
References

- AALBERSBERG, G, and LITT, T. 1998. Multiproxy climate reconstructions for the Eemian and Early Weichselian. *Journal of Quaternary Science*, Vol. 13, 367–390.
- ABER, J S, CROOT, D G, and FENTON, F M. 1989. *Glaciotectonic landforms and structures*. (Dordrecht, The Netherlands: Kluwer Academic Publishers.)
- AITKEN, A M. 1983. A preliminary study of the sand and gravel deposits of Strathmore (1:25 000 sheets NN72, 82, 92 and parts of 71, 81 and 91: sheets NO03, 14, 24, 25, 34, 35, 45, 55, 56, 64, 65, 66, 67, 75, 76, 77, 86, 87, 88 and parts of NO02, 04, 12, 13, 23, 36, 44, 46, 54 and 78). *Institute of Geological Sciences, Industrial Mineral Assessment Unit, Open File Report, WF/SC/83/5*.
- AITKEN, A M, MERRITT, J W, and SHAW, A J. 1979. The sand and gravel resources of the country around Garmouth, Grampian Region. Description of 1:25 000 resource Sheet NJ36. *Mineral Assessment Report of the Institute of Geological Sciences*, No. 41.
- AITKEN, J F. 1991. Sedimentology and palaeoenvironmental significance of late Devensian to mid Holocene deposits in the Don valley, north-east Scotland. Unpublished PhD thesis, University of Aberdeen.
- AITKEN, J F. 1993. A re-appraisal of supposed iceberg 'dump' and 'grounding' structures from Pleistocene glaciolacustrine sediments, Aberdeenshire. *Quaternary Newsletter*, Vol. 71, 1–10.
- AITKEN, J F. 1995. Lithofacies and depositional history of a Late Devensian ice-contact deltaic complex, northeast Scotland. *Sedimentary Geology*, Vol. 99, 111–130.
- AITKEN, J F. 1998. Sedimentology of Late Devensian glaciofluvial outwash in the Don Valley, Grampian Region. *Scottish Journal of Geology*, Vol. 34, 97–117.
- ALLEY, R B, and MACAYEAL, D R. 1994. Ice-rafted debris associated with binge-purge oscillations of the Laurentide Ice Sheet. *Palaeoceanography*, Vol. 9, 503–511.
- ALLEY, R B, and ten others. 1993. Abrupt increase in Greenland snow accumulation at the end of the Younger Dryas event. *Nature*, Vol. 362, 527–529.
- ALVERSON, K, and OLDFIELD, F. 2000. Past global changes and their significance for the future: an introduction. *Quaternary Science Reviews*, Vol. 19, 3–7.
- ANDERSON, J G C. 1943. Sands and gravels of Scotland. Quarter-inch Sheet 9 Elgin–Banff–Aberdeen. *Wartime Pamphlet of the Geological Survey of Great Britain*, No. 30.
- ANDERSON, J G C. 1945. Sands and gravels of Scotland: Quarter-Inch Sheet 12, Stonehaven–Perth–Dundee. *Wartime Pamphlet of the Geological Survey of Great Britain*, No. 30.
- ANDERTON, R, BRIDGES, P H, LEEDER, M R, and SELLWOOD, B W. 1979. *A dynamic stratigraphy of the British Isles*. (London: Allen and Unwin.)
- ANDREWS, I J, and six others. 1990. *United Kingdom offshore regional report: the geology of the Moray Firth*. (London: HMSO for the British Geological Survey.)
- ANSARI, M H. 1992. Stratigraphy and palaeobotany of Middle Pleistocene interglacial deposits in the North Sea. Unpublished PhD thesis, University Wales; Bangor.

- ARMSTRONG, M, and PATERSON, I B. 1985. Some recent discoveries of ice-wedge cast networks in north-east Scotland — a comment. *Scottish Journal of Geology*, Vol. 21, 107–108.
- ARMSTRONG, M, PATERSON, I B, and BROWNE, M A E. 1985. Geology of the Perth and Dundee district. *Memoir of the British Geological Survey*, Sheets 48W, 48E and 49 (Scotland).
- ASHCROFT, W A, and WILSON, C D V. 1976. A geophysical survey of the Turriff basin of the Old Red Sandstone, Aberdeenshire. *Journal of the Geological Society of London*, Vol. 132, 27–43.
- ASHCROFT, W A, and MUNRO, M. 1978. The structure of the eastern part of the Inch mafic intrusion, Aberdeenshire. *Scottish Journal of Geology*, Vol. 14, 55–79.
- ASHWORTH, J R. 1975. The sillimanite zones of the Huntly–Portsoy area in the north-east Dalradian, Scotland. *Geological Magazine*, Vol. 112, 113–136.
- ATKINSON, T C, BRIFFA, K R, and COOPE, G R. 1987. Seasonal temperatures in Britain during the last 22 000 years, reconstructed using beetle remains. *Nature, London*, Vol. 325, 587–593.
- AUSTIN, W E N, and KROON, D. 1996. Late glacial sedimentology, foraminifera and stable isotope stratigraphy of the Hebrides continental shelf, northwest Scotland. 187–213 in *Late Quaternary Palaeoceanography of the North Atlantic Margins*.
- ANDREWS, J T, and AUSTIN, W E N, BERGSTEN, H, and JENNINGS, A E (editors). *Geological Society, Special Publication*, No. 111.
- AUTON, C A. 1992. The utility of conductivity surveying and resistivity sounding in evaluating sand and gravel deposits and mapping drift sequences in northeast Scotland. *Engineering Geology*, Vol. 32, 11–28.
- AUTON, C A. 2000. The Buchan Gravels Formation. 79–81 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- AUTON, C A, and CROFTS, R G. 1986. The sand and gravel resources of the country around Aberdeen, Grampian Region. Description of 1:25 000 resource sheets NJ71, 80, 81 and 91, with parts of NJ61, 90 and 92, and with parts of NO89 and 99. *Mineral Assessment Report, British Geological Survey*, No. 146.
- AUTON, C A, MERRITT, J W, and ROSS, D L. 1988. The sand and gravel resources of the country around Inverurie and Dunecht, and between Banchory and Stonehaven, Grampian Region. Mineral Assessment Report 148. *British Geological Survey Technical Report*, WF/88/1.
- AUTON, C A, THOMAS, C W, and MERRITT, J W. 1990. The sand and gravel resources of the country around Strachan and between Auchenblae and Catterline, Grampian Region. Mineral Assessment Report 149. *British Geological Survey Technical Report*, WF/90/7.
- AUTON, C A, GORDON, J E, MERRITT, J W, and WALKER, M J C. 2000. The glacial and interstadial sediments at the Burn of Benholm, Kincardineshire: evidence for onshore pre-Devensian ice movement in northeast Scotland. *Journal of Quaternary Science*, Vol. 15, 141–156.
- BAKER, A, SMART, P L, and EDWARDS, R L. 1995. Paleoclimate implications of mass spectrometric dating of a British flowstone. *Geology*, Vol. 23, 309–312.
- BALLANTYNE, C K, and HARRIS, C. 1994. *The periglaciation of Great Britain*. (Cambridge: Cambridge University Press.)
- BALLANTYNE, C K, and five others. 1998. High-resolution reconstruction of the last ice sheet in NW Scotland. *Terra Nova*, Vol. 10, 63–67.

- BARDELL, E, and five others. 1987. Retreat velocity of the North Atlantic polar front during the last deglaciation determined by ^{14}C accelerator mass spectrometry. *Nature, London*, Vol. 328, 791–794.
- BARNE, J H, ROBSON, C F, KAZNAKOVA, S S, DOODY, J P, and DAVIDSON, N C (editors). 1996. *Coasts and seas of the United Kingdom: North-east Scotland: Cape Wrath to St Cyrus*. (Peterborough: Nature Conservation Committee.)
- BASHAM, I R. 1968. Deeply weathered rock and associated soils of the Inch and Boganclough masses, Aberdeen. Unpublished PhD thesis, University of Aberdeen.
- BASHAM, I R. 1974. Mineralogical changes associated with deep weathering of gabbro in Aberdeenshire. *Clay Minerals*, Vol. 10, 189–202.
- BAUMANN, K H, and six others. 1995. Reflection of Scandinavian ice sheet fluctuations in Norwegian sea sediments during the past 150 years. *Quaternary Research*, Vol. 43, 185–197.
- BEHRE, K E. 1989. Biostratigraphy of the last glacial period in Europe. *Quaternary Science Reviews*, Vol. 8, 25–44.
- BELL, D. 1895. The shelly clays and gravels of Aberdeenshire considered in relation to the question of submergence. *Quarterly Journal of the Geological Society of London*, Vol. 51, 472–479.
- BENN, D I, and EVANS, D J A. 1996. The interpretation and classification of subglacially-deformed sediments. *Quaternary Science Reviews*, Vol. 15, 23–52.
- BENN, D I, and EVANS, D J A. 1998. *Glaciers and glaciation*. (London: Arnold.)
- BENN, D I, LOWE, J J, and WALKER, M J C. 1992. Glacier response to climatic change during the Loch Lomond Stadial and early Flandrian: geomorphological and palynological evidence from the Isle of Skye, Scotland. *Journal of Quaternary Science*, Vol. 7, 125–144.
- BENT, A J A. 1986. Aspects of Pleistocene glaciomarine sequences in the northern North Sea. Unpublished PhD thesis, University of Edinburgh.
- BERSTAD, S, and DYPVIK, H. 1982. Sedimentological evolution and natural radioactivity of Tertiary sediments from the central North Sea. *Journal of Sedimentary Petrology*, Vol. 5, 77–88.
- BIRKS, H J B. 1977. The Flandrian forest history of Scotland: a preliminary synthesis. 119–135 in *British Quaternary studies: recent advances*. SHOTTON, F W (editor). (Oxford: Clarendon Press.)
- BIRKS, H J B, and RANSOM, M E. 1969. An interglacial peat at Fugla Ness, Scotland. *New Phytologist*, Vol. 68, 777–796.
- BISHOP, W W, and COOPE, G R. 1977. Stratigraphical and faunal evidence for Lateglacial and early Flandrian environments in south-west Scotland. 61–88 in *Studies in the Scottish Lateglacial*. GRAY, J M, and LOWE, J J (editors). (Oxford and New York: Pergamon.)
- BOND, G, and LOTTI, R. 1995. Iceberg discharges into the North Atlantic on millennial time scales during the last glaciation. *Science*, Vol. 267, 1005–1010.
- BOND, G, and six others. 1993. Correlation between climate records from North Atlantic sediments and Greenland ice. *Nature*, Vol. 365, 143–147.
- BOULTON, G S. 1968. Flow tills and related deposits on some Vestspitsbergen glaciers. *Journal of Glaciology*, Vol. 7, No. 51, 391–412.

- BOULTON, G S. 1970. On the deposition of subglacial and melt-out tills at the margins of certain Svalbard glaciers. *Journal of Glaciology*, Vol. 9, 231–245.
- BOULTON, G S. 1979. Processes of glacier erosion on different substrata. *Journal of Glaciology*, Vol. 23, 15–38.
- BOULTON, G S. 1987. A theory of drumlin formation by subglacial deformation. 25–80 in *Drumlin Symposium*. MENZIES, J, and ROSE, J (editors). (Rotterdam: Balkema.)
- BOULTON, G S, and DEYNOUX, M. 1981. Sedimentation in glacial environments and the identification of tills and tillites in ancient sedimentary sequences. *Precambrian Research*, Vol. 15, 397–422.
- BOULTON, G S, and DOBBIE, K E. 1993. Consolidation of sediments by glaciers: relations between sediment geotechnics, soft-bed glacier dynamics and subglacial groundwater flow. *Journal of Glaciology*, Vol. 39, 26–44.
- BOULTON, G S, and PAUL, M A. 1976. The influence of genetic processes on some geotechnical properties of glacial tills. *Quarterly Journal of Engineering Geology*, Vol. 9, 159–193.
- BOULTON, G S, DENT, D L, and MORRIS, E M. 1974. Subglacial shearing and crushing, and the role of water pressure in tills from SE Iceland. *Geografiska Annaler, Series A Physical Geography*, Vol. 56A, No. 314, 135–145.
- BOULTON, G S, JONES, A S, CLAYTON, K M, and KENNING, M J. 1977. A British ice-sheet model and patterns of glacial erosion and deposition in Britain 231–246 in *British Quaternary studies: recent advances*. SHOTTON, F W (editor). (Oxford: Clarendon Press.)
- BOULTON, G S, SMITH, G D, JONES, A S, and NEWSOME, J. 1985. Glacial geology and glaciology of the last mid-latitude ice sheets. *Journal of the Geological Society of London*, Vol. 142, 447–474.
- BOULTON, G S, PEACOCK, J D, and SUTHERLAND, D G. 1991. Quaternary. 503–543 in *Geology of Scotland*. (Third edition). CRAIG, G Y (editor). (London: The Geological Society.)
- BOWEN, D Q. 1989. The last interglacial-glacial cycle in the British Isles. *Quaternary International*, Vol. 3, Pt 4, 41–47.
- BOWEN, D Q, (editor). 1999. A revised correlation of Quaternary deposits in the British Isles. *Geological Society Special Report*, No. 23.
- BOWEN, D Q, ROSE, J, MCCABE, A M, and SUTHERLAND, D G. 1986. Correlation of Quaternary glaciations in England, Ireland, Scotland and Wales. 299–340 in *Quaternary Glaciations in the Northern Hemisphere*. SIBRAVA, V, BOWEN, D Q, and RICHMOND, G M (editors). *Quaternary Science Reviews*, Vol. 5.
- BOWEN, D Q, and SYKES, G A. 1988. Correlation of marine events and glaciations on the northeast Atlantic margin. *Philosophical Transactions of the Royal Society of London*, Vol. B, 318, 619–635.
- BRADY, G S, CROSSKEY, H W, and ROBERSTON, D. 1874. A monograph of the post-Tertiary Entomostraca of Scotland. *Palaeontographical Society Monograph*, 1–232.
- BREMNER, A. 1912. *The physical geology of the Dee valley*. (Aberdeen: The University Press.)
- BREMNER, A. 1915. The capture of the Geldie by the Feshie. *Scottish Geographical Magazine*, Vol. 31, 589–596.
- BREMNER, A. 1916. Problems in the glacial geology of northeast Scotland and some fresh facts bearing on them. *Transactions of the Edinburgh Geological Society*, Vol. 10, 334–347.
- BREMNER, A. 1917. Low-level kettle-holes in and near Aberdeen. *Transactions of the Edinburgh Geological Society*, Vol. 11, 23–24.

- BREMNER, A. 1919. A geographical study of the high plateau of the south-eastern Highlands. *Scottish Geographical Magazine*, Vol. 35, 331–351.
- BREMNER, A. 1920a. The glacial geology of the Stonehaven District. *Transactions of the Edinburgh Geological Society*, Vol. 11, 25–41.
- BREMNER, A. 1920b. Limits of valley glaciation in the basin of the Dee. *Transactions of the Edinburgh Geological Society*, Vol. 11, 61–68.
- BREMNER, A. 1921. *The physical geology of the Don basin*. (Aberdeen: The University Press.)
- BREMNER, A. 1922. Deeside as a field for the study of geology. *The Deeside Field*, Vol. 1, 33–36.
- BREMNER, A. 1928. Further problems in the glacial geology of north-eastern Scotland. *Transactions of the Edinburgh Geological Society*, Vol. 12, 147–164.
- BREMNER, A. 1931. The valley glaciation in the district round Dinnet, Cambus o'May and Ballater. *The Deeside Field*, Vol. 5, 15–24.
- BREMNER, A. 1934a. The glaciation of Moray and ice movements in the north of Scotland. *Transactions of the Edinburgh Geological Society*, Vol. 13, 17–56.
- BREMNER, A. 1934b. Meltwater drainage channels and other glacial phenomena of the Highland Border Belt from Cortachy to the Bervie Water. *Transactions of the Edinburgh Geological Society*, Vol. 13, 174–175.
- BREMNER, A. 1936. The glaciation of Glenesk. *Transactions of the Edinburgh Geological Society*, Vol. 13, 378–382.
- BREMNER, A. 1938. The glacial epoch in north-east Scotland. *The Deeside Field*, Vol. 8, 64–68.
- BREMNER, A. 1939. Notes on the glacial geology of east Aberdeenshire. *Transactions of the Edinburgh Geological Society*, Vol. 13, 474–475.
- BREMNER, A. 1942. The origins of the Scottish river system. *Scottish Geographical Magazine*, Vol. 58, 15–20, 54–59, 99–103.
- BREMNER, A. 1943. The glacial epoch in the north-east. 10–30 in *The Book of Buchan (Jubilee Volume)*. TOCHER, J F (editor). (Aberdeen: P Scrogie Ltd & Aberdeen University Press.)
- BRIDGLAND, D R. 2000a. Flint-rich gravels in Aberdeenshire. 96–101 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- BRIDGLAND, D R. 2000b. Discussion: the characteristics, variations and likely origin of the Buchan Ridge Gravel. 139–143 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- BRIDGLAND, D R, and SAVILLE, A. 2000. Den of Boddam. 102–115 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- BRIDGLAND, D R, SAVILLE, A, and SINCLAIR, J M. 1997. New evidence for the origin of the Buchan Ridge Gravel, Aberdeenshire. *Scottish Journal of Geology*, Vol. 33, 43–50.
- BRIDGLAND, D R, SAVILLE, A, and SINCLAIR, J. 2000. Skelmuir Hill. 126–138 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary

Research Association.)

BRITISH GEOLOGICAL SURVEY. 1977. Moray–Buchan Sheet 57°N–04°W. Solid geology. 1:250 000. (Southampton: Ordnance Survey for British Geological Survey.)

BRITISH GEOLOGICAL SURVEY. 1992. Peterhead, Scotland Sheet 87E. Solid and Drift. 1:50 000. (Keyworth: British Geological Survey.)

BRITISH GEOLOGICAL SURVEY. 2002. Lexicon of named rocks units [online]. Keyworth, Nottingham: British Geological Survey. Last revised 05/22/2002. Available from <http://www.bgs.ac.uk>.

BRITISH GEOLOGICAL SURVEY. 1998. *United Kingdom Minerals Yearbook 1997*. (Keyworth, Nottingham: British Geological Survey.)

BRITISH STANDARDS INSTITUTION. 1975. *BS 812: Methods for sampling and testing of mineral aggregates, sands and fillers*. (London: British Standards Institution.)

BROECKER, W S. 1984. Terminations. 687–698 in *Milankovitch and Climate. Part 2*. BERGER, A, IMBRIE, J, HAYS, J, KUKLA, G, and SALTZMAN, B (editors). (Norwell, Mass: D Reidel.)

BROECKER, W S. 1994. Massive iceberg discharges as triggers for global climate change. *Nature*, Vol. 372, 421–424.

BROECKER, W S, and DENTON, G H. 1990. What drives glacial cycles? *Scientific American*, Vol. 262, 43–50.

BROWN, A G. 1987. Long-term sediment storage in the Severn and Wye catchments. 307–332 in *Palaeohydrology in practice*. GREGORY, K J, LEWIN, J, and THORNES, J B (editors). (Chichester: Wiley.)

BROWN, I M. 1993. Pattern of deglaciation of the last (Late Devensian) Scottish ice sheet: evidence from ice-marginal deposits in the Dee valley, north-east Scotland. *Journal of Quaternary Science*, Vol. 8, 235–250.

BROWN, I M. 1994. Former glacial lakes in the Dee valley: origin, drainage and significance. *Scottish Journal of Geology*, Vol. 30, 147–158.

BUCHAN, A. 1935. Investigations of the glacial and post-glacial deposits of Loch Spynie. Unpublished PhD thesis, University of Aberdeen.

BUCHARDT, B. 1978. Oxygen isotope palaeotemperatures from the Tertiary period in the North Sea area. *Nature, London*, Vol. 275, 121–123.

BUILDING RESEARCH ESTABLISHMENT. 1968. Shrinkage of natural aggregates in concrete. *Digest Building Research Establishment*, No. 35, Series 2.

CABRERA, D E. 1976. A study of the soils and their underlying deposits at Cruden Bay, Grampian. Unpublished MSc thesis, University of Aberdeen.

CAMBRIDGE, P G. 1982. A note on supposed crag shells from the Kippet Hills, Aberdeenshire. *Bulletin of the Geological Society of Norfolk*, Vol. 32, 37–38.

CAMERON, T D J, STOKER, M S, and LONG, D. 1987. The history of Quaternary sedimentation in the UK sector of the North Sea Basin. *Journal of the Geological Society, London*, Vol. 144, Pt 1, 43–58.

CAMERON, T D J, and six others. 1992. *United Kingdom Offshore Regional Report: the Geology of the Southern North Sea*. (London: HMSO for the British Geological Survey, London.)

CAMERON, D G, and seven others. 1998. *Directory of Mines and Quarries, 1998*. (5th edition). (Keyworth, Nottingham: British Geological Survey.)

- CAMPBELL, R. 1934. On the occurrence of shelly boulder clay and interglacial deposits in Kincardineshire. *Transactions of the Edinburgh Geological Society*, Vol. 13, 176–182.
- CARR, S. 1998. Last glacial maximum in the North Sea Basin. Unpublished PhD thesis, Royal Holloway, University of London.
- CARR, S. 1999. The micromorphology of Last Glacial Maximum sediments in the Southern North Sea. *Catena*, Vol. 35, 123–145.
- CARROLL, S. 1995a. Geology of the Stonehaven district. 1:10 000 sheets NO88NW, NO88NE, NO88SW and NO88SE (South of the Highland Boundary Fault). *British Geological Survey Technical Report*, WA/94/19.
- CARROLL, S. 1995b. Geology of the Inverbervie and Catterline District. 1:10 000 sheets NO87NW, NO87NE and NO87SW. *British Geological Survey Technical Report*, WA/94/20.
- CARROLL, S. 1995c. Geology of the Laurencekirk District. 1:10 000 sheets NO77SW and NO77SE. *British Geological Survey Technical Report*, WA/95/81.
- CARROLL, S. 1995d. Geology of the Fettercairn District. 1:10 000 sheets NO67NW, NO67NE, NO67SW, NO67SE and NO68SE (South of the Highland Boundary Fault). *British Geological Survey Technical Report*, WA/95/91.
- CASELDINE, C J, and EDWARDS, K J. 1982. Interstadial and last interglacial deposits covered by till in Scotland: comments and new evidence. *Boreas*, Vol. 11, 119–123.
- CHAMBERS, R. 1857. Geological notes on Banffshire. *Proceedings of the Royal Society of Edinburgh*, Vol. 3, 332–333.
- CHAPMAN, M R, SHACKLETON, N J, and DUPLESSY, J-C. 2000. Sea surface temperature variability during the last glacial–interglacial cycle: assessing the magnitude and pattern of climate change in the North Atlantic. *Palaeogeography, Palaeoclimatology, Palaeoecology*, Vol. 157, 1–25.
- CHARLESWORTH, J K. 1926. The re-advance, marginal kame-moraine of the south of Scotland, and some later stages of retreat. *Transactions of the Royal Society of Edinburgh*, Vol. 55, 25–50.
- CHARLESWORTH, J K. 1956. The Late-glacial history of the Highlands and Islands of Scotland. *Transactions of the Royal Society of Edinburgh*, Vol. 62, 769–928.
- CLAPPERTON, C M. 1977. Buchan. 37–39 in *INQUA X Congress 1977. Guidebook for Excursions A10 and C10. The Northern Highlands of Scotland*. CLAPPERTON, C M (editor). (Norwich: Geo Abstracts.)
- CLAPPERTON, C M. 1997. Greenland ice cores and North Atlantic sediments: implications for the last glaciation in Scotland. 45–58 in *Reflections on the ice age in Scotland*. GORDON, J E (editor). (Glasgow: Scottish Association of Geography Teachers and Scottish Natural Heritage.)
- CLAPPERTON, C M, and GEMMELL, A M D. 1998. Windy Hills SSSI, Aberdeenshire: site survey and management phase 1. *Scottish Natural Heritage Commissioned Report*, F98LF10 (Unpublished report).
- CLAPPERTON, C M, and SUGDEN, D E. 1975. The glaciation of Buchan —a reappraisal. 19–22 in *Quaternary studies in north east Scotland*. A M D GEMMELL (editor). (Aberdeen: Department of Geography, University of Aberdeen.)
- CLAPPERTON, C M, and SUGDEN, D E. 1977. The Late Devensian glaciation of north-east Scotland. 1–13 in *Studies in the Scottish Lateglacial environment*. GRAY, J M, and LOWE, J J (editors). (Oxford: Pergamon Press.)
- CLAYTON, K M. 1974. Zones of glacial erosion. *Institute of British Geographers Special Publication*, Vol. 7, 163–176.
- CLIMAP PROJECT MEMBERS. 1976. The surface of the ice age Earth. *Science*, Vol. 191, 1131–1136.

- CONNELL, E R. 1984a. Kirkhill Quarry. Site. 59 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R. 1984b. Kirkhill Quarry. Deposits between the lower and upper palaeosols. 62–64 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R. 1984c. Kirkhill Quarry. Deposits above the upper palaeosol. 64–69 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R. 1984d. Sandhole (Denhead) Sand Pit. 83–86 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R. 2000a. Tofthead, Fochabers. 38–39 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- CONNELL, E R. 2000b. Sandford Bay, Peterhead. 57–61 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- CONNELL, E R, and HALL, A M. 1984a. Kirkhill Quarry. Deposits beneath the lower palaeosol. 60–62 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R, and HALL, A M. 1984b. Boyne Bay Quarry. 97–101 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R, and HALL, A M. 1984c. Sandford Bay. 106–107 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R, and HALL, A M. 1987. The periglacial stratigraphy of Buchan. 277–285 in *Periglacial processes and landforms in Britain and Ireland*. BOARDMAN, J (editor). (Cambridge: Cambridge University Press.)
- CONNELL, E R, and ROMANS, J C C. 1984. Kirkhill Quarry. Palaeosols. 70–76 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- CONNELL, E R, EDWARDS, K J, and HALL, A M. 1982. Evidence for two pre-Flandrian palaeosols in Buchan, Scotland. *Nature, London*, Vol. 297, 570–572.
- CONNELL, E R, HALL, A M, SHAW, D, and RILEY, L A. 1985. Palynology and significance of radiocarbon dated organic materials from Cruden Bay Brick Pit, Grampian Region, Scotland. *Quaternary Newsletter*, Vol. 47, 19–25.
- CRAIG, G Y (editor). 1991. *Geology of Scotland*. (Third edition). (London: The Geological Society.)
- CRAMPTON, C B, and CARRUTHERS, R G. 1914. The geology of Caithness. *Memoir of the Geological Survey of Great Britain*, Sheets 110, 116 with parts of 109, 115 and 117 (Scotland).
- CROFTS, R S. 1975. Sea bed topography off north east Scotland. *Scottish Geographical Magazine*, Vol. 91, 52–64.
- CULLINGFORD, R A, and SMITH, D E. 1980. Late Devensian raised shorelines in Angus and Kincardineshire, Scotland. *Boreas*, Vol. 9, 21–38.
- CULLINGFORD, R A, SMITH, D E, and FIRTH, C R. 1991. The altitude and age of the Main Postglacial Shoreline in eastern Scotland. *Quaternary International*, Vol. 9, 39–52.
- CUMMING, G A, and BATE, P A. 1933. The Lower Cretaceous erratics of the Fraserburgh district, Aberdeenshire. *Geological Magazine*, Vol. 70, 397–413.

- DALE, B. 1985. Dinoflagellate cyst analysis of Upper Quaternary sediments in core GIK 15530–4 from the Skagerrak. *Norsk Geologisk Tidsskrift*, Vol. 65, 97–102.
- DANSGAARD, W, and ten others. 1993. Evidence for general instability of past climate from a 250-kyr ice-core record. *Nature*, Vol. 364, 218–220.
- DAWSON, A G, LONG, D, and SMITH D E. 1988. The Storegga Slides: evidence from eastern Scotland of a possible tsunami. *Marine Geology*, Vol. 82, 271–276.
- DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND. 1962. *Scottish Peat*. (Second Report of the Scottish Peat Committee). (Edinburgh: HMSO.)
- DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND. 1964. *Scottish Peat Surveys*. (South West Scotland). (Edinburgh: HMSO.)
- DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND. 1965a. *Scottish Peat Surveys*. (Central Scotland). (Edinburgh: HMSO.)
- DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND. 1965b. *Scottish Peat Surveys*. (Western Highlands and Islands). (Edinburgh: HMSO.)
- DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND. 1968. *Scottish Peat Surveys*. (Caithness, Shetland and Orkney). (Edinburgh: HMSO.)
- DONNER, J J. 1957. The geology and vegetation of Late-glacial retreat stages in Scotland. *Transactions of the Royal Society of Edinburgh*, Vol. 63, 221–264.
- DONNER, J J. 1960. Pollen analysis of the Burn of Benholm peat bed, Kincardineshire. *Societas Scientiarum Fennica, Commentationes Biologicae*, Vol. 22, 1–13.
- DONNER, J J. 1963. The Late- and Post-Glacial raised beaches in Scotland. *Annales Academiae Scientiarum Fennicae*, Vol. 68, Pt II, Series A III Geologica-Geographica, 1–13.
- DONNER, J J. 1979. The Early or Middle Devensian peat at Burn of Benholm, Kincardineshire. *Scottish Journal of Geology*, Vol. 15, 247–250.
- DOWDESWELL, J A, ELVERHØI, A, ANDREWS, J T, and HEBBELN, D. 1999. Asynchronous deposition of ice-rafted layers in the Nordic seas and North Atlantic Ocean. *Nature, London*, Vol. 400, 348–351.
- DREIMANIS, A, and VAGNERS, U J. 1971. The effect of lithology on the texture of tills. 66–82 in *Research Methods in Pleistocene Geomorphology*. YATSU, and FALCONER (editors). (Norwich: Geo Abstracts.)
- DROOP, G T R, and CHARNLEY, N. 1985. Comparative geobarometry of pelitic hornfelses associated with the newer gabbros: a preliminary study. *Journal of the Geological Society of London*, Vol. 142, 53–62.
- DRYBURGH, P M. 1978. *Scotland's peat resources: an introduction to their potential*. (Edinburgh: School of Engineering, University of Edinburgh.)
- DULLER, G A T, WINTLE, A F, and HALL, A M. 1995. Luminescence dating and its application to key pre-Late Devensian sites in Scotland. *Quaternary Science Reviews*, Vol. 14, 495–519.
- DURNO, S E. 1956. Pollen analysis of peat deposits in Scotland. *Scottish Geographical Magazine*, Vol. 72, 177–187.
- DURNO, S E. 1957. Certain aspects of vegetational history in north-east Scotland. *Scottish Geographical Magazine*, Vol. 73, 176–184.

- DURNO, S E. 1970. Pollen diagrams from three buried peats in the Aberdeen area. *Transactions of the Botanical Society of Edinburgh*, Vol. 41, 43–50.
- EDMOND, J M, and GRAHAM, J D. 1977. Peterhead power station cooling water intake tunnel: an engineering case study. *Quarterly Journal of Engineering Geology*, Vol. 10, 281–301.
- EDWARDS, A G. 1970. Scottish aggregates: their suitability for concrete with regard to rock constituents. *Current Paper of the Building Research Station*, No. 28/70.
- EDWARDS, K J. 1978. Palaeoenvironmental and archaeological investigations in the Howe of Cromar, Grampian Region, Scotland. Unpublished PhD thesis, University of Aberdeen.
- EDWARDS, K J. 1979. Environmental impact in the prehistoric period. 27–42 in *Early Man in the Scottish Landscape*. *Scottish Archaeological Forum*. THOMS, L M (editor). Vol. 9. (Edinburgh: Edinburgh University Press.)
- EDWARDS, K J, and CONNELL, E R. 1981. Interglacial and interstadial sites in north-east Scotland. *Quaternary Newsletter*, Vol. 33, 22–28.
- EDWARDS, K J, and ROWNTREE, K M. 1980. Radiocarbon and palaeoenvironmental evidence for changing rates of erosion at a Flandrian stage site in Scotland. 207–223 in *Timescales in Geomorphology*. CULLINGFORD, R A, DAVIDSON, D A, and LEWIN, J (editors). (Chichester and New York: Wiley.)
- EDWARDS, K J, CASELDINE, C J, and CHESTER, D K. 1976. Possible interstadial and interglacial pollen floras from Teindland, Scotland. *Nature*, Vol. 264, 742–744.
- EHLERS, J. 1988. Skandinavische Geschiebe in Großbritannien. *Der Geschiebesammler*, Vol. 22, 49–64.
- EHLER, J, and WINGFIELD, R. 1991. The extension of the Late Weichselian/Late Devensian ice sheets in the North Sea Basin. *Journal of Quaternary Science*, Vol. 6, 313–326.
- EHLERS, J, GIBBARD, P L, and ROSE, J. 1991. Glacial deposits of Britain and Europe: general overview. 493–501 in *Glacial deposits in Great Britain and Ireland*. EHLERS, J, GIBBARD, P L, and ROSE, J (editors). (Rotterdam: Balkema.)
- EMILIANI, C. 1954. Depth habitats of some species of pelagic foraminifera as indicated by oxygen isotope ratios. *American Journal of Science*, Vol. 252, 149.
- ENGLAND, J. 1986. Glacial erosion of a high Arctic valley. *Journal of Glaciology*, Vol. 32, 60–64.
- EVANS, D, CHESHER, J A, DEEGAN, C E, and FANNIN, N G T. 1981. The offshore geology of Scotland in relation to the IGS shallow drilling programme, 1970–1978. *Report of the Institute of Geological Sciences*, No. 81/12.
- EVANS, D, MORTON, A C, WILSON, S, JOLLEY, D, and BARREIRO, B A. 1997. Palaeoenvironmental significance of marine and terrestrial Tertiary sediments on the NW Scottish Shelf in BGS borehole 77/7. *Scottish Journal of Geology*, Vol. 33, 31–42.
- EYLES, N, MCCABE, A M, and BOWEN, D Q. 1994. The stratigraphic and sedimentological significance of Late Devensian Ice Sheet surging in Holderness, Yorkshire, UK. *Quaternary Science Reviews*, Vol. 13, 727–759.
- EYLES, V A, ANDERSON, J G C, BONNELL, D G R, and BUTTERWORTH, A R I C. 1946. Brick clays of north-east Scotland. Part I —Description of occurrences; Part II — Report on analyses and physical tests. *Geological Survey of Great Britain: Wartime Pamphlet*, No. 47.
- FIRTH, C R, and HAGGART, B A. 1989. Loch Lomond Stadial and Flandrian shorelines in the inner Moray Firth area, Scotland. *Journal of Quaternary Science*, Vol. 4, 37–50.

- FITZPATRICK, E A. 1956. An indurated soil horizon formed by permafrost. *Soil Science*, Vol. 7, 248–254.
- FITZPATRICK, E A. 1958. An introduction to the periglacial geomorphology of Scotland. *Scottish Geographical Magazine*, Vol. 74, 28–36.
- FITZPATRICK, E A. 1963. Deeply weathered rock in Scotland, its occurrence, age and contribution to the soils. *Journal of Soil Science*, Vol. 14, 33–43.
- FITZPATRICK, E A. 1965. An interglacial soil at Teindland, Morayshire. *Nature*, Vol. 207, 621–622.
- FITZPATRICK, E A. 1969. Some aspects of soil evolution in north-east Scotland. *Soil Science*, Vol. 107, 403–408.
- FITZPATRICK, E A. 1972. The principal Tertiary and Pleistocene events in north-east Scotland. 1–4 in *North-East Scotland Geographical Essays*. CLAPPERTON, C M (editor). (Aberdeen: Department of Geography, University of Aberdeen.)
- FITZPATRICK, E A. 1975a. Errollston Farm. 19–21 in *Aberdeen Field Excursion Guide*. (Informal Publication: Quaternary Research Association.)
- FITZPATRICK, E A. 1975b. Particle size distribution and stone orientation patterns in some soils of north-east Scotland. 49–60 in *Quaternary Studies in North East Scotland*. GEMMELL, A M D (editor). (Aberdeen: Department of Geography, University of Aberdeen.)
- FITZPATRICK, E A. 1975c. Windy Hills. 23–25 in *Aberdeen Field Excursion Guide*. (Informal Publication: Quaternary Research Association.)
- FITZPATRICK, E A. 1987. Periglacial features in the soils of north east Scotland. 153–162 in *Periglacial processes and landforms in Britain and Ireland*. BOARDMAN, J (editor). (Cambridge: Cambridge University Press.)
- FLETCHER, T P, and five others. 1996. Geology of the Fortrose and eastern Inverness district. *Memoir of the British Geological Survey*, Sheet 84W (Scotland).
- FLETT, J S, and READ, H H. 1921. Tertiary gravels of the Buchan district of Aberdeenshire. *Geological Magazine*, Vol. 58, 215–225.
- FRASER, G K. 1943. Peat deposits of Scotland. Part I — General account. *Wartime Pamphlet of the Geological Survey of Great Britain: Scotland*, No. 36.
- FRASER, G K. 1948. Peat deposits of Scotland. Part II — Peat mosses of Aberdeenshire, Banffshire and Morayshire (area of quarter-inch sheet 9). *Wartime Pamphlet of the Geological Survey of Great Britain: Scotland*, No. 36.
- FRIIS, H. 1976. Weathering of a Neogene fluvialite fining-upwards sequence at Voervadsbro, Denmark. *Bulletin of the Geological Society of Denmark*, Vol. 25, 99–105.
- FRONVAL, T, JANSEN, E, BLOEMENDAL, J, and JOHNSEN, S. 1995. Oceanic evidence for coherent fluctuations in Fennoscandian and Laurentide ice sheets on millennium timescales. *Nature*, Vol. 374, 443–446.
- FUNNELL, B M. 1995. Global sea-level and the (pen-)insularity of late Cenozoic Britain. 3–13 in *Island Britain: a Quaternary Perspective*. PREECE, R C (editor). *Geological Society of London, Special Publication*, No. 96.
- GALLOWAY, R W. 1958. Periglacial phenomena in Scotland. Unpublished PhD thesis, University of Edinburgh.
- GALLOWAY, R W. 1961a. Solifluction in Scotland. *Scottish Geographical Magazine*, Vol. 77, 75–87.
- GALLOWAY, R W. 1961b. Periglacial phenomena in Scotland. *Geografiska Annaler*, Vol. 43, 348–353.

- GALLOWAY, R W. 1961c. Ice wedges and involutions in Scotland. *Biuletyn Periglacialny*, Vol. 10, 169–193.
- GATLIFF, R W, and eleven others. 1994. *United Kingdom offshore regional report: the geology of the central North Sea*. (London: HMSO for the British Geological Survey.)
- GEIKIE, A. 1878. On the Old Red Sandstone of western Europe. *Transactions of the Royal Society of Edinburgh*, Vol. 28, 345–452.
- GEMMELL, A M D. 1975. The Kippit Hills. 14–19 in *Aberdeen Field Excursion Guide*. (Informal Publication: Quaternary Research Association.)
- GEMMELL, A M D, and AUTON, C A. 2000. Windy Hills. 81–92 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- GEMMELL, A M D, and KESEL, R H. 1979. Developments in the study of the Buchan flint deposits. 66–77 in *Early Man in the Scottish landscape*. THOMS, L M (editor). (Edinburgh: Edinburgh University Press.)
- GEMMELL, A M D, and KESEL, R H. 1982. Letters to the editors. The 'Pliocene' Gravels of Buchan: a reappraisal: reply. *Scottish Journal of Geology*, Vol. 18, 333–335.
- GEMMELL, A M D, and RALSTON, I B M. 1984. Some recent discoveries of ice-wedge cast networks in north-east Scotland. *Scottish Journal of Geology*, Vol. 20, 115–118.
- GEMMELL, A M D, and RALSTON, I B M. 1985. Ice wedge polygons in north-east Scotland: a reply. *Scottish Journal of Geology*, Vol. 21, 109–111.
- GEMMELL, A M D, and STOVE, G C. 1999. Windy Hills SSSI, Aberdeenshire: site survey and management phase 2. *Scottish Natural Heritage Commissioned Report*, F98LF11 (Unpublished report).
- GEMMELL, S, HANSOM, J, and HOEY, T B. 1996. Geomorphology conservation and management of the River Spey and Spey Bay SSSIs, Moray. *Scottish Natural Heritage Commissioned Report*.
- GLASSER, N F, and HALL, A M. 1997. Calculating Quaternary erosion rates in North East Scotland. *Geomorphology*, Vol. 20, 29–48.
- GLENTWORTH, R. 1954. *The soils of the country around Banff, Huntly and Turriff (Sheets 86 and 96)*. (Memoir of the Soil Survey of Great Britain: Scotland). (Edinburgh: Her Majesty's Stationery Office for Department of Agriculture and Fisheries for Scotland.)
- GLENTWORTH, R, and MUIR, J W. 1963. *The soils of the country around Aberdeen, Inverurie and Fraserburgh. Sheets 77, 76 and 87/97*. (Memoir of the Soil Survey of Great Britain: Scotland). (Edinburgh: Her Majesty's Stationery Office for Department of Agriculture and Fisheries for Scotland.)
- GLENTWORTH, R, MITCHELL, W A, and MITCHELL, B D. 1964. The red glacial drift deposits of north-east Scotland. *Clay Minerals Bulletin*, Vol. 5, 373–381.
- GODWIN, H, and WILLIS, E H. 1959. Radiocarbon dating of the Late-glacial Period in Britain. *Proceedings of the Royal Society of London, Series B*, Vol. 150, 199–215.
- GOODWIN, I D. 1998. Did changes in Antarctic ice volume influence Late Holocene sea-level lowering? *Quaternary Science Reviews*, Vol. 17, 319–332.
- GORDON, D, and six others. 1989. Dating of Late Pleistocene Interglacial and Interstadial Periods in the United Kingdom from Speleothem Growth Frequency. *Quaternary Research*, Vol. 31, 14–26.

- GORDON, J E. 1993a. Boyne Quarry. 233–236 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORDON, J E. 1993b. Kippet Hills. 242–245 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORDON, J E. 1993c. Nigg Bay. 479–482 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORDON, J E. 1993d. Burn of Benholm. 482–485 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORDON, J E, (editor). 1997. *Reflections on the Ice Age in Scotland: an update on Quaternary studies*. (Glasgow: Scottish Association of Geography Teachers and Scottish Natural Heritage).
- GORDON, J E, and SUTHERLAND, D G (editors). 1993a. *Quaternary of Scotland*. *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORDON, J E, and SUTHERLAND, D G. 1993b. Windy Hills. 216–218 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G. *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- GORNITZ, V. 1995. Sea-level rise: a review of recent past and near-future trends. *Earth Surface Processes and Landforms*, Vol. 20, 7–20.
- GOULD, D. 1996. Geology of the Findochty and Bin of Cullen areas. 1:10 000 sheets NJ46NE, NJ46SE and part of NJ45NE. *British Geological Survey Technical Report*, WA/96/68.
- GOULD, D. 1997. Geology of the country around Inverurie and Alford. *Memoir of the British Geological Survey*, Sheet 76W and 76E (Scotland).
- GOULD, D. 2001. Geology of the Aboyne district. *Memoir of the British Geological Survey*, Sheet 66W (Scotland).
- GRAHAM, D K, HARLAND, R, GREGORY, D M, LONG, D, and MORTON, A C. 1990. The biostratigraphy and chronostratigraphy of BGS borehole 78/4, north Minch. *Scottish Journal of Geology*, Vol. 26, 65–75.
- GRANT, R. 1960. The soils of the country round Elgin. *Memoir of the Soil Survey* (Scotland).
- GRAY, J M, and LOWE, J J (editors). 1977. *Studies in the Scottish Lateglacial Environment*. (Oxford: Pergamon Press.)
- GREENWOOD, P G, and RAINES, M G. 1994. Ground probing radar surveys in Scotland and East Anglia. Part 2 — Ground Probing Radar Sections. *British Geological Survey Technical Report*, WN/94/12.
- GREENWOOD, P G, AUTON, C A, and RAINES, M G. 1995. Ground probing radar surveys in Scotland and East Anglia. Part 1 — Ground Probing Radar Report. *British Geological Survey Technical Report*, WN/95/6.
- GREGORY, D M, and BRIDGE, V A. 1979. On the Quaternary foraminiferal species *Elphidium ?ustulatum* Todd 1957: its stratigraphic and palaeontological implications. *Journal of Foraminiferal Research*, Vol. 9, 70–75.
- GROUSSET, F E, PUJOL, C, LABEYRIE, L, AUFFRET, G, and BOELAERT, A. 2000. Were the North Atlantic Heinrich events triggered by the behavior of the European ice sheets? *Geology*, Vol. 28, 123–126.
- GUNSON, A R. 1975. The vegetation history of north-east Scotland. 61–72 in *Quaternary studies in north-east Scotland*. GEMMELL, A M D (editor). (Aberdeen: Department of Geography, University of Aberdeen.)
- HALL, A M. 1982. The Pliocene gravels of Buchan: a reappraisal: discussion. *Scottish Journal of Geology*, Vol. 18, 336–338.

- HALL, A M. 1983. Deep weathering and landform evolution in north-east Scotland. Unpublished PhD thesis, University of St Andrews.
- HALL, A M. 1984a. *Buchan field guide*. (Cambridge: Quaternary Research Association.)
- HALL, A M. 1984b. Oldmill. 106 in *Buchan Field Guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association).
- HALL, A M. 1985. Cenozoic weathering covers in Buchan, Scotland and their significance. *Nature*, Vol. 315, 392–395.
- HALL, A M. 1986. Deep weathering patterns in north-east Scotland and their geomorphological significance. *Zeitschrift für Geomorphologie*, Vol. NF 30, 407–422.
- HALL, A M. 1987. Weathering and relief development in Buchan, Scotland. Part II. 991–1005 in *International Geomorphology 1986*. GARDINER, V (editor). (Chichester: John Wiley.)
- HALL, A M. 1991. Pre-Quaternary landscape evolution in the Scottish Highlands. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, Vol. 8, 1–26.
- HALL, A M. 1993a. Moss of Cruden. 218–221 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- HALL, A M. 1993b. Pittodrie. 221–223 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No 6 (London: Chapman and Hall.)
- HALL, A M. 1993c. Hill of Longhaven. 223–225 in *Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- HALL, A M. 1995. Was all of Lewis glaciated in the Late Devensian? *Quaternary Newsletter*, Vol. 76, 1–7.
- HALL, A M. 1997. Quaternary stratigraphy: the terrestrial record. 59–71 in *Reflections on the Ice Age in Scotland*. GORDON, J E (editor). (Glasgow: Scottish Association of Geography Teachers and Scottish Natural Heritage).
- HALL, A M. 2000. The Teindland Interglacial site. 34–37 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- HALL, A M, and BENT, A J A. 1990. The limits of the last British Ice Sheet in northern Scotland and the adjacent shelf. *Quaternary Newsletter*, Vol. 61, 2–12.
- HALL, A M, and CONNELL, E R. 1982. Recent excavations at the Greensand locality of Moreseat, Grampian Region. *Scottish Journal of Geology*, Vol. 18, 291–296.
- HALL, A M, and CONNELL, E R. 1986. A preliminary report on the Quaternary sediments at Leys gravel pit, Buchan. *Quaternary Newsletter*, Vol. 48, 17–28.
- HALL, A M, and CONNELL, E R. 1991. The glacial deposits of Buchan, northeast Scotland. 129–136 in *Glacial Deposits in Great Britain and Ireland*. EHLERS, J, GIBBARD, P L, and ROSE, J (editors). (Rotterdam: Balkema.)
- HALL, A M, and CONNELL, E R. 2000. Howe of Byth Quarry. 72–78 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- HALL, A M, and JARVIS, J. 1989. A preliminary report on the Late Devensian glaciomarine deposits around St Fergus, Grampian Region. *Quaternary Newsletter*, Vol. 59, 5–7.

- HALL, A M, and JARVIS, J. 1993a. Kirkhill. 225–230 in Quaternary of Scotland. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- HALL, A M, and JARVIS, J. 1993b. Bellscamphie. 230–233 in Quaternary of Scotland. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- HALL, A M, and JARVIS, J. 1994. A concealed Lower Cretaceous outlier at Moss of Cruden, Grampian Region. *Scottish Journal of Geology*, Vol. 30, 163–166.
- HALL, A M, and JARVIS, J. 1995. A multiple till sequence near Ellon, Grampian Region: T. F. Jamieson's 'indigo boulder clay' re-examined. *Scottish Journal of Geology*, Vol. 31, 53–59.
- HALL, A M, and PEACOCK, J D. 2000. King Edward. 43–45 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- HALL, A M, and SUGDEN, D E. 1987. Limited modification of mid-latitude landscapes by ice sheets. *Earth Surface Processes and Landforms*, Vol. 12, 531–542.
- HALL, A M, and WHITTINGTON, G. 1989. Late Devensian glaciation of southern Caithness. *Scottish Journal of Geology*, Vol. 25, 307–324.
- HALL, A M, MELLOR, T, and WILSON, J. 1989. The clay mineralogy and age of deeply weathered rock in north-east Scotland. *Zeitschrift der Geomorphologie Supplement Band*, Vol. 72, 97–108.
- HALL, A M, WHITTINGTON, G, DULLER, G A T, and JARVIS, J. 1995a. Late Pleistocene environments in lower Strathspey, Scotland. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, Vol. 85, 253–273.
- HALL, A M, DULLER, G, JARVIS, J, and WINTLE, A G. 1995b. Middle Devensian ice-proximal gravels at Howe of Byth, Grampian Region. *Scottish Journal of Geology*, Vol. 31, 61–64.
- HALL, A R. 1980. Late Pleistocene deposits at Wing, Rutland. *Philosophical Transactions of the Royal Society of London*, Vol. B289, 135–164.
- HALLAM, A, and SELLWOOD, B. 1976. Middle Mesozoic sedimentation in relation to tectonics in the British area. *Journal of Geology*, Vol. 84, 302–321.
- HAMBLIN, R J O. 1973. The Haldon Gravels of south Devon. *Proceedings of the Geologists' Association*, Vol. 84, 459–476.
- HANCOCK, J M. 1975. The petrography of the Chalk. *Proceedings of the Geologists' Association*, Vol. 86, 499–536.
- HARDE, K W. 1981. *A field guide in colour to beetles*. (London: Octopus Books.) HARKNESS, D D, and WILSON, H W. 1979. Scottish Universities Research and Reactor Centre radiocarbon measurements III. *Radiocarbon*, Vol. 21, 203–256.
- HARKNESS, D D, and WILSON, H W. 1981. Scottish Universities Research and Reactor Centre radiocarbon measurements IV. *Radiocarbon*, Vol. 23, 252–304.
- HARLAND, R. 1983. Distribution maps of recent dinoflagellate cysts in bottom sediments from the North Atlantic Ocean and adjacent seas. *Palaeontology*, Vol. 26, 321–387.
- HARLAND, R. 1988. Quaternary dinoflagellate cyst biostratigraphy of the North Sea. *Palaeontology*, Vol. 31, 877–903.
- HARLAND, R. 1992. Dinoflagellate cysts of the Quaternary System. 253–266 in *A stratigraphic index of dinoflagellate cysts*. POWELL, A J (editor). (London: Chapman and Hall.)

- HARLAND, R. 1993. Dinoflagellate cyst analysis of the Quaternary 'shelly till' at the Burn of Benholm, Scottish Sheet 57A. *British Geological Survey Technical Report*, WH93/173R.
- HARRIS, A L, HASELOCK, P J, KENNEDY, M J, and MENDUM, J R. 1994. The Dalradian Supergroup in Scotland, Shetland and Ireland. 33–53 in *A revised correlation of Precambrian rocks in the British Isles*. GIBBONS, W, and HARRIS, A L (editors). *Special Report of the Geological Society of London*, No. 22.
- HART, J K, and BOULTON, G S. 1991. The interrelation of glaciectonic and glaciodepositional processes within the glacial environment. *Quaternary Science Reviews*, Vol. 10, 335–350.
- HART, R. 1941. Soil studies in relation to geology in an area in north-east Scotland. Part 1. The mineralogy of the soil parent materials. *Journal of Agricultural Science*, Vol. 31, 438–447.
- HEDBERG, H D (editor). 1976. *International stratigraphic guide*. (New York: John Wiley & Sons).
- HEINRICH, H. 1988. Origin and consequences of cyclic ice rafting in the north-east Atlantic Ocean during the past 130 000 years. *Quaternary Research*, Vol. 29, 142–152.
- HICOCK, S R, LIAN, O B, and MATHEWES, R W. 1999. 'Bond cycles' recorded in terrestrial Pleistocene sediments of southwestern British Columbia, Canada. *Journal of Quaternary Science*, Vol. 14, 443–449.
- HILL, M O, and eight others. 1999. Climate changes and Scotland's natural heritage: an environmental audit. *Scottish Natural Heritage Research and Monitoring Report*, No. 132.
- HINXMAN, L W, and TEALL, J J H. 1896. The geology of West Aberdeenshire, Banffshire, parts of Elgin and Inverness. *Memoir of the Geological Survey (Scotland)*.
- HINXMAN, L W, and WILSON, J S G. 1902. The geology of Lower Strathspey. *Memoir of the Geological Survey, Scotland*, Sheet 85 (Scotland).
- HOLMES, R. 1977. Quaternary deposits of the central North Sea, 5. The Quaternary geology of the UK sector of the North Sea between 56° and 58°N. *Report of the Institute of Geological Sciences*, No. 77/14.
- HOLMES, R. 1991. Foula Sheet 60°N–04°W. Quaternary Geology. 1:250 000 Map Series. British Geological Survey, Edinburgh.
- HOLMES, R. 1997. Quaternary stratigraphy: the offshore record. 72–94 in *Reflections on the ice age in Scotland*. GORDON, J E (editor). (Glasgow: Scottish Association of Geography Teachers and Scottish Natural Heritage.)
- HOLMES, R, JEFFREY, D H, RUCKLEY, N A R, and WINGFIELD, R. 1993. Quaternary sediments around the United Kingdom, North Sheet, 1:1 000 000. British Geological Survey, Edinburgh.
- HUIJZER, B, and VANDENBERGHE, J. 1998. Climatic reconstruction of the Weichselian pleniglacial in northwestern and central Europe. *Journal of Quaternary Science*, Vol. 13, 391–417.
- HULL, E. 1895. The glacial deposits of Aberdeenshire. *Geological Magazine*, Vol. 2, 450–452.
- HYDRAULICS RESEARCH. 1997. Coastal cells in Scotland. *Scottish Natural Heritage Research, Survey and Monitoring Report*, No. 56.
- IMBRIE, J, and IMBRIE, K P. 1979. *Ice Ages: solving the mystery*. (London: MacMillan.)
- IMBRIE, J, and eight others. 1984. The orbital theory of Pleistocene climate: support from a revised chronology of the marine 18O record. 269–305 in *Milankovitch and climate: understanding the response to astronomical forcing*. BERGER, A L, and four others (editors). (Dordrecht: Reidel).

- JAMIESON, T F. 1858. On the Pleistocene deposits of Aberdeenshire. *Quarterly Journal of the Geological Society of London*, Vol. 14, 509–532.
- JAMIESON, T F. 1859. On an outlier of Lias in Aberdeenshire. *Quarterly Journal of the Geological Society of London*, Vol. 15, 131–133.
- JAMIESON, T F. 1860a. On the occurrence of crag strata beneath boulder clay in Aberdeenshire. *Quarterly Journal of the Geological Society of London*, Vol. 16, 371–373.
- JAMIESON, T F. 1860b. On the drift and rolled gravel of the north of Scotland. *Quarterly Journal of the Geological Society of London*, Vol. 16, 347–371.
- JAMIESON, T F. 1862. On the ice-worn rocks of Scotland. *Quarterly Journal of the Geological Society of London*, Vol. 18, 164–184.
- JAMIESON, T F. 1865. On the history of the last geological changes in Scotland. *Quarterly Journal of the Geological Society of London*, Vol. 21, 161–203.
- JAMIESON, T F. 1866. On the glacial phenomena of Caithness. *Quarterly Journal of the Geological Society of London*, Vol. 22, 261–281.
- JAMIESON, T F. 1874. On the last stage of the glacial period in North Britain. *Quarterly Journal of the Geological Society of London*, Vol. 30, 317–338.
- JAMIESON, T F. 1882a. On the crag shells of Aberdeenshire and the gravel beds containing them. *Quarterly Journal of the Geological Society*, Vol. 38, 145–159.
- JAMIESON, T F. 1882b. On the Red Clay of the Aberdeenshire coast and the direction of ice-movement in that quarter. *Quarterly Journal of the Geological Society of London*, Vol. 38, 160–177.
- JAMIESON, T F. 1906. The glacial period in Aberdeenshire and the southern border of the Moray Firth. *Quarterly Journal of the Geological Society of London*, Vol. 62, 13–39.
- JAMIESON, T F. 1910. On the surface geology of Buchan. 19–25 in *The Book of Buchan*. TOCHER, J F, (editor). (Aberdeen and Peterhead: Aberdeen University Press and P. Scrogie Ltd).
- JAMIESON, T F, JUKES-BROWNE, A J, and MILNE, J. 1897. Cretaceous fossils in Aberdeenshire. *Report of the British Association for the Advancement of Science*, 333–342.
- JANSEN, J H F. 1976. Late Pleistocene and Holocene history of the northern North Sea, based on acoustic reflection records. *Netherlands Journal of Sea Research*, Vol. 10, 1–43.
- JAPSEN, P. 1997. Regional Neogene exhumation of Britain and the western North Sea. *Journal of the Geological Society of London*, Vol. 154, 239–247.
- JAPSEN, P. 1998. Regional velocity-depth anomalies, North Sea Chalk: a record of overpressure and Neogene uplift and erosion. *American Association of Petroleum Geologists*, Vol. 82, 2031–2074.
- JARDINE, W G, and five others. 1988. A late Middle Devensian interstadial site at Sourlie, near Irvine, Strathclyde. *Scottish Journal of Geology*, Vol. 24, 288–295.
- JEFFERY, D H, and LONG, D. 1989. Early Pleistocene sedimentation and geographic change in the UK sector of the North Sea. *Terra Abstracts*, Vol. 1, 425.

- JENSEN, K A, and KNUDSEN, K L. 1988. Quaternary foraminiferal stratigraphy in boring 81/29 from the central North Sea. *Boreas*, Vol. 17, 273–287.
- JOHNSON, H, RICHARDS, P C, LONG, D, and GRAHAM, C C. 1993. *United Kingdom Offshore Regional Report: the Geology of the Northern North Sea*. (London: HMSO for the British Geological Survey.)
- JONES, L H P, and MILNE, A A. 1956. Birnessite, a new manganese oxide mineral from Aberdeenshire, Scotland. *Mineralogical Magazine*, Vol. 31, 283–288.
- JORDT, H, FALEIDE, J I, BJØLYKKE, K, and IBRAHAM, M T. 1998. Cenozoic sequence stratigraphy of the central and northern North Sea basin: tectonic development, sediment distribution and provenance areas. *Marine and Petroleum Geology*, Vol. 12, 845–879.
- KARLLSON, W, VOLLSET, J, BJØRLYKKE, K, and JORGENSEN, P. 1979. Changes in the mineralogical composition of Tertiary sediments from North Sea wells. 281–289 in *Proceedings of the 6th International Clay Conference*. Development in sedimentology, No. 27. MORTLAND, M M, and FARMER, V C (editors). (Amsterdam, Netherlands: Elsevier.)
- KESEL, R H, and GEMMELL, A M D. 1981. The 'Pliocene' gravels of Buchan: a reappraisal. *Scottish Journal of Geology*, Vol. 17, 185–203.
- KNUDSEN, K L, and SEJRUP, H P. 1993. Pleistocene stratigraphy in the Devils Hole area, central North Sea: foraminiferal and amino-acid evidence. *Journal of Quaternary Science*, Vol. 8, 1–14.
- KOPPI, A J. 1977. Weathering of Tertiary gravels, a schist and a metasediment in north-east Scotland. Unpublished PhD thesis, University of Aberdeen.
- KOPPI, A J, and FITZPATRICK, E A. 1980. Weathering in Tertiary gravels in NE Scotland. *Journal of Soil Science*, Vol. 31, 525–532.
- KOTILAINEN, A T, and SHACKLETON, N J. 1995. Rapid climate variability in the North Pacific Ocean during the past 95 000 years. *Nature, London*, Vol. 377, 323–326.
- KROON, D, AUSTIN, W E N, CHAPMAN, M R, and GANSSSEN, G M. 1997. Deglacial surface circulation changes in the northeastern Atlantic: temperature and salinity records off NW Scotland on a century scale. *Palaeoceanography*, Vol. 12, 755–763.
- LAGERKLINT, I M, and WRIGHT, J D. 1999. Late glacial warming prior to Heinrich event 1: the influence of ice rafting and large ice sheets on the timing of initial warming. *Geology*, Vol. 27, 1099–1102.
- LAMB, H H. 1977. *Climate: present, past and future*. Vol. 2. Climatic history and the future. (London: Methuen.)
- LAMBECK, K. 1991. A model for Devensian and Flandrian glacial rebound and sea-level change in Scotland. 33–62 in *Glacial isostasy, sea level and mantle rheology*. SABADINI, R, LAMBECK, K, and BOSCHI, E, (editors). (Dordrecht: Kluwer Academic Publishers.)
- LAMBECK, K. 1993a. Glacial rebound of the British Isles, I; preliminary model results. *Geophysical Journal International*, Vol. 115, 941–959.
- LAMBECK, K. 1993b. Glacial rebound of the British Isles, II; a high resolution, high precision model. *Geophysical Journal International*, Vol. 115, 960–990.
- LAMBECK, K. 1995. Late Devensian and Holocene shorelines of the British Isles and North Sea from models of glacio-hydro-isostatic rebound. *Journal of the Geological Society of London*, Vol. 152, 437–448.

- LARSEN, E, and five others. 1987. Cave stratigraphy in western Norway; multiple Weichselian glaciations and interstadial vertebrate fauna. *Boreas*, Vol. 16, 267–292.
- LAW, G R. 1962. The sub-surface geology of the Bay of Nigg–Tullos area. Unpublished MSc thesis, University of Aberdeen.
- LAWSON, T J. 1984. Reindeer in the Scottish Quaternary. *Quaternary Newsletter*, Vol. 42, 1–7.
- LAWSON, T J, and ATKINSON, T C. 1995. Quaternary chronology. 12–18 in *The Quaternary of Assynt and Coigach: field guide*. LAWSON, T J (editor). (Cambridge: Quaternary Research Association.)
- LAXTON, J L. 1992. A particle-size classification of sand and gravel deposits as a basis for end-use assessment. *Engineering Geology*, Vol. 32, 29–37.
- LEHMAN, S. 1996. True grit spells double trouble. *Nature, London*, Vol. 382, 25–26.
- LESLIE, A G. 1984. Field relations in the north-eastern part of the Inch mafic igneous mass, Aberdeenshire. *Scottish Journal of Geology*, Vol. 20, 225–235.
- LEWIN, J, and WEIR, M J C. 1977. Morphology and recent history of the Lower Spey. *Scottish Geographical Magazine*, Vol. 93, 45–51.
- LIDMAR-BERGSTROM, K. 1982. Pre-Quaternary geomorphological evolution in southern Fennoscandia. *Sveriges Geologiska Undersökning*, Vol. 785, 1–202.
- LINDROTH, C H. 1985. The Carabidae (Coleoptera) of Fennoscandia and Denmark. In *Fauna Entomologica Scandinavica*. BRILL, E J (editor). Part 1. Vol. 15. (Copenhagen: Scandanavian Science Press Ltd.)
- LINTON, D L. 1951. Problems of Scottish scenery. *Scottish Geographical Magazine*, Vol. 67, 65–85.
- LINTON, D L. 1963. The forms of glacial erosion. *Transactions of the Institute of British Geographers*, Vol. 33, 1–28.
- LONG, D, SMITH, D E, and DAWSON, A G. 1989. A Holocene tsunami deposit in eastern Scotland. *Journal of Quaternary Science*, Vol. 4, 61–66.
- LOWE, J J. 1984. A critical evaluation of pollen-stratigraphic investigations of pre-Late Devensian sites in Scotland. *Quaternary Science Reviews*, Vol. 3, 405–432.
- LOWE, J J, and eight others. 1999. The chronology of palaeoenvironmental changes during the last Glacial-Holocene transition: towards an event stratigraphy for the British Isles. *Journal of the Geological Society of London*, Vol. 156, 397–410.
- LUBINSKY, I. 1980. Marine bivalve molluscs of the Canadian central and eastern Arctic: faunal composition and zoogeography. *Canadian Bulletin of Fisheries and Aquatic Sciences*, Vol. 207, 1–111.
- LUMSDEN, G I. 1958. The glacial and post-glacial history of the lower reaches of the River Don, Aberdeenshire. *Transactions of the Geological Society of Edinburgh*, Vol. 17, 141–155.
- MACKIE, W. 1905. Some notes on the distribution of erratics over eastern Moray. *Transactions of the Edinburgh Geological Society*, Vol. 8, 91–97.
- MACKIE, W. 1923. The principles that regulate the distribution of particles of heavy minerals in sedimentary rocks, as illustrated by the sandstones of the north-east of Scotland. *Transactions of the Edinburgh Geological Society*, Vol. 11, 138–164.

- MACPHERSON, E. 1971. *The marine molluscs of arctic Canada*. (Publications in Biological Oceanography, No 3). (Ottawa: National museums of Canada.)
- MADGETT, P A, and CATT, J A. 1978. Petrography, stratigraphy and weathering of Late Pleistocene tills in East Yorkshire, Lincolnshire and north Norfolk. *Proceedings of the Yorkshire Geological Society*, Vol. 42, 55–108.
- MAIZELS, J K, and AITKEN, J F. 1991. Palaeohydrological change during deglaciation in upland Britain: a case study from northeast Scotland. 105–145 in *Temperate Palaeohydrology*. STARKEL, L, GREGORY, K J, and THORNES, J B (editors). (Chichester: John Wiley.)
- MANGERUD, J, and six others. 1981. A Middle Weichselian ice-free period in Western Norway: the Ålesund interstadial. *Boreas*, Vol. 10, 447–462.
- MANGERUD, J, JANSEN, E, and LANDVIK, J.Y. 1996. Late Cenozoic history of the Scandinavian and Barents Sea ice sheets. *Global and Planetary Change*, Vol. 12, 11–26.
- MASLIN, M A, and five others. 1995. Northwest Pacific Site 882: the initiation of Northern Hemisphere glaciation. Ocean Drilling Program, College Station, TX. *Proceedings of the Ocean Drilling Program, Scientific Reports*, Vol. 145, 315–329.
- MASLIN, M A, LI, X S, LOUTRE, M-F, and BERGER, A. 1998. The contribution of orbital forcing to the progressive intensification of Northern Hemisphere glaciation. *Quaternary Science Reviews*, Vol. 17, 411–426.
- MAUZ, B. 1998. The onset of the Quaternary: a review of new findings in the Pliocene–Pleistocene chronostratigraphy. *Quaternary Science Reviews*, Vol. 17, 357–364.
- MAYLE, F E, and nine others. 1999. Climate variations in Britain during the last Glacial-Holocene transition (15.0–11.5 cal ka BP): comparison with the GRIP ice-core record. *Journal of the Geological Society of London*, Vol. 156, 411–423.
- MCCABE, A M. 1996. Dating and rhythmicity from the last deglacial cycle in the British Isles. *Journal of the Geological Society of London*, Vol. 153, 499–502.
- MCCABE, A M, and CLARK, P U. 1998. Ice-sheet variability around the North Atlantic Ocean during the last deglaciation. *Nature, London*, Vol. 392, 373–377.
- MCCABE, A M, KNIGHT, J, and MCCARRON, S. 1998. Evidence for Heinrich event 1 in the British Isles. *Journal of Quaternary Science*, Vol. 13, 549–568.
- MCDONALD, B C, and SHILTS, W W. 1975. Interpretation of faults in glaciofluvial sediments. 123–131 in *Glaciofluvial and glaciolacustrine sedimentation*. JOPLING, A V, and MCDONALD, B C (editors). *Society for Economic Paleontologists and Mineralogists (Society for Sedimentary Geology) Special Publication*, No. 23.
- MCEWEN, L J. 1997. Geomorphological change and fluvial landscape evolution in Scotland during the Holocene. 116–129 in *Reflections on the Ice Age in Scotland*. GORDON, J E (editor). (Glasgow: Scottish Association of Geography Teachers and Scottish Natural Heritage.)
- MCGOWN, A. 1971. The classification for engineering purposes of tills from moraines and associated landforms. *Journal of Engineering Geology*, Vol. 4, 115–130.
- MCGOWN, A, and DERBYSHIRE, E. 1977. Genetic influences on the properties of tills. *Quarterly Journal of Engineering Geology*, Vol. 10, 389–410.
- MCGREGOR, D M, and WILSON, J S G. 1967. Gravity and magnetic surveys of the younger gabbros of Aberdeenshire. *Quarterly Journal of the Geological Society of London*, Vol. 123, 99–123
- MCLEAN, F. 1977. The glacial sediments of a part of Aberdeenshire. Unpublished PhD thesis, University of Aberdeen.

- MCMILLAN, A A, and AITKEN, A M. 1981. The sand and gravel resources of the country west of Peterhead, Grampian Region. Description of 1:25 000 sheet NK04 and parts of NJ94, 95 and NK 05, 14 and 15. *Mineral Assessment Report of the Institute of Geological Sciences*, No. 58.
- MCMILLAN, A A, and MERRITT, J W. 1980. A reappraisal of the 'Tertiary' deposits of Buchan, Grampian Region. *Report of the Institute of Geological Sciences*, No. 80/1, 18–25.
- MCMILLAN, A A, AND HAMBLIN, R J O. 2000. A mapping related lithostratigraphical framework for the Quaternary of the UK. *Quaternary Newsletter*, No. 92, 21–34.
- MENKE, B, and BEHRE, K E. 1973. History of vegetation and biostratigraphy. *Eiszeitalter und Gegenwart*, Vol. 23, 251–267.
- MERRITT, J W. 1981. The sand and gravel resources of the country around Ellon, Grampian Region. Description of 1:25 000 resource sheets NJ93 with parts of NJ82, 83 and 92, and NK03 and parts of NK02 and 13. *Mineral Assessment Report of the Institute of Geological Sciences*, No. 76.
- MERRITT, J W. 1992a. A critical review of methods used in the appraisal of onshore sand and gravel resources in Britain. *Engineering Geology*, Vol. 32, 1–9.
- MERRITT, J W. 1992b. The high-level marine shell-bearing deposits of Clava, Invernessshire, and their origin as glacial rafts. *Quaternary Science Reviews*, Vol. 11, 759–779.
- MERRITT, J W, and CONNELL, E R. 2000. Oldmill Quarry. 68–71 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- MERRITT, J W, and MCMILLAN, A A. 1982. Letters to the editors. The 'Pliocene' gravels of Buchan: a reappraisal. *Scottish Journal of Geology*, Vol. 18, 329–332.
- MERRITT, J W, and PEACOCK, J D. 1983a. A preliminary study of the sand and gravel deposits around Aberdeen (1:25 000 sheets NJ71, 80, 81, 90, 91 and parts of 61 and 92; NO69 and 79 and parts of 89). *Institute of Geological Sciences, Industrial Mineral Assessment Unit, Open File Report, WA/HI/83/4*.
- MERRITT, J W, and PEACOCK, J D. 1983b. A preliminary study of the sand and gravel deposits around Inverness and Nairn, Highland Region and Forres and Elgin, Grampian Region (1:25 000 sheets NH63, 64, 73, 75, 84, 85, 94, 95 and 96; NJ05, 06, 15, 16, 17, 25, 26, 27, 35 and part of 04). *Institute of Geological Sciences, Industrial Mineral Assessment Unit, Open File Report, WA/HI/83/5*.
- MERRITT, J W, and PEACOCK, J D. 2000. Glacial meltwater channels in Banffshire and Buchan with particular reference to the area around the Tore of Troup. 46–48 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- MERRITT, J W, AUTON, C A, and ROSS, D L. 1988. Summary assessment of the sand and gravel resources of northeast Scotland. *British Geological Survey Technical Report, WF/88/2*.
- MERRITT, J W, AUTON, C A, and FIRTH, C R. 1995. Ice-proximal glaciomarine sedimentation and sea-level change in the Inverness area, Scotland: a review of the deglaciation of a major ice stream of the British Late Devensian ice sheet. *Quaternary Science Reviews*, Vol. 14, 289–329.
- MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R. 2000. *The Quaternary of the Banffshire coast and Buchan: field guide*. (London: Quaternary Research Association.)
- MERRITT, J W, CONNELL, E R, HALL, A M, and PEACOCK, J D. 2000. An introduction to the Cainozoic geology of coastal Morayshire, Banffshire and Buchan. 1–20 in *The Quaternary of the Banffshire coast and Buchan: field guide*.

- MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- MILLER, G H. 1990. Additional dating methods. 405–413 in *Geomorphological Techniques*. GOUDIE, A (edited for the British Geomorphological Research Group). (London: Unwin Hyman.)
- MILLER, G H, and MANGERUD, J. 1985. Aminostratigraphy of European marine interglacial deposits. *Quaternary Science Reviews*, Vol. 4, 215–278.
- MILLER, G H, BRIGHAM, J K, and CLARK, P. 1982. Alteration of the Total alle/Ile ratio by different methods of sample preparation. 9–20 in *Amino acid geochronology laboratory*. January 1981 through May 1982. Report of current activities. MILLER, G H (editor). *Institute of Arctic and Alpine Research and Department of Geological Sciences, University of Colorado*.
- MILLER, G H, SEJRUP, H P, MANGERUD, J, and ANDERSEN, B G. 1983. Amino acid ratios in Quaternary molluscs and foraminifera from western Norway: aminostratigraphy and paleotemperature estimates. *Boreas*, Vol. 12, 107–124.
- MILLER, G H, and seven others. 1987. Racemization-derived late Devensian temperature reduction in Scotland. *Nature, London*, Vol. 326, 593–595.
- MILLER, H. 1859. *Sketchbook of popular geology*. (Edinburgh: Constable.)
- MILNE, J. 1892a. Geology of Buchan. *Transactions of the Buchan Field Club*, Vol. 2, 23–38.
- MILNE, J. 1892b. Drift rocks in Buchan. *Transactions of the Buchan Field Club*, Vol. 2, 181–198.
- MITCHELL, G F, PENNY, L F, SHOTTON, F W, and WEST, R G. 1973. A correlation of Quaternary deposits in the British Isles. *Geological Society of London Special Report*, No. 4.
- MUNRO, M. 1970. A re-assessment of the 'younger' basic igneous rocks between Huntly and Portsoy based on new borehole evidence. *Scottish Journal of Geology*, Vol. 6, 41–52.
- MUNRO, M. 1986. Geology of the country around Aberdeen. *Memoir of the British Geological Survey*, Sheet 77 (Scotland).
- MUNRO, M, and GALLACHER, J W. 1984. Cumulate relations in the 'Younger Basic' masses of the Huntly–Portsoy area, Grampian Region. *Scottish Journal of Geology*, Vol. 20, 361–382.
- MURDOCH, W M. 1975. The geomorphology and glacial deposits of the area around Aberdeen. 14–18 in *Quaternary Studies in North East Scotland*. GEMMELL, A M D (editor). (Aberdeen: University of Aberdeen.)
- MURDOCH, W M. 1977. The glaciation and deglaciation of south east Aberdeenshire. Unpublished PhD thesis, University of Aberdeen.
- MUSSON, R M W. 1994. A catalogue of British earthquakes. *British Geological Survey Technical Report*, WL/94/04.
- MUSSON, R M W. 1996. The seismicity of the British Isles. *Annali di Geofisica*, Vol. 39, 463–469.
- MUSSON, R M W, NEILSON, G, and BURTON, P W. 1986. Macroseismic reports on historical British earthquakes X11: 1927 January 24 North Sea. *British Geological Survey Global Seismology Unit Report*, WL/GS/86/281.
- MYKURA, W. 1983. Old Red Sandstone. 205–251 in *Geology of Scotland*. (second edition). CRAIG, G Y (editor). (Edinburgh: Scottish Academic Press.)
- NATURAL ENVIRONMENT RESEARCH COUNCIL. 1998. UKDMAP CD-ROM. *United Kingdom Digital Marine Atlas*. (Third edition). (Bidston Observatory, Birkenhead: British Oceanographic Data Centre.)

- NESJE, A, and SEJRUP, H P. 1988. Late Weichselian/Late Devensian ice sheets in the North Sea and adjacent areas. *Boreas*, Vol. 17, 371–384.
- NICOL, J. 1860. On the geological structure of the vicinity of Aberdeen and the north-east of Scotland. *Report of the British Association for the Advancement of Science, 29th meeting*, 116–119.
- NORTON, P E P, and SPAINK, G. 1973. The earliest occurrence of *Macoma balthica* (L.) as a fossil in the North Sea deposits. *Malacologia*, Vol. 14, 33–37.
- OCKELMANN, W K. 1954. On the interrelationship and the zoogeography of northern species of *Yoldia* Møller, S. Str. (*Mollusca, fam. Ledidae*). *Meddelelser om Grønland*, Vol. 107, Nr. 7.
- OGILVIE, A G. 1923. The physiography of the Moray Firth coast. *Transactions of the Royal Society of Edinburgh*, Vol. 53, 377–404.
- OLSEN, L. 1997. Rapid shifts in glacial extension characterise a new concepted model for glacial variations during the Mid and Late Weichselian in Norway. *Norges Geologiske Undersøkelse, Bulletin*, 433, 54–55.
- OSBORNE, P J. 1988. A late Bronze Age insect fauna from the River Avon, Warwickshire, England: its implications for the terrestrial and fluvial environment and for climate. *Journal of Archaeological Science*, Vol. 15, 715–727.
- OWEN, D E. 1987. Commentary: usage of stratigraphic terminology in papers, illustrations, and talks. *Journal of Sedimentary Petrology*, Vol. 57, 363–372.
- OWENS, B, and MARSHALL, J, (compilers). 1978. Micropalaeontological biostratigraphy of samples from around the coasts of Scotland. *Report of the Institute of Geological Sciences*, No. 78/20.
- PATERSON, I B. 1974. The supposed Perth Re-advance in the Perth district. *Scottish Journal of Geology*, Vol. 10, 53–66.
- PAUL, M A, and EYLES, N. 1990. Constraints on the preservation of diamict facies (melt-out tills) at the margins of stagnant glaciers. *Quaternary Science Reviews*, Vol. 9, 51–69.
- PAUL, M A, and LITTLE, J A. 1991. Geotechnical properties of glacial deposits in lowland Britain. 389–403 in *Glacial deposits in Great Britain and Ireland*. EHLERS, J, GIBBARD, P L, and ROSE, J (editors). (Rotterdam: Balkema.)
- PEACOCK, J D. 1966. Note on the drift sequence near Portsoy, Banffshire. *Scottish Journal of Geology*, Vol. 2, 35–37.
- PEACOCK, J D. 1971. A re-interpretation of the coastal deposits of Banffshire and their place in the late-Glacial history of NE Scotland. *Bulletin of the Geological Survey of Great Britain*, Vol. 37, 81–89.
- PEACOCK, J D. 1975. Scottish Late- and Post-glacial marine deposits. 45–48 in *Quaternary studies in north east Scotland*. GEMMELL, A M D (editor). (Aberdeen: University of Aberdeen.)
- PEACOCK, J D. 1979. Mill of Dyce. 203–256 in *Scottish Universities Research and Reactor Centre radiocarbon measurements III*. HARKNESS, D D, and WILSON, H W (editors). *Radiocarbon*, Vol. 21.
- PEACOCK, J D. 1980. An overlooked record of interglacial or interstadial sites in north-east Scotland. *Quaternary Newsletter*, Vol. 32, 14–15.
- PEACOCK, J D. 1983. Planning for development: Peterhead project. *British Geological Survey Technical Report*, WA/HI/83/1.
- PEACOCK, J D. 1984. Errolston. 108–109 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)

- PEACOCK, J D. 1985. Comments on the Quaternary deposits and landforms of Scotland and the neighbouring shelves: a review. *Quaternary Science Reviews*, Vol. 4, i–ii.
- PEACOCK, J D. 1995. Late Devensian to early Holocene palaeoenvironmental changes in the Viking Bank area, northern North Sea. *Quaternary Science Reviews*, Vol. 14, 1029–1042.
- PEACOCK, J D. 1996. Marine molluscan proxy data applied to Scottish late glacial and Flandrian sites: strengths and limitations. 215–228 in *Late Quaternary Palaeoceanography of the North Atlantic Margins*. ANDREWS, J T, AUSTIN, W E N, BERGSTEN, H, and JENNINGS, A E (editors). *Special Publication of the Geological Society of London*, No. 111.
- PEACOCK, J D. 1997. Was there a re-advance of the British ice sheet into the North Sea between 15 ka and 14 ka BP? *Quaternary Newsletter*, Vol. 81, 1–8.
- PEACOCK, J D. 1999. The pre-Windermere Interstadial (Late Devensian) raised marine strata of eastern Scotland and their macrofauna: a review. *Quaternary Science Reviews*, Vol. 18, 1655–1679.
- PEACOCK, J D. 2000. A glaciated pavement and crossing striations between Fraserburgh and Rattray Head. 56 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- PEACOCK, J D, and BROWNE, M A E. 1998. Radiocarbon dates from the Errol Beds (pre-Windermere Interstadial raised marine deposits) in eastern Scotland. *Quaternary Newsletter*, Vol. 86, 1–7.
- PEACOCK, J D, and CONNELL, E R. 2000. Glacial lakes in the valleys of the North Ugie and South Ugie. 49–52 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- PEACOCK, J D, and HARKNESS, D D. 1990. Radiocarbon ages and the full-glacial to Holocene transition in seas adjacent to Scotland and southern Scandinavia: a review. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, Vol. 81, 385–396.
- PEACOCK, J D, and MERRITT, J W. 1997. Glacigenic rafting at Castle Hill, Gardenstown, and its significance for the glacial history of northern Banffshire, Scotland. *Journal of Quaternary Science*, Vol. 12, 283–294.
- PEACOCK, J D, and MERRITT, J W. 2000a. Glacial deposits at the Boyne Limestone Quarry, Portsoy, and the late-Quaternary history of coastal Banffshire. *Journal of Quaternary Science*, Vol. 15, 543–555.
- PEACOCK, J D, and MERRITT, J W. 2000b. Boyne Bay Limestone Quarry. 25–32 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- PEACOCK, J D, and MERRITT, J W. 2000c. So-called 'pre-Glacial' raised beach deposits on the Banffshire coast. 33 in *The Quaternary of the Banffshire coast and Buchan: Field Guide*. (London: Quaternary Research Association.)
- PEACOCK, J D, and MERRITT, J W. 2000d. Castle Hill, Gardenstown. 40–42 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- PEACOCK, J D, and MERRITT, J W. 2000e. Exposures in the Blackhills Sand and Gravel Formation and related deposits. 53–55 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- PEACOCK, J D, BERRIDGE, N G, HARRIS, A L, and MAY, F. 1968. The geology of the Elgin district. *Memoir of the Geological Survey*, Sheet 95 (Scotland).

- PEACOCK, J D, and seven others. 1977. Sand and gravel resources of the Grampian region. *Report of the Institute of Geological Sciences*, No. 77/2.
- PEACOCK, J D, GRAHAM, D K, and WILKINSON, I P. 1978. Late-glacial and post-glacial marine environments at Ardyne, Scotland, and their significance in the interpretation of the history of the Clyde sea area. *Report of the Institute of Geological Sciences*, No. 78/17.
- PEACOCK, J D, and five others. 1992. Late Devensian and Flandrian palaeoenvironmental changes in the Scottish continental shelf west of the Outer Hebrides. *Journal of Quaternary Science*, Vol. 7, 145–161.
- PEACOCK, J D, HALL, A M, and CONNELL, E R. 2000. St Fergus. 62–64 in *The Quaternary of the Banffshire coast and Buchan: field guide*. (London: Quaternary Research Association.)
- PEARS, N V. 1968. Post-glacial tree-lines of the Cairngorm Mountains. *Transactions of the Botanical Society of Edinburgh*, 40, 361–394.
- PEARS, N V. 1970. Post-glacial tree-lines of the Cairngorm Mountains; some modifications based on radiocarbon dating. *Transactions of the Botanical Society of Edinburgh*, Vol. 40, 536–544.
- PEARSON, D G, EMELEUS, C H, and KELLEY, S P. 1996. Precise $^{40}\text{Ar}/^{39}\text{Ar}$ age for the initiation of Palaeogene volcanism in the Inner Hebrides and its regional significance. *Journal of the Geological Society of London*, Vol. 153, 815–818.
- PENNEY, D. 1990. Quaternary ostracod chronology of the central North Sea: the record from BH 81/29. *Courier Forschungsinstitut Senckenberg*, Vol. 123, 97–109.
- PHILLIPS, L. 1976. Pleistocene vegetational history and geology in Norfolk. *Philosophical Transactions of the Royal Society of London*, Vol. B275, 215–286.
- PIRAZZOLI, P.A. 1993. Global sea-level changes and their measurement. *Global and Planetary Change*, Vol. 8, 135–148.
- PONS, A, GUIOT, J L, BEAULIEU, J L, DE, and REILLE, M. 1992. Recent contributions to the climatology of the last glacial–interglacial cycle based on French pollen sequences. *Quaternary Science Reviews*, Vol. 11, 439–448.
- POPE, R D. 1977. Revised version of 'A check list of British insects' by G S Kloet, and W D Hinks. Second edition, part 3. *Royal Entomological Society of London, Handbooks for the identification of British Insects*, Volume 11, Part 3.
- POWELL, A J. 1992. Dinoflagellate cysts of the Tertiary System. 253–266 in *A stratigraphic index of dinoflagellate cysts*. POWELL, A J (editor). (London: Chapman and Hall.)
- PRESTWICH, J. 1837. Observations on the Ichthyolites of Gamrie in Banffshire, and on the accompanying red conglomerates and sandstones. *Transactions of the Geological Society of London*, Vol. 5, 139–148.
- PRICE, R J. 1983. *Scotland's environment during the last 30 000 years*. (Edinburgh: Scottish Academic Press.)
- QUATERNARY RESEARCH ASSOCIATION. 1975. *Field excursion guide: Aberdeen*. (Informal publication: Quaternary Research Association.)
- RAMSAY, D M. 1965. Factors influencing aggregate impact value in rock aggregate. *Quarry Manager's Journal*, Vol. 49, 129–134.
- RAMSAY, D M, DHIR, R K, and SPENCE, I M. 1973. The reproducibility of results in the aggregate impact test: the influence of non-geological factors. *Quarry Managers' Journal*, Vol. 57, 179–181.

- RAMSAY, D M, DHIR, R K, and SPENCE, I M. 1974. The role of rock and clast fabric in the physical performance of crushed-rock aggregate. *Engineering Geology*, Vol. 8, 267–285.
- RAMSAY, K. 1999. Geotechnical properties of glacial tills in the Aberdeen area. Unpublished MSc thesis, Heriot-Watt University, Edinburgh.
- RAYMO, M E. 1994. The initiation of Northern Hemisphere glaciation. *Annual Review of Earth and Planetary Sciences*, Vol. 22, 353–383.
- RAYMO, M E. 1997. The timing of major climate terminations. *Paleoceanography*, Vol. 12, 577–585.
- RAYMO, M E, and RUDDIMAN, W F. 1992. Tectonic forcing of late Cenozoic climate. *Nature, London*, Vol. 359, 117–122.
- READ, H H. 1923. The geology of the country around Banff, Huntly and Turriff (Lower Banffshire and north-west Aberdeenshire). *Memoir of the Geological Survey, Scotland, sheets 86 and 96*.
- READ, H H, BREMNER, A, CAMPBELL, R, and GIBB, A W. 1923. Records of the occurrence of boulders of Norwegian rocks in Aberdeenshire and Banffshire. *Transactions of the Edinburgh Geological Society*, Vol. 11, 230–231.
- RIDGWAY, J M. 1982. Common clay and shale. *Mineral Dossier Mineral Resources Consultative Committee*, No. 22.
- RIDING, J B. 1998. A palynological investigation of a Quaternary sample from Boyne Bay, Banffshire (Scottish 1:50 000 Sheet 96). *British Geological Survey: Edinburgh, Technical Report, WH/98/17R*.
- RITCHIE, W. 1992. Scottish landform examples — 4. Coastal parabolic dunes of the Sands of Forvie. *Scottish Geographical Magazine*, Vol. 108, 39–44.
- RITCHIE, W, SMITH, J S, and ROSE, N. 1978. *Beaches of northeast Scotland*. (Aberdeen: Department of Geography, University of Aberdeen.)
- ROBINS, N S. 1990. *Hydrogeology of Scotland*. (London: HMSO for the British Geological Survey.)
- ROMANS, J C C. 1977. Stratigraphy of buried soil at Teindland Forest, Scotland. *Nature, London*, Vol. 268, 622–623.
- ROSE, J. 1985. The Dimlington Stadial/Dimlington Chronozone: a proposal for the naming of the main glacial episode of the Late Devensian in Britain. *Boreas*, Vol. 14, 225–230.
- RUDDIMAN, W F, and KUTZBACH, J E. 1991. Plateau uplift and climatic change. *Scientific American*, Vol. 264, 66–75.
- RUDDIMAN, W F, and MCINTYRE, A. 1973. Time-transgressive deglacial retreat of polar waters from the North Atlantic. *Quaternary Research*, Vol. 3, 117–130.
- RUDDIMAN, W F, and MCINTYRE, A. 1976. North-east Atlantic palaeoclimatic changes over the past 600 000 years. 111–146 in Investigation of late Quaternary palaeoceanography and palaeoclimatology. CLINE, R M, and HAGS, J D (editors). *Geological Society of America Memoir*, 145.
- RUDDIMAN, W F, and MCINTYRE, A. 1981. The mode and mechanism of the last deglaciation: oceanic evidence. *Quaternary Research*, Vol. 16, 125–134.
- RUDDIMAN, W F, and RAYMO, M E. 1988. Northern Hemisphere climate régimes during the past 3 Ma: possible tectonic connections. *Philosophical Transactions of the Royal Society of London*, Vol. B318, 411–430.
- RUDDIMAN, W F, SANCETTA, C D, and MCINTYRE, A. 1977. Glacial/interglacial response rate of subpolar North Atlantic waters to climatic change: the record in oceanic sediments. *Philosophical Transactions of the Royal Society of London*, Vol. B280, 119–142.

- RUDDIMAN, W F, RAYMO, M E, MARTINSON, D G, CLEMENT, B M, and BACKMAN, J. 1989. Pleistocene evolution: northern hemisphere ice sheets and North Atlantic Deep-Sea Core V23–82: correlation with the terrestrial record. *Palaeoceanography*, Vol. 4, 353–412.
- SALTER, J W. 1857. On the Cretaceous fossils of Aberdeenshire. *Quarterly Journal of the Geological Society of London*, Vol. 13, 83–89.
- SAVILLE, A. 2000. The NMS Project on flint mining in Scotland. 93–95 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- SCHRAG, D P. 2000. Of ice and elephants. *Nature, London*, Vol. 404, 23–24.
- SCOTT, D. 1890. Excursion to Links of St Fergus. *Transactions of the Buchan Field Club*, Vol. 1, 86–92.
- SEJRUP, H P, and KNUDSEN, K L. 1993. Paleoenvironments and correlations of interglacial sediments in the North Sea. *Boreas*, Vol. 22, 223–235.
- SEJRUP, H P, and nine others. 1987. Quaternary stratigraphy of the Fladen area, central North Sea: a multidisciplinary study. *Journal of Quaternary Science*, Vol. 2, 35–58.
- SEJRUP, H P, and six others. 1994. Late Weichselian glaciation history of the northern North Sea. *Boreas*, Vol. 23, 1–13.
- SEJRUP, H P, and seven others. 1995. Quaternary of the Norwegian Channel; paleoceanography and glaciation history. *Norsk Geologisk Tidsskrift*, Vol. 75, 65–87.
- SEJRUP, H P, and five others. 1998. The Jaeren area: a border zone of the Norwegian Channel Ice Stream. *Quaternary Science Reviews*, Vol. 17, 801–812.
- SEJRUP, H P, and five others. 2000. Quaternary glaciations in southern Fennoscandia: evidence from southwestern Norway and the northern North Sea region. *Quaternary Science Reviews*, Vol. 19, 667–685.
- SELBY, I. 1989. Quaternary geology of the Hebridean continental margin. Unpublished PhD thesis, University of Nottingham.
- 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 and 106 year scale. *Quaternary Research*, Vol. 3, 39–55.
- SHACKLETON, N J, and sixteen others. 1984. Oxygen isotope calibration of the onset of ice-rafting and history of glaciation in the North Atlantic region. *Nature, London*, Vol. 307, 620–623.
- SHACKLETON, N J, BERGER, A, and PELTIER, W R. 1990. An alternative astronomical calibration of the lower Pleistocene time based on ODP Site 677. *Transactions of the Royal Society of Edinburgh for Earth Sciences*, Vol. 81, 251–261.
- SHAW, J. 1979. Genesis of the Sveg tills and rogen moraines of Central Sweden: a model of basal meltout. *Boreas*, Vol. 8, 409–426.
- SHENNAN, I. 1989. Holocene crustal movements and sea-level changes in Britain. *Journal of Quaternary Science*, Vol. 4, 77–89.
- SIMPSON, S. 1948. The glacial deposits of Tullos and Bay of Nigg, Aberdeen. *Transactions of the Royal Society of Edinburgh*, Vol. 61, 687–687.

- SIMPSON, S. 1955. A re-interpretation of the drifts of north-east Scotland. *Transactions of the Edinburgh Geological Society*, Vol. 16, 189–199.
- SISSONS, J B. 1958. Supposed ice-dammed lakes in Britain with particular reference to the Eddleston Valley, southern Scotland. *Geografiska Annaler*, Vol. 40, 159–187.
- SISSONS, J B. 1961a. A subglacial drainage system by the Tinto Hills, Lanarkshire. *Transactions of the Edinburgh Geological Society*, Vol. 18, 175–193.
- SISSONS, J B. 1961b. Some aspects of glacial drainage channels in Britain. *Scottish Geographical Magazine*, Vol. 77, 15–36.
- SISSONS, J B. 1965. Quaternary. 467–503 in *The geology of Scotland*. CRAIG, G Y, (editor). (Edinburgh: Oliver and Boyd).
- SISSONS, J B. 1967. *The evolution of Scotland's scenery*. (Edinburgh & London: Oliver & Boyd.)
- SISSONS, J B. 1974a. A lateglacial ice-cap in the central Grampians. *Transactions of the Institute of British Geographers*, Vol. 62, 95–114.
- SISSONS, J B. 1974b. Lateglacial marine erosion in Scotland. *Boreas*, Vol. 3, 41–48.
- SISSONS, J B. 1974c. The Quaternary in Scotland: a review. *Scottish Journal of Geology*, Vol. 10, 311–337.
- SISSONS, J B. 1976. *The geomorphology of the British Isles: Scotland*. (London: Methuen.)
- SISSONS, J B. 1979. The Loch Lomond Stadial in the British Isles. *Nature, London*, Vol. 280, 199–203.
- SISSONS, J B. 1981. The last Scottish ice-sheet: facts and speculative discussion. *Boreas*, Vol. 10, 1–17.
- SISSONS, J B. 1982. Interstadial and last interglacial deposits covered by till in Scotland: a reply. *Boreas*, Vol. 11, 123–124.
- SISSONS, J B. 1983. Quaternary. 399–424 in *The geology of Scotland*. (second edition). G Y CRAIG (editor). (Edinburgh: Scottish Academic Press.)
- SKEMPTON, A W, and NORTHEY, R D. 1952. The sensitivity of clays. *Géotechnique*, Vol. 3, 30–53.
- SKINNER, A C, MCELVENNEY, E, RUCKLEY, N, RISE, L, and ROKOENGEN, K. 1986. Cormorant Sheet 61°N–00°. Quaternary geology. 1:250 000. British Geological Survey.)
- SKINNER, B J, and PORTER, S C. 1995. *The Dynamic Earth*. (Third edition). (New York: Wiley.)
- SMITH, C G. 1983. Planning for development: Aberdeen project. *British Geological Survey Technical Report*, WA/HI/86/1.
- SMITH, D E. 1984. Lower Ythan Valley. 47–58 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- SMITH, D E. 1993. Philorth Valley. 251–254 in Quaternary of Scotland. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- SMITH, D E, and CULLINGFORD, R A. 1985. Flandrian relative sea-level changes in the Montrose Basin area. *Scottish Geographical Magazine*, Vol. 101, 91–105.
- SMITH, D E, and DAWSON, A G. 1990. Tsumani waves in the North Sea. *New Scientist*, Vol. 127, 46–49.

- SMITH, D E, CULLINGFORD, R A, and SEYMOUR, W P. 1982. Flandrian relative sea-level changes in the Philorth Valley, north-east Scotland. *Transactions of the Institute of British Geographers (New Series)*, Vol. 7, 321–336.
- SMITH, D E, CULLINGFORD, R A, and BROOKS, C L. 1983. Flandrian relative sea level changes in the Ythan Valley, north-east Scotland. *Earth Surface Processes and Landforms*, Vol. 8, 423–438.
- SMITH, D E, FIRTH, C R, BROOKS, C L, ROBINSON, M, and COLLINS, P E F. 1999. Relative sea-level rise during the Main Postglacial Transgression in NE Scotland, U.K. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, Vol. 90, 1–27.
- SMITH, J, SCOTT, T, and STEEL, J. 1904. The post-drift fossils of the Clyde drainage area at low levels. 528–545 in *The geology and palaeontology of the Clyde drainage area*. MURDOCH, J B (editor). (Glasgow: Geological Society of Glasgow.)
- SMITH, J S, MATHER, A S, and GEMMELL, A M D. 1977. *A landform inventory of Grampian Region*. (Aberdeen: Department of Geography, University of Aberdeen.)
- SMITH, M R, and COLLIS, L (editors). 1993. Aggregates. Sand, gravel and crushed rock aggregates for construction purposes. (Second Edition.) *Special Publication of the Geological Society of London*, No. 9.
- SMITH, S M, and HEPPELL, D. 1991. Check list of British marine Mollusca. *National Museums of Scotland Information Series (Natural History)*, No. 11.
- SOIL SURVEY OF SCOTLAND. 1983. East of Scotland. Land capability for agriculture. Sheet 5. 1:250 000. (Aberdeen: The Ordnance Survey, Southampton for the Macaulay Institute for Soil Research.)
- STACE, C. 1991. *New Flora of the British Isles*. (Cambridge: Cambridge University Press.)
- STEERS, A. 1937. The Culbin Sands and Burghead Bay. *Geological Journal*, Vol. 90, 498 (Second Edition.) 528.
- STEPHENSON, D, and GOULD, D. 1995. *British regional geology: the Grampian Highlands*. (fourth edition). (London: HMSO for the British Geological Survey.)
- STEVENSON, A S. 1991. Miller Sheet 61° N–02°W. Quaternary Geology. 1:250 000 Map Series. British Geological Survey.
- STEWART, F S. 1991. A reconstruction of the eastern margin of the late Weichselian ice sheet in northern Britain. Unpublished PhD thesis, University of Edinburgh.
- STEWART, F S, and STOKER, M S. 1990. Problems associated with seismic facies analysis of diamicton-dominated, shelf glacial sequences. *Geo-Marine Letters*, Vol. 10, 151–156.
- STOKER, M S. 1988. Pleistocene ice-proximal glaciomarine sediments in boreholes from the Hebrides shelf and Wyville-Thomson Ridge, NW UK continental shelf. *Scottish Journal of Geology*, Vol. 24, 249–262.
- STOKER, M S. 1990. Glacially influenced sedimentation on the Hebridean slope, northwestern United Kingdom continental margin. 349–362 *Special Publication of the Geological Society of London*, No. 53.
- STOKER, M S, and BENT, A J A. 1985. Middle Pleistocene glacial and glaciomarine sedimentation in the west central North Sea. *Boreas*, Vol. 14, 325–332.
- STOKER, M S, and BENT, A J A. 1987. Lower Pleistocene deltaic and marine sediments in boreholes from the central North Sea. *Journal of Quaternary Science*, Vol. 2, 87–96.

- STOKER, M S, and GRAHAM, C. 1985. Pre-Late Weichselian submerged rock platforms off Stonehaven. *Scottish Journal of Geology*, Vol. 21, 205–208.
- STOKER, M S, and HOLMES, R. 1991. Submarine end-moraines as indicators of Pleistocene ice limits of NW Britain. *Journal of the Geological Society of London*, Vol. 148, 431–434.
- STOKER, M S, SKINNER, A C, FYFE, J A, and LONG, D. 1983. Palaeomagnetic evidence for early Pleistocene in the central and northern North Sea. *Nature, London*, Vol. 304, 332–334.
- STOKER, M S, LONG, D, and FYFE, J A. 1985. A revised Quaternary stratigraphy for the central North Sea. *Report of the British Geological Survey*, No. 17/2.
- STOKER, M S, HITCHEN, K, and GRAHAM, C C. 1993. *United Kingdom offshore regional report: the geology of the Hebrides and West Shetland shelves, and adjacent deepwater areas*. (London: HMSO for the British Geological Survey.)
- STOKER, M S, and eight others. 1994. A record of late Cenozoic stratigraphy, sedimentation and climate change from the Hebrides Slope, NE Atlantic Ocean. *Journal of the Geological Society of London*, Vol. 151, 235–249.
- STOKER, M S, HOWE, J A, and STOKER, S J. 1999. Late Vendian–?Cambrian glacially influenced deep-water sedimentation, Macduff Slate Formation (Dalradian), N E Scotland. *Journal of the Geological Society of London*, Vol. 156, 55–61.
- STUIVER, M, and REIMER, P J. 1993. Extended ^{14}C data base and revised calib 3.0 ^{14}C age calibration program. *Radiocarbon*, Vol. 35, 215–230.
- SUGDEN, D E. 1986. Pre-glacial weathered rock in till, Tyrebagger, Aberdeen and its implications. 397–401 in *Essays for Professor R E H Mellor*. RITCHIE, W, STONE, J C, and MATHER, A S (editors). (Aberdeen: University of Aberdeen.)
- SUGDEN, D E. 1989. Modification of old land surfaces by ice sheets. *Zeitschrift fur Geomorphologie N F Supplement-Bunt*, Vol. 72, 163–172.
- SUGDEN, D E, and JOHN, B S. 1976. *Glaciers and landscape: a geomorphological approach*. (London: Arnold.)
- SUTHERLAND, D G. 1981. The high-level marine shell beds of Scotland and the build-up of the last Scottish ice sheet. *Boreas*, Vol. 10, 247–254.
- SUTHERLAND, D G. 1984a. The Quaternary deposits and landforms of Scotland and the neighbouring shelves: a review. *Quaternary Science Reviews*, Vol. 3, 157–254.
- SUTHERLAND, D G. 1984b. Gardenstown (Gamrie). 89–93 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- SUTHERLAND, D G. 1984c. King Edward. 93–96 in *Buchan field guide*. HALL, A M (editor). (Cambridge: Quaternary Research Association.)
- SUTHERLAND, D G. 1993a. Teindland Quarry. 236–240 in *The Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- SUTHERLAND, D G. 1993b. Castle Hill. 240–242 in *The Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- SUTHERLAND, D G. 1999. Scotland. 99–114 in *A revised correlation of Quaternary deposits in the British Isles*. BOWEN, D Q, (editor). *Geological Society of London Special Report*, No. 23.

- SUTHERLAND, D G, and GORDON, J E. 1993. The Quaternary in Scotland. 13–47 in *The Quaternary of Scotland*. GORDON, J E, and SUTHERLAND, D G (editors). *Geological Conservation Review Series*, No. 6 (London: Chapman and Hall.)
- SYKES, G. 1991. Amino acid dating. 161–176 in *Quaternary dating methods —a user's guide. Technical Guide 4*. SMART, P L, and FRANCES, P D (editors). (Cambridge: Quaternary Research Association.)
- SYNGE, F M. 1956. The glaciation of north-east Scotland. *Scottish Geographical Magazine*, Vol. 72, 129–143.
- SYNGE, F M. 1963. The Quaternary succession round Aberdeen, north-east Scotland. 353–361 in *Report on the 6th International Congress on the Quaternary*. (Warsaw, 1961: International Union for Quaternary Research, Lodz.)
- THOMAS, G S P. 1984. Sedimentation of a sub-aqueous esker-delta at Strabathie, Aberdeenshire. *Scottish Journal of Geology*, Vol. 20, 9–20.
- THOMAS, G S P, and CONNELL, R, J. 1985. Iceberg drop, dump, and grounding structures from Pleistocene glacio-lacustrine sediments, Scotland. *Journal of Sedimentary Petrology*, Vol. 55, 243–249.
- THOMSON, K, and HILLIS, R R. 1995. Tertiary structuration and erosion of the inner Moray Firth. 249–269 in *The tectonics, sedimentation and palaeoceanography of the North Atlantic Region*. SCRUTTON, R A, STOKER, M S, SHIMMIELD, G B, and TUDHOPE, A W (editors). *Geological Society of London Special Publication*, No. 90.
- TIPPING, R M, and MILBURN, P. 2000. Palaeoenvironmental evidence from peat beneath the floor of the Den of Boddam. 116–125 in *The Quaternary of the Banffshire coast and Buchan: field guide*. MERRITT, J W, CONNELL, E R, and BRIDGLAND, D R (editors). (London: Quaternary Research Association.)
- TRAVERSE, A, and GINSBURG, R N. 1966. Palynology of the surface sediments of the Great Bahama Bank, as related to water movement and sedimentation. *Marine Geology*, Vol. 4, 417–459.
- TURNER, C. 1970. The Middle Pleistocene deposits at Marks Tey, Essex. *Philosophical Transactions of the Royal Society of London*, Vol. B257, 373–440.
- TURNER, W. 1870. On the bones of a seal found in red clay near Grangemouth, with remarks on the species. *Proceedings of the Royal Society of Edinburgh*, Vol. 7, 105–114.
- VALEN, V, LARSEN, E, and MANGERUD, J. 1995. High resolution paleomagnetic correlation of Middle Weichselian ice-dammed lake sediments in two coastal caves, western Norway. *Boreas*, Vol. 24, 141–153.
- VAN AMERONGEN, J C. 1976. The study of two soils in an area near Mintlaw, North-East Scotland. Unpublished MSc thesis, University of Aberdeen.
- VAN DEN BROEK, J M M, and VAN DER WAALS, L. 1967. The late Tertiary peneplain of southern Limburg. *Geologie en Mijnbouw*, Vol. 46, 318–332.
- VASARI, Y. 1977. Radiocarbon dating of the Late Glacial and Early Flandrian vegetational succession in the Scottish Highlands and the Isle of Skye. 143–163 in *Studies in the Scottish Lateglacial environment*. GRAY, J M, and LOWE, J J (editors). (Oxford: Pergamon Press.)
- VASARI, Y, and VASARI, A. 1968. Late- and post-glacial macrophytic vegetation in the lochs of northern Scotland. *Acta Botanica Fennica*, Vol. 80, 1–120.
- WALKER, A B. 1998. UK earthquake monitoring 1997/1998: British Geological Survey Seismic Monitoring and Information Service Nineth Annual Report. *British Geological Survey Technical Report*, WL/98/03.

- WALKER, A D. 1973. The age of the Cuttie's Hillock Sandstone (Permo–Triassic) of the Elgin area. *Scottish Journal of Geology*, Vol. 9, 177–183.
- WALKER, A D, and six others. 1982. *Soil and land capability for agriculture: Eastern Scotland*. (Handbook of the Soil Survey of Scotland, No. 5). (Aberdeen: Macauley Institute for Soil Research.)
- WALKER, M J C, and six others. 1992. Allt Odhar and Dalcharn: two pre-Late Devensian (Late Weichselian) sites in northern Scotland. *Journal of Quaternary Science*, Vol. 7, 69–86.
- WALKER, M J C, and six others. 1999. Isotopic 'events' in the GRIP ice core: a stratotype for the Late Pleistocene. *Quaternary Science Reviews*, Vol. 18, 1143–1150.
- WALTON, K. 1956. Rattray: a study in coastal evolution. *Scottish Geographical Magazine*, Vol. 72, 85–96.
- WALTON, K. 1959. Ancient elements in the coastline of northeast Scotland. 93–109 in *Geographical essays in memory of Alan G Ogilvy, Edinburgh*. MILLER, R, and WATSON, J W (editors). (London: Nelson).
- WHITTAKER, A. and eleven others. 1991. A guide to stratigraphical procedure. *Journal of the Geological Society, London*, Vol. 148, 813–824.
- WHITTINGTON, G. 1994. *Bruckenthalia spiculifolia* (Salisb.) Reichenb. (Ericaceae) in the Late Quaternary of western Europe. *Quaternary Science Reviews*, Vol. 13, 761–768.
- WHITTINGTON, G, HALL, A M, and JARVIS, J. 1993. A pre-Late Devensian pollen site from Camp Fauld, Buchan, north-east Scotland. *New Phytologist*, Vol. 125, 867–874.
- WHITTINGTON, G, and six others. 1998. Devensian organic interstadial deposits and ice sheet extent in Buchan, Scotland. *Journal of Quaternary Science*, Vol. 13, 309–324.
- WILKINSON, I P. 1993. Calcareous micropalaeontological analysis of the Quaternary 'shelly till' at Burn of Benholm. *British Geological Survey Technical Report*, WH93/232R.
- WILKINSON, I P. 1998. Pleistocene Microfossils from Boyne Bay, Banffshire. *British Geological Survey Technical Report*, WH97/224R.
- WILSON, J S G. 1882. Northern Aberdeenshire and eastern Banffshire. *Memoirs of the Geological Survey*, Sheet 97 (Scotland).
- WILSON, J S G. 1886. North-east Aberdeenshire with detached portions of Banffshire. *Memoirs of the Geological Survey, Scotland*, Sheet 87.
- WILSON, J S G, and HINXMAN, L W. 1890. Geology of central Aberdeenshire. *Memoir of the Geological Survey of Scotland*, Sheet 76 (Scotland).
- WILSON, M J, and TAIT, J M. 1977. Halloysite in some soils from north-east Scotland. *Clay Minerals*, Vol. 12, 59–66.
- WILSON, M J, BAIN, D C, and MITCHELL, W A. 1968. Saponite from the Dalradian metalimestones of north-east Scotland. *Clay Minerals*, Vol. 7, 343–349.
- WILSON, M J, and five others. 1981. A swelling hematite/layer sillicate complex in weathered granite. *Clays and Clay Minerals*, Vol. 16, 261–278.
- WILSON, M J, RUSSELL, J D, TAIT, J M, CLARK, D R, and FRASER, A R. 1984. Macaulayite, a new mineral from north-east Scotland. *Mineralogical Magazine*, Vol. 48, 127–129.

WORSLEY, P. 1991. Possible early Devensian glacial deposits in the British Isles. 47–51 in *Glacial deposits in Great Britain and Ireland*. EHLERS, J, GIBBARD, P L, and ROSE, J (editors). (Rotterdam: A A Balkema.)

WRIGHT, J S. 1997. Deep weathering profiles (saprolites) in north east Scotland. *Scottish Geographical Magazine*, Vol. 113, 189–194.

ZENKEVITCH, L. 1963. *Biology of the seas of the U.S.S.R.* (London: Allen and Unwin.)

ZIEGLER, P A. 1981. *Evolution of sedimentary basins of north-west Europe.* (London: Heyden.)