymer, J.J. (1977c) Furze Platt. In South East England and the Thames Valley (eds E.R. Shephard-Thorn and J.J. Wymer), Guide Book for excursion A5, X INQUA Congress, Birmingham, Geoabstracts, Norwich, pp. 30–4.
- Wymer, J.J. (1981) The Palaeolithic. In *The Environment in British Prehistory* (eds I.G. Simmons and M.J. Tooley), Duckworth, pp. 49-81.
- Wymer, J.J. (1985a) Early Man in Britain time and change. *Modern Geology*, 9, 261–72.
- Wymer, J.J. (1985b) *The Palaeolithic Sites of East Anglia*, Geobooks, Norwich, 440 pp.
- Wymer, J.J. (1988) Palaeolithic archaeology and the British Quaternary sequence. *Quaternary Science Reviews*, 7, 79–98.
- Wymer, J.J. and Singer, R. (1970) The first season of excavations at Clacton-on-Sea, Essex, England: a brief report. *World Archaeology*, **2**, 12–16.
- Zagwijn, W.H. (1973) Pollen analytic studies of Holsteinian and Saalian Beds in the northern Netherlands. *Mededelingen Rijks Geologische Dienst, New Series*, 24, 139–56.
- Zagwijn, W.H. (1978) A macroflora of Holsteinian age from the northern part of the Netherlands. *Review of Paleobotany and Palynology*, 26, 243–8.
- Zagwijn, W.H. (1985) An outline of the Quaternary Stratigraphy of the Netherlands. *Geologie en Mijnbouw*, **50**, 41–58.
- Zagwijn, W.H. (1986) The Pleistocene of the Netherlands with special reference to glacia-

tion and terrace formation. *Quaternary Science Reviews*, **5**, 341–6.

- Zagwijn, W.H., Montfrans, H.M. Van and Zandrsta, J.G. (1971) Subdivision of the 'Cromerian' in the Netherlands; pollen analysis, palaeomagnetism and sedimentary petrology. *Geologie en Mijnbouw*, **50**, 41–58.
- Zalasiewicz, J.A. and Gibbard, P.L. (1988) The Pliocene to early Middle Pleistocene of East Anglia: an overview. In *Pliocene–Middle Pleistocene of East Anglia* (eds P.L. Gibbard and J.A. Zalasiewicz), Field Guide, Quaternary Research Association, Cambridge, pp. 1–31.
- Zeuner, F.E. (1945) *The Pleistocene Period: its Climate, Chronology and Faunal Successions*, 1st edn, Ray Society, Publication No. 130, London, 322 pp.
- Zeuner, F.E. (1946) Dating the Past: an Introduction to Geochronology. Methuen, London, 444 pp.
- Zeuner, F.E. (1954) Riss or Würm? *Eiszeitalter* und Gegenwart, 4, 98–105.
- Zeuner, F.E. (1955) Loess and Palaeolithic chronology. *Proceedings of the Prehistoric Society*, **21**, 51–64.
- Zeuner, F.E. (1958) *Dating the Past: An Introduction to Geochronology*, 4th edn, Methuen, London, 516 pp.
- Zeuner, F.E. (1959) The Pleistocene Period: its Climate, Chronology and Faunal Successions, 2nd edn, Hutchinson, London, 447 pp.

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