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## References

- Allen, J.R.L. (1965) The sedimentation and palaeogeography of the Old Red Sandstone of Anglesey, North Wales. *Proceedings of the Yorkshire Geological Society*, 35, 139–85.
- Allen, P.M. and Jackson, A.A. (1985a) *Geology of the country around Harlech*. Memoir of the Geological Survey of the UK, HMSO, London, 112 pp.
- Allen, P.M. and Jackson, A.A. (1985b) Geological excursions in the Harlech Dome. *Classical areas of British Geology*, British Geological Survey, HMSO, London, 94 pp.
- Anderson, T.B. and Cameron, T.D.J. (1979) A structural profile of Caledonian deformation in Down. In *The Caledonides of the British Isles reviewed*. (eds A.L. Harris, C.H. Holland, and B.E. Leake), Geological Society of London Special Publication, No. 8, pp. 263–7.
- Anderson, T.B. and Oliver, G.J.H. (1986) The Orlock Bridge Fault: a major Late Caledonian sinistral fault in the Southern Uplands terrane, British Isles. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, 77, 203–22.
- Anketell, J.M. (1987) On the geological succession and structure of south-central Wales. *Geological Journal*, 22, 155–65.
- Arthurton, R.S., Johnson, E.W., and Mundy, D.J.C. (1988) *Geology of the country around Settle*. Memoir of the Geological Survey of the UK, HMSO, London.
- Aveline, W.T. (1872) On the continuity and breaks between the various divisions of the Silurian strata in the Lake District. *Geological Magazine*, 9, 441–2.
- Aveline, W.T., Hughes, T. McK., and Strahan, A. (1888) *The Geology of the country around Kendal, Sedburgh, Bowness and Tebay*. Memoir of the Geological Survey of the UK, HMSO, London.
- Bailey, E.B. (1929) The Palaeozoic mountain systems of Europe and America. *Report of the British Association for the Advancement of Science*, Glasgow, 1928, Trans. Secs, 57–76 (British Isles, General).
- Baker, J.W. (1971) Intra-Lower Palaeozoic faults in the southern Irish Sea area. *Geological Magazine*, 108, 501–9.
- Barber, A.J. and Max, M.D. (1979) A new look at the Mona Complex (Anglesey, North Wales). *Journal of the Geological Society of London*, 136, 407–32.
- Barber, A.J., Max, M.D., and Bruck, P.M. (1981) Geologists' Association–Irish Geological Association; Field Meeting in Anglesey and southeastern Ireland, 4–11 June, 1977. *Proceedings of the Geologists' Association*, 92, 269–91.
- Barker, A.J. and Gayer, R.A. (1985) Caledonide–Appalachian tectonic analysis and evolution of related oceans. In *The Tectonic Evolution of the Caledonide–Appalachian Orogen*. (ed. R.A. Gayer), F. Vieweg and Sohn, Braunschweig, pp. 126–65.
- Barnes, R.P. (1989) *Geology of the Whithorn District*. Explanation of Sheet 2 (Scotland), Memoir of the British Geological Survey, HMSO, London, 20 pp.
- Barnes, R.P., Anderson, T.B., and McCurry, J.A. (1987) Along-strike variation in the stratigraphical and structural profile of the Southern Uplands Central Belt in Galloway and Down. *Journal of the Geological Society of London*, 144, 807–16.
- Bassett, D.A. (1969) Some of the major structures of early Palaeozoic age in Wales and the Welsh
- Borderland: an historical essay. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 67–116.

- Bates, D.E.B. (1968) The Lower Palaeozoic brachiopod and trilobite faunas of Anglesey. *Bulletin of the British Museum (Natural History): Geology*, 16, p. 127.
- Bates, D.E.B. (1972) The stratigraphy of the Ordovician rocks of Anglesey. *Geological Journal*, 8, 29–58.
- Bates, D.E.B. (1974) The structure of the Lower Palaeozoic rocks of Anglesey, with special reference to faulting. *Geological Journal*, 9, 39–60.
- Bates, D.E.B. and Davies, J.R. (1981) Anglesey. *Geologists' Association Guide*, 40, 31 pp.
- Bell, A.M. (1975) A finite strain study of accretionary lapilli tuff in the Borrowdale Volcanic Group, English Lake District. Unpublished Ph.D. thesis, University of Sheffield.
- Bell, A.M. (1981) Strain factorisations from lapilli tuff, English Lake District. *Journal of the Geological Society of London*, 138, 463–74.
- Bell, A.M. (1985) Strain paths during slaty cleavage formation — the role of volume loss. *Journal of Structural Geology*, 7, 563–8.
- Beutner, E.C., Jancin, M.C., and Simon, R.W. (1977) Dewatering origin of cleavage in light of deformed calcite veins and clastic dikes in Martinsburg slate, Delaware Water Gap, New Jersey. *Geology*, 5, 118–22.
- Bluck, B.J. (1986) The Scottish paratectonic Caledonides. *Scottish Journal of Geology*, 21, 437–64.
- Boulter, C.A. and Soper, N.J. (1973) Structural relationships of the Shap Granite. *Proceedings of the Yorkshire Geological Society*, 39, 365–9.
- Bouma, A.H. (1962) *Sedimentology of Some Flysch Deposits: A Graphic Approach to Interpretation*. Elsevier, Amsterdam, 168 pp.
- Bracegirdle, D.R. (1974) Structure and Stratigraphy of the Towyn–Abergynolwyn Area of Southern Merionethshire in Relation to the Bala Fault. Unpublished M.Sc thesis, University of Wales, Aberystwyth.
- Branney, M.J. and Soper, N.J. (1988) Ordovician volcano-tectonics in the English Lake District. *Journal of the Geological Society of London*, 145, 367–76.
- British Geological Survey (1966) *Tectonic map of Great Britain and Northern Ireland*, 1st edn. British Geological Survey (1979) *Geological Survey Ten Mile Map, South Sheet*, 3rd edn (Solid).
- Bromley, A.V. (1963) The Geology of the Blaenau Ffestiniog Area, Merionethshire. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Bromley, A.V. (1969) Acid plutonic igneous activity in the Ordovician of North Wales. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A.Wood), University of Wales Press, Cardiff, pp. 387–408.
- Bromley, A.V. (1971) Phases of deformation in North Wales. *Geological Magazine*, 108, 548–50.
- Brown, P.E., Miller, J.A., and Soper, N.J. (1964) Age of the principal intrusions of the Lake District. *Proceedings of the Yorkshire Geological Society*, 34, 331–42.
- Callaway, C. (1884) The Archaean and Lower Palaeozoic rocks of Anglesey (with an appendix, on the petrology of the rocks by T.G. Bonney). *Quarterly Journal of the Geological Society of London*, 40, 567–89.
- Callaway, C. (1900) On Longmyndian Inliers at Old Radnor and Huntley (Gloucestershire). *Quarterly Journal of the Geological Society of London*, 56, 511–20.

- Campbell, S.D.G., Reedman, A.J., and Howells, M.F. (1985) Regional variations in cleavage and fold development in North Wales. *Geological Journal*, 20, 43–52.
- Campbell, S.D.G., Howells, M.F., Smith, M., and Reedman, A.J. (1988) A Caradoc failed-rift within the Ordovician marginal basin of Wales. *Geological Magazine*, 125, 257–66.
- Capewell, J.G. (1955) The post-Silurian pre-marine Carboniferous sedimentary rocks of the eastern side of the English Lake District. *Quarterly Journal of the Geological Society of London*, 111, 23–46.
- Cattermole, P. and Jones, A. (1970) The geology of the area around Mynydd Mawr, Nantlle, Caernarvonshire. *Geological Journal*, 7, 111–28.
- Cave, R. (1984) *Outline of geology*. From 1:50 000 geological map, Sheet 163 (Aberystwyth), British Geological Survey.
- Cave, R. and Haim, B.A. (1986) *Geology of the country between Aberystwyth and Machynlleth*. Memoir of the Geological Survey of the UK, HMSO, London.
- Clark, L. (1964) The Borrowdale Volcanic Series between Buttermere and Wasdale, Cumberland. *Proceedings of the Yorkshire Geological Society*, 34, 343–56.
- Clarkson, C.M., Craig, G.Y., and Walton, E.K. (1975) The Silurian rocks bordering Kirkcudbright Bay, South Scotland. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, 69, 313–25.
- Cobbold, P.R. and Quinquis, H. (1980) Development of sheath folds in shear regions. *Journal of Structural Geology*, 2, 119–26.
- Cook, D.R. and Weir, J.A. (1979) Structure of the Lower Palaeozoic rocks around Cairnsmore of Fleet, Galloway. *Scottish Journal of Geology*, 15, 187–202.
- Cooper, D.C., Lee, M.K., Fortey, N.J. *et al.* (1988) The Crummock Water Aureole: a zone of metasomatism and source of ore metals in the English Lake District. *Journal of the Geological Society of London*, 145, 523–40.
- Coward, M.P. and Siddans, A.W.B. (1979) The tectonic evolution of the Welsh Caledonides. In *The Caledonides of the British Isles — Reviewed*. (eds A.L. Harris, C.H. Holland, and B.E. Leake), Special Publication of the Geological Society of London, No. 8, pp. 187–98.
- Cox, S.F. (1987) Antitaxial crack-seal vein microstructures and their relationship to displacement path. *Journal of Structural Geology*, 9, 779–87.
- Craig, G.Y. and Walton, E.K. (1959) Sequence and structure in the Silurian rocks of Kirkcudbrightshire. *Geological Magazine*, 96, 209–20.
- Craig, G.Y. and Walton, E.K. (1983) Asymmetrical folding in the Hawick Rocks of the Galloway area, Southern Uplands: comment. *Scottish Journal of Geology*, 19, 103–6.
- Craig, J. (1985) Tectonic Evolution of the Area Between Borth and Cardigan, Dyfed, West Wales. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Craig, J. (1987) The structure of the Llangranog Lineament, West Wales: a Caledonian transpression zone. In *Sedimentation and Tectonics of the Welsh Basin*. (eds W.R. Fitches and N.H. Woodcock), *Geological Journal*, 22, 167–81.
- Craig, J., Fitches, W.R., and Maltman, A.J. (1982) Chlorite-mica stacks in low-strain rocks from central Wales. *Geological Magazine*, 119, 243–56.

- Davies, W. and Cave, R. (1976) Folding and cleavage determined during sedimentation. *Sedimentary Geology*, 15, 89–134.
- Dearman, W.R., Shiels, K.A.G., and Larwood, G.P. (1962). Refolded folds in the Silurian rocks of Eyemouth, Berwickshire. *Proceedings of the Yorkshire Geological Society*, 33, 273–86.
- Dewey, J.F. (1969) Structure and sequence in paratectonic British Caledonides. In *North Atlantic — Geology and Continental Drift*. (ed. M. Kay), Memoir of the American Association of Petroleum Geologists, 12, 309–35.
- Dickson, J.A.D. (1983) Graphic modelling of crystal aggregates and its relevance to cement diagenesis. *Philosophical Transactions of the Royal Society of London*, A309, 465–502.
- Downie, C. and Soper, N.J. (1972) Age of the Eycott Volcanic Group and its conformable relationship to the Skiddaw Slates in the English Lake District. *Geological Magazine*, 109, 259–68.
- Eastwood, T., Hollingworth, S.E., Rose, W.C.O. *et al.* (1968) *The Geology of the Country around Cockermouth*. Memoir of the Geological Survey of the UK, HMSO, London.
- Elles, G.L. (1940) The stratigraphy and faunal succession in the Ordovician rocks of the Builth–Llandrindod inlier, Radnorshire. *Quarterly Journal of the Geological Society of London*, 95, 385–445.
- Fearnside, W.G. (1910) The Tremadoc Slates and associated rocks of south-east Caernarvonshire. *Quarterly Journal of the Geological Society of London*, 66, 142–88.
- Fearnside, W.G. and Davies, W. (1944) The geology of Deudraeth — the country between Traeth Mawr and Traeth Bach, Merioneth. *Quarterly Journal of the Geological Society of London*, 99, 247–76.
- Firman, R.J. (1957) The Borrowdale Volcanic Series between Wastwater and the Duddon Valley, Cumberland. *Proceedings of the Yorkshire Geological Society*, 31, 39–64.
- Firman, R.J. and Lee, M.K. (1986) Age and structure of the concealed English Lake District batholith and its probable influence on subsequent sedimentation, tectonics and mineralization. In *Geology in the Real World — the Kingsley Dunham volume*. (eds R.W. Nesbitt and I. Nichol), Institution of Mining and Metallurgy, London, pp. 117–27.
- Fitch, F.J., Miller, J.A., Evans, A.L., *et al.* (1969) Isotopic age determinations on rocks from Wales and the Welsh Borders. In *The Precambrian and Lower Palaeozoic Rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 23–46.
- Fitches, W.R. (1972). Polyphase deformation structures in the Welsh Caledonides near Aberystwyth. *Geological Magazine*, 109, 149–55.
- Fitches, W.R. (1987) Aspects of veining in the Lower Palaeozoic rocks of the Welsh Basin. In *Deformation of Sediments and Sedimentary Rocks*. (eds M.R. Jones and R.M.F. Preston), Geological Society of London Special Publication, No 29, pp. 297–317.
- Fitches, W.R. and Campbell, S.D.G. (1987) Tectonic evolution of the Bala Lineament in the Welsh Basin. In *Sedimentation and Tectonics of the Welsh Basin* (eds W.R. Fitches and N.H. Woodcock), Geological Journal, 22, 131–53.
- Fitches, W.R. and Johnson, R. (1978) Cleavage-fold relationships in the Aberystwyth Grits — a preliminary report (Abstract of Tectonic Studies Group conference report: Deformation of soft sediments, Aberystwyth, March 1977), *Journal of the Geological Society of London*, 135, 250.
- Fitches, W.R., Cave, R., Craig, J. *et al.* (1986) Early veins as evidence of detachment structures in the Lower Palaeozoic rocks of the Welsh Lower Palaeozoic Basin. *Journal of Structural Geology*, 8, 607–20.

- Fitton, J.G. and Hughes, D.J. (1970) Volcanism and plate tectonics in the British Ordovician. *Earth and Planetary Science Letters*, 8, 223–8.
- Fortey, N.J. (1989) Low grade metamorphism in the Lower Ordovician Skiddaw Group of the Lake District, England. *Proceedings of the Yorkshire Geological Society*, 47, 325–37.
- Francis, E.H. and Howells, M.F. (1973) Transgressive welded ash-flow tuffs among the Ordovician sediments of NE Snowdonia, N. Wales. *Journal of the Geological Society of London*, 129, 621–41.
- Fumes, H. (1978) A Comparative Study of Caledonian Volcanics in Wales and West Norway. Unpublished PhD thesis, University of Oxford.
- Fyfe, T.B. and Weir, J.A. (1976) The Etrick Valley Thrust and the upper limit of the Moffat Shales in Craigmichan Scaurs. *Scottish Journal of Geology*, 12, 93–102.
- Garwood, E.J. and Goodyear, E. (1918) On the geology of the Old Radnor district, with special reference to an algal development in the Woolhope Limestone. *Quarterly Journal of the Geological Society of London*, 74, 1–30.
- Geikie, A. (1863) *The geology of eastern Berwickshire*. Memoir of the Geological Survey of Scotland, 58 pp.
- George, T.N. (1961) *British Regional Geology, North Wales*. (3rd edn), HMSO 97 pp.
- George, T.N. (1963) Palaeozoic growth of the British Caledonides. In *The British Caledonides*. (eds M.R.J. Johnson, and F.H. Stewart), Oliver and Boyd, Edinburgh, pp. 1–33.
- Gibbons, W. (1983) The Monian 'Penmynydd Zone of metamorphism' in Llyn, North Wales. *Geological Journal*, 18, 21–41.
- Gibbons, W. (1987) Menai Straits fault system: an early Caledonian terrane boundary in north Wales. *Geology*, 15, 744–7.
- Green, J.F.N. (1915) The structure of the eastern part of the Lake District. *Proceedings of the Geologists' Association*, 26, 195–223.
- Green, J.F.N. (1917) The age of the chief intrusions of the Lake District. *Proceedings of the Geologists' Association*, 28, 1–30.
- Green, J.F.N. (1920) The geological structure of the Lake District. *Proceedings of the Geologists' Association*, 31, 109–26.
- Greenly, E. (1919) *The Geology of Anglesey*. Memoir of the Geological Survey of the UK (2 volumes), HMSO, London.
- Greenly, E. (1920) One inch Geological Map of Anglesey (Sheet 92). Geological Survey of the UK, HMSO, London.
- Greig, D.E., Wright, J.E., Haim, B.A., and Mitchell, G.H. (1968) *Geology of the country around Church Stretton, Craven Arms, Wenlock Edge and Brown Clee*. (Sheet 166), Memoir of the Geological Survey of Great Britain, HMSO, London.
- Grigor'ev, D.P. (1965) The ontogeny of minerals. *Israeli Program for Scientific Translation*.
- Hall, J. (1815) On the vertical position and convolutions of certain strata and their relation with granite. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, 7, 79–108.
- Hamdi Lemnouar, D.E.S. (1988) Relationship between Mineral Deposition and Movement in Fault Zones from Llangollen, North Wales. Unpublished MSc thesis, University of Manchester.
- Harland, W.B. (1971) Tectonic transpression in Caledonian Spitsbergen. *Geological Magazine*, 108, 27–42.

- Helm, D.G. (1970) Stratigraphy and structure in the Black Combe Inlier, English Lake District. *Proceedings of the Yorkshire Geological Society*, 38, 105–48.
- Helm, D.G. and Roberts, B. (1971) The relationship between the Skiddaw and Borrowdale Volcanic Groups in the English Lake District. *Nature*, 232, 181–3.
- Helm, D.G. and Siddans, A.W.B. (1971) Deformation of a slaty, lapillar tuff in the English Lake District, discussion. *Bulletin of the Geological Society of America*, 82, 523–31.
- Helm, D.G., Roberts, B., and Simpson, A. (1963) Polyphase folding in the Caledonides south of the Scottish Highlands. *Nature*, 200, 1060–2.
- Hollingworth, S.E. (1955) The geology of the Lake District — a review. *Proceedings of the Geologists' Association*, 65, 385–402.
- Howells, M.F., Francis, E.H., Leveridge, B.E., and Evans C.D.R. (1978) *Capel Curig and Betws-y-Coed. (Description of 125 000 sheet SH 75) Classical areas of British Geology*, Institute of Geological Sciences, HMSO, London, 73 pp.
- Howells, M.F., Leveridge, B.E., Addison, R, *et al.* (1979) The Capel Curig Volcanic Formation, Snowdonia, North Wales; variations in ash-flow tuffs related to emplacement environment. In *The Caledonides of the British Isles — Reviewed*. (eds A.L. Harris, C.H. Holland, and B.E. Leake) Special Publication of the Geological Society of London, No. 8, pp. 611–18.
- Howells, M.F., Leveridge, B.E., and Reedman, A.J. (1981). *Snowdonia. (Rocks and fossils Series, No. 1, Unwin paperbacks)*, London, 119 pp.
- Howells, M.F., Reedman, A.J., and Campbell, S.D.G. (1986) The submarine eruption and emplacement of the Lower Rhyolitic Tuff Formation (Ordovician), N. Wales. *Journal of the Geological Society of London*, 143, 411–23.
- Hutton, D.H.W. (1982) A tectonic model for the emplacement of the Main Donegal Granite, NW Ireland. *Journal of the Geological Society of London*, 139, 615–31.
- Hutton, D.H.W. (1987) Strike-slip terranes and a model for the evolution of the British and Irish Caledonides. *Geological Magazine*, 124, 405–25.
- Hutton, D.H.W. and Murphy, F.C. (1987) The Silurian of the Southern Uplands and Ireland as a successor basin to the end-Ordovician closure of Iapetus. *Journal of the Geological Society of London*, 144, 765–72.
- Hutton, J. (1795) *Theory of the Earth 1*. Creech, Edinburgh.
- Institute of Geological Sciences (1977) *Llandrindod Wells Ordovician inlier* (1:25,000 geological map). HMSO, London.
- Jackson, D.E. (1961) Stratigraphy of the Skiddaw Group between Buttermere and Mungrisdale, Cumberland. *Geological Magazine*, 98, 515–28.
- Jackson, D.E. (1962) Graptolite zones in the Skiddaw Group in Cumberland, England. *Journal of Palaeontology*, 36, 300–13.
- Jackson, D.E. (1978) The Skiddaw Group. In *The Geology of the Lake District*. (ed. F. Moseley), Yorkshire Geological Society Occasional Publication, No. 3, pp. 79–98.
- Jeans, P.J.F. (1971) The relationship between the Skiddaw Slates and the Borrowdale Volcanics. *Nature, Physical Science*, 234, 59.

- Jeans, P.J.F. (1972) The junction between the Skiddaw Slates and Borrowdale Volcanics in Newlands Beck, Cumberland. *Geological Magazine*, 109, 25–8.
- Jeans, P.J.F. (1974) The Structure, Metamorphism and Stratigraphy of the Skiddaw Slates East of Crummock Water, Cumberland. Unpublished PhD thesis, University of Birmingham.
- Jennings, A.V. and Williams, G.J. (1891) Manod and the Moelwyns. *Quarterly Journal of the Geological Society of London*, 47, 368–83.
- Johnson, M.R.W., Sanderson, D.J., and Soper, N.J. (1979) Deformation in the Caledonides of England, Ireland and Scotland. In *The Caledonides of the British Isles — Reviewed*. (eds A.L. Harris, C.W. Holland, and B.E. Leake), Geological Society of London Special Publication, No. 8, pp. 165–86.
- Jones, O.T. (1912) The geological structure of Central Wales and the adjoining regions. *Quarterly Journal of the Geological Society of London*, 68, 328–73.
- Jones, O.T. (1954) The trends of geological structures in relation to directions of maximum compression. *British Association for the Advancement of Science, London*, 11, 102–6.
- Jones, O.T. (1955) The geological evolution of Wales and the adjacent regions. *Quarterly Journal of the Geological Society of London*, 111, 323–51.
- Jones, O.T. and Pugh, W.J. (1915) The geology of the district around Machynlleth and the Llyfnant Valley. *Quarterly Journal of the Geological Society of London*, 71, 343–85.
- Jones, O.T. and Pugh, W.J. (1941) The Ordovician rocks of the Builth District; a preliminary account. *Geological Magazine*, 78, 185–91.
- Jones, O.T. and Pugh, W.J. (1946) The complex intrusion of Welfield, near Builth Wells, Radnorshire. *Quarterly Journal of the Geological Society of London*, 102, 157–88.
- Jones, O.T. and Pugh, W.J. (1949) An early Ordovician shoreline in Radnorshire, near Builth Wells. *Quarterly Journal of the Geological Society of London*, 105, 65–99.
- Kelling, G. (1961) The stratigraphy and structure of the Ordovician rocks of the Rhinns of Galloway. *Quarterly Journal of the Geological Society of London*, 117, 37–75.
- Kemp, A.E.S. (1986) Tectonostratigraphy of the Southern Belt of the Southern Uplands. *Scottish Journal of Geology*, 22, 241–56.
- Kemp, A.E.S. (1987) Tectonic development of the Southern Belt of the Southern Uplands accretionary complex. *Journal of the Geological Society of London*, 144, 827–38.
- Kemp, A.E.S. and White, D.E. (1985) Silurian trench sedimentation in the Southern Uplands, Scotland: implications of new age data. *Geological Magazine*, 122, 275–7.
- King, W.B.R. and Wilcockson, W.H. (1934) The Lower Palaeozoic rocks of Austwick and Horton-in-Ribblesdale, Yorkshire. *Quarterly Journal of the Geological Society of London*, 90, 7–31.
- Kirk, N.H. (1951) The upper Llandovery and lower Wenlock rocks of the area between Dolyhir and Presteigne, Radnorshire. *Proceedings of the Geological Society of London*, 1471, 56–8.
- Kirk, N.H. (1952) The tectonic structure of the anticlinal disturbance of Breconshire and Radnorshire: Port Faen to Presteigne. *Proceedings of the Geological Society of London*, 1485, 87–91.

- Knipe, R.J. and Needham, D.T. (1986) Deformation processes in accretionary wedges — examples from the SW margin of the Southern Uplands, Scotland. In *Collision Tectonics*. (eds M.P. Coward and A.I. Ries), Geological Society of London Special Publication, No. 19, pp. 53–67.
- Knipe, R.J. and White, S.H. (1977) Microstructural variation of an axial plane cleavage around a fold — a H.V.E.M. study. *Tectonophysics*, 39, 355–80.
- Kokelaar, B.P. (1977) The Igneous History of the Rhobell Fawr Area, Merionethshire, North Wales. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Kokelaar, B.P. (1979) Tremadoc to Llanvirn volcanism on the south-east side of the Harlech Dome (Rhobell Fawr), North Wales. In *The Caledonides of the British Isles — reviewed*. (eds A.L. Harris, C.H. Holland, and B.E. Leake). Geological Society of London Special Publication, No. 8, pp. 591–6.
- Kokelaar, B.P. (1988) Tectonic controls of Ordovician arc and marginal basin volcanism in Wales. *Journal of the Geological Society of London*, 145, 759–75.
- Lapworth, C. (1874) On the Silurian rocks of the south of Scotland. *Transactions of the Geological Society of Glasgow*, 4, 164–74.
- Lapworth, C. (1889) On the Ballantrae rocks of South Scotland. *Geological Magazine*, 26, 20–4, 59–69.
- Lawrence, D.J.D., Webb, B.C., Young, B. (1986) *The Geology of the Late Ordovician and Silurian Rocks (Windermere Group) in the Area Around Kentmere and Crook*. Report of the British Geological Survey, Volume 18, No. 5.
- Leake, B.E., Tanner, P.W.C., Singh, D., and Halliday, A.N. (1983) Major southward thrusting of the Dalradian rocks of Connemara, W. Ireland. *Nature*, 305, 210–13.
- Leggett, J.K. (1980) The sedimentological evolution of a Lower Palaeozoic accretionary fore-arc in the Southern Uplands of Scotland. *Sedimentology*, 27, 401–17.
- Leggett, J.K., McKerrow, W.S., and Eales, M.H. (1979) The Southern Uplands of Scotland: a Lower Palaeozoic accretionary prism. *Journal of the Geological Society of London*, 136, 755–70.
- Leggett, J.K., McKerrow, W.S., and Soper, N.J. (1983) A model for the crustal evolution of southern Scotland. *Tectonics*, 2, 187–210.
- Lisle, R.J. (1977) Clastic grain shape and orientation in relation to cleavage from the Aberystwyth Grits, Wales. *Tectonophysics*, 39, 381–95.
- Lynas, B.D.T. (1970) Clarification of the polyphase deformations of North Wales Palaeozoic rocks. *Geological Magazine*, 107, 505–10.
- Lynas, B.D.T. (1973) The Cambrian and Ordovician rocks of the Migneint area, North Wales. *Journal of the Geological Society of London*, 129, 481–503.
- Lynas, B.D.T. (1988) Evidence for dextral oblique-slip faulting in the Shelve Ordovician Inlier, Welsh Borderland: implications for the south British Caledonides. *Geological Journal*, 23, 39–57.
- Marr, J.E. (1916) *The Geology of the Lake District*, Cambridge University Press, Cambridge, 220 pp.
- Martin, B.A., Howells, M.F., and Reedman, A.J. (1981) A geological reconnaissance study of the Dyfi Valley region, Gwynedd/Powys, Wales. *Institute of Geological Sciences Environmental Protection Unit*, 81/1, 57 pp.



- Matley, C.A. (1899) On the geology of northern Anglesey (with appendix by W.W. Watts). *Quarterly Journal of the Geological Society of London*, 55, 635–80.
- Matley, C.A. (1901) The geology of the Mynydd-y-Garn (Anglesey). *Quarterly Journal of the Geological Society of London*, 57, 20–30.
- McCabe, P.J. (1972) The Wenlock and Lower Ludlow strata of the Austwick and Horton-in-Ribblesdale Inlier of north-west Yorkshire. *Proceedings of the Yorkshire Geological Society*, 39, 167–74.
- McCabe, P.J. and Waugh, B. (1983) Wenlock and Ludlow sedimentation in the Austwick and Horton-in-Ribblesdale Inlier, north-west Yorkshire. *Proceedings of the Yorkshire Geological Society*, 39, 445–70.
- McKerrow, W.S. (1988) Wenlock to Givetian deformation in the British Isles and the Canadian Appalachians. In *The Caledonian–Appalachian Orogen*. (eds A.L. Harris and D.J. Fettes), Geological Society Special Publication, No. 38, 405–12.
- McKerrow, W.S. and Cocks, L.R.M. (1976) Progressive faunal migration across the Iapetus Ocean. *Nature*, 263, 304–6.
- McKerrow, W.S. and Soper, N.J. (1989) The Iapetus Suture in the British Isles. *Geological Magazine*, 126, 1–8.
- McKerrow, W.S., Leggett, J.K., and Eales, M.H. (1977) Imbricate thrust model of the Southern Uplands of Scotland. *Nature*, 267, 237–9.
- Mitchell, A.H.G. and McKerrow, W.S. (1975) Analogous evolution of the Burma Orogen and the Scottish Caledonides. *Bulletin of the Geological Society of America*, 86, 305–15.
- Mitchell, G.H. (1929) The succession and structure of the Borrowdale Volcanic Series in Troutbeck, Kentmere and the western part of Long Sleddale (Westmorland). *Quarterly Journal of the Geological Society of London*, 85, 9–43.
- Mitchell, G.H. (1940) The Borrowdale Volcanic Series of Coniston, Lancashire. *Quarterly Journal of the Geological Society of London*, 96, 301–19.
- Mitchell, G.H. (1956a) The geological history of the Lake District. *Proceedings of the Yorkshire Geological Society*, 30, 407–63.
- Mitchell, G.H. (1956b) The Borrowdale Volcanic Series of the Dunnerdale Fells, Lancashire. *Liverpool and Manchester Geological Journal*, 1, 428–49.
- Mitchell, G.H., Moseley, F., Firman, R.J., *et al.* (1972) Excursion to the northern Lake District. *Proceedings of the Geologists' Association*, 83, 443–70.
- Moore, J.G. and Peck, D.L. (1962) Accretionary lapilli in volcanic rocks of the Western Continental United States. *Journal of Geology, Chicago*, 70, 182–93.
- Morris, J.H. (1987) The Northern Belt of the Longford–Down Inlier, Ireland and Southern Uplands, Scotland: an Ordovician back-arc basin. *Journal of the Geological Society of London*, 144, 773–86.
- Morris, T.O. and Fearnside, W.G. (1926). The stratigraphy and structure of the Cambrian slate belt of Nantlle (Caernarvonshire). *Quarterly Journal of the Geological Society of London*, 82, 250–303.
- Moseley, F. (1964) The succession and structure of the Borrowdale Volcanic rocks north-west of Ullswater. *Geological Journal*, 4, 127–42.
- Moseley, F. (1968) Joints and other structures in the Silurian rocks of the southern Shap Fells, Westmorland. *Geological Journal*, 6, 79–96.

- Moseley, F. (1972) A tectonic history of north-west England. *Journal of the Geological Society of London*, 128, 561–98.
- Moseley, F. (1975) Structural relations between the Skiddaw Slates and the Borrowdale Volcanics. *Proceedings of the Cumberland Geological Society*, 3, 127–45.
- Moseley, F. (1977) Caledonian plate tectonics and the place of the English Lake District. *Bulletin of the Geological Society of America*, 88, 764–8.
- Moseley, F. (1981) *Methods in Field Geology*. Freeman, 211 pp.
- Moseley, F. (1983) *The Volcanic Rocks of the Lake District*. Macmillan, London. 111 pp.
- Moseley, F. (1984) Lower Palaeozoic lithostratigraphical classification in the English Lake District. *Geological Journal*, 19, 239–47.
- Moseley, F. (1986) *Geology and Scenery in the Lake District*. Macmillan, London, 88 pp.
- Moseley, F. (1990) Geology of the Lake District. *Geologists' Association Guide*, Geologists' Association, London, 1–213 pp.
- Muir, M.D., Bliss, G.M., Grant, P.R., and Fisher, M. (1979) Palaeontological evidence for the age of some supposedly Precambrian rocks in Anglesey, North Wales. *Journal of the Geological Society of London*, 136, 61–4.
- Mukhopadhyay, D. (1972) Deformation of a slaty, lapillar tuff in the Lake District, England: discussion. *Bulletin of the Geological Society of America*, 83, 547–8.
- Murphy, F.C. (1985) Non-axial planar cleavage and Caledonian sinistral transpression in eastern Ireland. *Geological Journal*, 20, 257–79.
- Murphy, F.C. and Hutton, D.H.W. (1986) Is the Southern Uplands of Scotland really an accretionary prism? *Geology*, 14, 354–7.
- Nettle, J.T. (1964) Fabric analysis of a deformed vein. *Geological Magazine*, 101, 220–7.
- Nicholson, R. (1966) The problem of origin, deformation and recrystallization of calcite-quartz bodies. *Geological Journal*, 5, 117–26.
- Nicholson, R. (1970) Tectonic ripples and associated minor structures in the Silurian rocks of Denbighshire. *Geological Magazine*, 107, 447–9.
- Nicholson, R. (1978) Folding and pressure solution in a laminated calcite-quartz vein from the Silurian slates of the Llangollen region of North Wales. *Geological Magazine*, 115, 47–54.
- Norman, T.N. (1961) The Geology of the Silurian Strata in the Blawith Area, Furness. Unpublished PhD thesis, University of Birmingham.
- Numan, N.M.S. (1974) Structure and Stratigraphy of the Southern Part of the Borrowdale Volcanic Group, English Lake District. Unpublished PhD thesis, University of Sheffield.
- Nutt, M.J.C. and Smith, E.G. (1981) Transcurrent faulting and the anomalous position of pre-Carboniferous Anglesey. *Nature*, 290, 492–5.
- Oertel, G. (1970) Deformation of a slaty, lapillar tuff in the Lake District, England. *Bulletin of the Geological Society of America*, 81, 1173–87.

- Oertel, G. (1971) Deformation of a slaty, lapillar tuff in the English Lake District: reply. *Bulletin of the Geological Society of America*, 82, 533–6.
- Oertel, G. (1972) Deformation of a slaty, lapillar tuff in the Lake District, England: another reply. *Bulletin of the Geological Society of America*, 83, 549–50.
- Oertel, G. and Wood, D.S. (1974) Finite strain measurement: a comparison of methods. *Transactions of the American Geophysical Union*, 55, 695.
- Orton, G. (1988) Volcanoclastic Sedimentation in a Caradocian Marginal Basin, North Wales. Unpublished PhD thesis, University of Oxford.
- Owen, T.R. (1974) The Variscan Orogeny in Wales. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 285–94.
- Owen, T.R. and Weaver, J.D. (1983) The structure of the main South Wales coalfield and its margins. In *The Variscan Fold Belt in the British Isles*. (ed. P.L. Hancock), Adam Hilger Ltd, Bristol, pp. 74–87.
- Peach, B.N. and Horne, J. (1899) *The Silurian rocks of Britain I: Scotland*. Memoir of the Geological Survey of the UK, HMSO, London.
- Phillips, W.I. (1972) Hydraulic fracturing and mineralization. *Journal of the Geological Society of London*, 128, 337–59.
- Phillips, W.E.A., Stillman, C.J., and Murphy, T. (1976) A Caledonian plate tectonic model. *Journal of the Geological Society of London*, 132, 579–609.
- Playfair, J. (1805) Biographical account of the late Dr James Hutton. *Transactions of the Royal Society of Edinburgh*, 5, 39–99.
- Powell, C. McA. (1979) A morphological classification of rock cleavage. *Tectonophysics*, 58, 21–34.
- Powell, D. and Phillips, W.E.A. (1985) Time of deformation in the Caledonide Orogen of Britain and Ireland. In (ed. A.L. Harris), *Geological Society of London, Memoir*, 9, pp. 17–39.
- Price, N.J. (1958) Tectonics of the Aberystwyth Grits. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Price, N.J. (1962) The tectonics of the Aberystwyth grits. *Geological Magazine*, 99, 542–57.
- Pringle, J. and George, T.N. (1948) *British Regional Geology South Wales*, 2nd edn, HMSO, 152 pp.
- Ramsay, A.C. (1866) *The Geology of North Wales*, 1st edn, Memoir of the Geological Survey of the UK, HMSO, London.
- Ramsay, A.C. (1881) *The Geology of North Wales*, 2nd edn, Memoir of the Geological Survey of the UK, HMSO, London.
- Ramsay, J.G. (1967) *Folding and Fracturing of rocks*. McGraw-Hill, New York, 568 pp. Ramsay, J.G. (1980) The crack-seal mechanism of rock deformation. *Nature*, 284, 135–9.
- Ramsay, J.G. (1983) Rock ductility and its influence on the development of tectonic structures of mountain belts. In *Mountain Building Processes*. (ed. K.J. Hsui), Academic Press, London, pp. 111–27.
- Ramsay, J.G. and Huber, M.I. (1983) *The Techniques of Modern Structural Geology (Volume 1: Strain Analysis)*. Academic Press, London.
- Ramsay, J.G. and Huber, M.I. (1987) *The Techniques of Modern Structural Geology (Volume 2: Folds and Fractures)*. Academic Press, London.

- Ramsay, J.G. and Wood, D.S. (1973) The geometric effects of volume change during deformational processes. *Tectonophysics*, 16, 263–77.
- Rast, N. (1969) The relationship between Ordovician structure and volcanicity in Wales. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 305–36.
- Raybould, J.G. (1976) The influence of pre-existing planes of weakness in rocks on the localization of vein-type ore deposits. *Economic Geologist*, 71, 636–41.
- Reedman, A.J., Colman, T.B., Campbell, S.D.G., and Howells, M.F. (1985) Volcanogenic mineralization related to the Snowdon Volcanic Group (Ordovician), North Wales. *Journal of the Geological Society of London*, 142, 875–88.
- Roberts, B. (1967) Succession and structure in Llwyd Mawr Syncline, Caernarvonshire North Wales. *Geological Journal*, 5, 369–90.
- Roberts, B. (1969) The Llwyd Mawr ignimbrite and its associated volcanic rocks. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 337–56.
- Roberts, B. (1979) *The Geology of Snowdonia and Llyn: An outline and field guide*. Adam Hilger Ltd, Bristol, 183 pp.
- Roberts, B. and Siddans, A.W.B. (1971) Fabric studies in the Llwyd Mawr ignimbrite, Caernarfonshire, North Wales. *Tectonophysics*, 12, 283–306.
- Roberts, D.E. (1971). Structures of the Skiddaw Slates in the Caldew Valley, Cumberland. *Geological Journal*, 7, 225–38.
- Roberts, D.E. (1973) The structure of the Skiddaw Slates in the Blencartha–Mungrisdale Area, Cumberland. Unpublished PhD thesis, University of Birmingham.
- Roberts, D.E. (1977a) The structure of the Skiddaw Slates in the Blencathra–Mungrisdale area, Cumbria. *Geological Journal*, 12, 33–58.
- Roberts, D.E. (1977b) Minor tectonic structures in the Skiddaw Slates of Raven Crag, Mungrisdale, northern Lake District. *Proceedings of the Geologists' Association*, 88, 117–24.
- Roberts, J.L. and Sanderson, D.J. (1974) Oblique fold axes in the Dalradian rocks of the southwest Highlands. *Scottish Journal of Geology*, 9, 281–96.
- Rock, N.M.S., Gaskarth, J.W., and Rundle, C.C. (1986) Late Caledonian dyke-swarms in Southern Scotland: a regional zone of K-rich lamprophyres and associated vents. *Journal of Geology*, 94, 505–22.
- Rose, W.C.C. (1954) The sequence and structure of the Skiddaw Slates in the Keswick–Buttermere area. *Proceedings of the Geologists' Association*, 65, 403–6.
- Rundle, C.C. (1981) The significance of isotopic dates from the English Lake District for the Ordovician–Silurian time scale. *Journal of the Geological Society of London*, 138, 569–72.
- Rust, B.R. (1965) The stratigraphy and structure of the Whithorn area of Wigtownshire, Scotland. *Scottish Journal of Geology*, 1, 101–33.
- Sanderson, D.J. and Marchini, W.R.D. (1984) Transpression. *Journal of Structural Geology*, 6, 449–58.
- Sanderson, D.J., Andrews, J.R., Phillips, W.E.A., and Hutton, D.H.W. (1980) Deformation studies in the Irish Caledonides. *Journal of the Geological Society of London*, 137, 289–302.
- Schaller, W.T. (1932) The crystal cavities of the New Jersey zeolite region, *United States Geological Survey Bulletin*, 32, 47–58.

- Shackleton, R.M. (1953) The structural evolution of North Wales. *Liverpool and Manchester Geological Journal*, 1, 261–97.
- Shackleton, R.M. (1954) The structure and succession of Anglesey and the Lleyn Peninsula. *British Association for the Advancement of Science*, 11, 106–8.
- Shackleton, R.M. (1959) The stratigraphy of the Moel Hebog district between Snowdon and Tremadoc. *Liverpool and Manchester Geological Journal*, 2, 216–52.
- Shackleton, R.M. (1969) The Pre-Cambrian of North Wales. In *The Precambrian and Lower Palaeozoic rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 1–18.
- Sharp, D. (1849) On slaty cleavage. *Quarterly Journal of the Geological Society of London*, 5, 111–15.
- Shepherd, T.J., Beckinsale, R.D., Rundle, C.C. *et al.* (1976) Genesis of the Carrock Fell tungsten deposits, Cumbria: fluid inclusion and isotopic study. *Transactions of the Institution of Mining and Metallurgy*, B85, 63–73.
- Siddans, A.W.B. (1971) The origin of slaty cleavage. Unpublished PhD thesis, University of London.
- Siddans, A.W.B. (1972) Slaty cleavage — a review of research since 1815. *Earth Science Reviews*, 8, 205–32.
- Simpson, A. (1967) The stratigraphy and tectonics of the Skiddaw Slates and the relationship of the overlying Borrowdale Volcanic Series in part of the Lake District. *Geological Journal*, 5, 391–418.
- Smith, M. (1987) The Tremadoc 'Thrust' Zone in southern central Snowdonia. In *Sedimentation and Tectonics of the Welsh Basin*. (eds W.R. Fitches and N.H. Woodcock), Geological Journal, 22, 119–29.
- Smith, M. (1988) The Tectonic Evolution of the Cambro-Ordovician Rocks of Southern Central Snowdonia. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Sokoutis, D. (1987) Finite strain effects in experimental mullions. *Journal of Structural Geology*, 9, 233–42.
- Soper, N.J. (1970) Three critical localities on the junction of the Borrowdale Volcanic Rocks with the Skiddaw Slates in the Lake District. *Proceedings of the Yorkshire Geological Society*, 37, 461–93.
- Soper, N.J. (1986) The Newer Granite problem: a geotectonic view. *Geological Magazine*, 123, 227–36.
- Soper, N.J. (1987) The Ordovician batholith of the English Lake District. *Geological Magazine*, 124, 481–2.
- Soper, N.J. (1988) Timing and geometry of collision, terrane accretion and sinistral strike-slip events in the British Caledonides. In *The Caledonian–Appalachian Orogen*. (eds A.L. Harris and D.J. Fettes), Geological Society Special Publication, No. 38, pp. 482–92.
- Soper, N.J. and Hutton, D.H.W. (1984) Late Caledonian sinistral displacements in Britain: implications for a three-plate collision model. *Tectonics*, 3, 781–94.
- Soper, N.J. and Moseley, F. (1978) Structure. In *The Geology of the Lake District*. (ed. F. Moseley), Yorkshire Geological Society Occasional Publication, No. 3, pp. 45–67.
- Soper, N.J. and Numan, N.M.S. (1974) Structure and stratigraphy of the Borrowdale Volcanic rocks of the Kentmere area, English Lake District. *Geological Journal*, 9, 147–66.
- Soper, N.J. and Roberts, D.E. (1971) Age of cleavage in the Skiddaw Slates in relation to the Skiddaw aureole. *Geological Magazine*, 108, 293–302.

- Soper, N.J., Webb, B.C., and Woodcock, N.H. (1987). Late Caledonian (Acadian) transpression in north-west England: timing, geometry and geotectonic significance. *Proceedings of the Yorkshire Geological Society*, 46, 175–92.
- Sorby, H.C. (1853) On the origin of slaty cleavage. *New Philosophical Journal of Edinburgh*, 55, 137–48.
- Sorby, H.C. (1856) On slaty cleavage as exhibited in the Devonian limestones of Devonshire. *Philosophical Magazine*, 11, 20–37.
- Sorby, H.C. (1908) On the application of quantitative methods to the study of the structure and history of rocks. *Quarterly Journal of the Geological Society of London*, 64, 171–232.
- Stone, P., Floyd, J.D., Barnes, R.P., and Lintern, B.C. (1987). A sequential back-arc and foreland basin thrust duplex model for the Southern Uplands of Scotland. *Journal of the Geological Society of London*, 144, 753–64.
- Stringer, P. and Treagus, J.E. (1980) Non-axial planar  $S_1$  cleavage in the Hawick Rocks of the Galloway area, Southern Uplands, Scotland. *Journal of Structural Geology*, 2, 317–31.
- Stringer, P. and Treagus, J.E. (1981). Asymmetrical folding in the Hawick Rocks of the Galloway area, Southern Uplands. *Scottish Journal of Geology*, 17, 129–48
- Stringer, P. and Treagus, J.E. (1983) Asymmetrical folding in the Hawick Rocks of the Galloway area, Southern Uplands: Reply. *Scottish Journal of Geology*, 19, 107–12.
- Thirlwall, M.F. (1988) Geochronology of Late Caledonian magmatism in northern Britain. *Journal of the Geological Society of London*, 145, 951–67.
- Toghill, P. (1970) The south-east limit of the Moffat Shales in the upper Etrick Valley region, Selkirkshire. *Scottish Journal of Geology*, 6, 233–42.
- Treagus, J.E. and Treagus, S.H. (1981) Folds and the strain ellipsoid:- a general model. *Journal of Structural Geology*, 3, 1–18.
- Tremlett, C.R. (1982) The structure and structural history of the Lower Palaeozoic Rocks in parts of North Dyfed, Wales. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Tullis, T.E. and Wood, D.S. (1972) The relationship between preferred orientation and finite strain for three slates. *Geological Society of America (Abstract with program)*, 4, (7), p. 694.
- Tullis, T.E. and Wood, D.S. (1975) Correlation of finite strain from both reduction bodies and preferred orientation of mica in slate from Wales. *Bulletin of the Geological Society of America*, 86, 632–8.
- Tyler, J.E. and Woodcock, N.H. (1987) The Bailey Hill Formation: Ludlow Series turbidites in Welsh Borderland reinterpreted as distal storm deposits. *Geological Journal*, 22, 73–86.
- Wadge, A.J. (1972) Sections through the Skiddaw–Borrowdale unconformity in eastern Lakeland. *Proceedings of the Yorkshire Geological Society*, 39, 179–98.
- Wadge, A.J. (1978a) Classification and stratigraphical relationships of the Lower Ordovician rocks. In *The Geology of the Lake District*. (ed. F. Moseley), Yorkshire Geological Society Occasional Publication No. 3, pp. 68–78.
- Wadge, A.J. (1978b). Devonian. In *The Geology of the Lake District*. (ed. F. Moseley), Yorkshire Geological Society Occasional Publication No. 3, pp. 164–7.
- Wadge, A.J., Gale, N.H., Beckinsale, R.D., and Rundle, C.C. (1978) A Rb-Sr isochron for the Shap granite. *Proceedings of the Yorkshire Geological Society*, 42, 297–305.

- Walton, E.K. (1961) Some aspects of the succession and structure in the Lower Palaeozoic rocks of the Southern Uplands of Scotland. *Geologische Rundschau*, 50, 63–77.
- Walton, E.K. (1965) Lower Palaeozoic rocks: stratigraphy, palaeogeography and structure. In *Geology of Scotland*. 1st edn, (ed. G.Y. Craig), Oliver and Boyd, Edinburgh, pp. 167–227.
- Walton, E.K. (1983) Lower Palaeozoic rocks, structure and palaeogeography. In *Geology of Scotland*. 2nd edn, (ed. G.Y. Craig), Edinburgh, pp. 139–66.
- Ward, J.C. (1876) *The Geology of the Northern Part of the English Lake District*. Memoir of the Geological Survey of the UK, HMSO, London.
- Warren, P.T., Harrison, R.K., Wilson, H.E., *et al.* (1970) Tectonic ripples and associated minor structures in the Silurian rocks of Denbighshire, North Wales. *Geological Magazine*, 107, 51–60.
- Watson, J.V. (1984) The ending of the Caledonian Orogeny in Scotland. *Journal of the Geological Society of London*, 141, 193–214.
- Webb, B.C. (1972) North–south trending pre-cleavage folds in the Skiddaw Slate Group of the English Lake District. *Nature Physical Science*, 235, 138–40.
- Webb, B.C. (1975) The structure and stratigraphy of the Skiddaw Slates between Buttermere and Newlands, Cumbria, and their relationship to the overlying Volcanic Rocks. Unpublished PhD thesis, University of Sheffield.
- Webb, B.C. (1983) Imbricate structure in the Etrick area, Southern Uplands. *Scottish Journal of Geology*, 19, 387–400.
- Webb, B.C. and Cooper, A.H. (1988) Slump folds and gravity slide structures in a Lower Palaeozoic marginal basin sequence (the Skiddaw Group) NW England. *Journal of Structural Geology*, 10, 463–72.
- Webb, B.C. and Lawrence, D.J.D. (1986) Conical fold terminations in the Bannisdale Slates of the English Lake District. *Journal of Structural Geology*, 8, 79–86.
- Wedd, C.B., Smith, B., and Willis, U. (1927) *The geology of the country around Wrexham*. Memoir of the Geological Survey of the UK, HMSO, London.
- Weir, J.A. (1968) Structural history of the Silurian rocks of the coast west of Gatehouse, Kirkcudbrightshire. *Scottish Journal of Geology*, 4, 31–52.
- Weir, J.A. (1979) Tectonic contrasts in the Southern Uplands. *Scottish Journal of Geology*, 15, 169–86.
- Whalley, J.S. (1973) Finite strain and texture variation associated with folds in a greywacke sequence at Rhosneigr, Anglesey. Unpublished MSc thesis, Imperial College, London.
- White, S.H. and Knipe, R.J. (1978). Microstructure and cleavage development in selected slates. *Contributions to Mineralogy and Petrology*, 66, 165–74.
- Wilkinson, I. (1987). A finite strain study of the Ordovician volcanic rocks of Snowdonia, North Wales and its implications for a regional strain model. In *Sedimentation and Tectonics of the Welsh Basin*. (eds W.R. Fitches and N.H. Woodcock). *Geological Journal*, 22, 95–105.
- Wilkinson, I. (1988) The Deformation of the Ordovician Volcanic Rocks of Snowdonia, North Wales. Unpublished PhD thesis, University of Wales, Aberystwyth.
- Wilkinson, I. and Smith, M. (1988) Basement fractures in North Wales: their recognition and control on Caledonian deformation. *Geological Magazine*, 125, 301–6.

- Williams, A. (1975) Plate tectonic and biofacies evolution as factors in Ordovician correlation. In *The Ordovician System: Proceedings of a Palaeontological Association symposium*. (ed. M.G. Bassett) University of Wales Press, Cardiff, and National Museum of Wales, pp. 18–53.
- Williams, H. (1922) The igneous rocks of the Capel Curig district, North Wales. *Proceedings of the Liverpool Geological Society*, 13, 166–206.
- Williams, H. (1927) The geology of Snowdon, North Wales. *Quarterly Journal of the Geological Society of London*, 83, 346–431.
- Williams, H. and Hatcher, R.D. (1982) Appalachian suspect terranes. *Memoir of the Geological Society of America*, 158, 33–53.
- Wilson, J.T. (1966) Did the Atlantic close and then re-open? *Nature*, 211, 676–681.
- Wood, A. (1958) Whitsun field meeting at Aberystwyth. *Proceedings of the Geologists' Association*, 69, 28–31.
- Wood, A. and Smith, A.J. (1958) The sedimentation and sedimentary history of the Aberystwyth Grits (Upper Llandoveryan). *Quarterly Journal of the Geological Society of London*, 114, 163–95.
- Wood, D.S. (1969) The base and correlation of the Cambrian rocks of North Wales. In *The Precambrian and Lower Palaeozoic Rocks of Wales*. (ed. A. Wood), University of Wales Press, Cardiff, pp. 47–66.
- Wood, D.S. (1971) Studies of strain and slaty cleavage in the Caledonides of North-west Europe and the eastern United States. Unpublished PhD thesis, University of Leeds.
- Wood, D.S. (1973) Patterns and magnitudes of natural strain in rocks. *Philosophical Transactions of the Royal Society of London*, A274, 373–82.
- Wood, D.S. (1974) Current views of the development of slaty cleavage. *Review of Earth and Planetary Science*, 2, 369–401.
- Wood, D.S. and Oertel, G. (1980) Deformation in the Cambrian Slate belt of Wales. *Journal of Geology*, 88, 285–308.
- Wood, D.S., Oertel, G., Singh, J., and Bennett, H.F. (1976) Strain and anisotropy in rocks. *Philosophical Transactions of the Royal Society of London*, A283, 27–42.
- Wood, M. and Nicholls, G.D. (1973) Pre-Cambrian stromatolitic limestones from northern Anglesey. *Nature, Physical Science*, 241, p. 65.
- Woodcock, N.H. (1976) Ludlow series slumps and turbidites and the form of the Montgomery Trough, Powys. *Proceedings of the Geologists' Association*, 87, 169–82.
- Woodcock, N.H. (1984a) Early Palaeozoic sedimentation and tectonics in Wales. *Proceedings of the Geologists' Association*, 95, 323–35.
- Woodcock, N.H. (1984b). The Pontesford Lineament, Welsh Borderland. *Journal of the Geological Society of London*, 141, 1001–14.
- Woodcock, N.H. (1987a) Structural geology of the Llandovery Series in the type area, Dyfed, Wales. In *Sedimentation and Tectonics of the Welsh Basin*. (eds W.R. Fitches and N.H. Woodcock), Geological Journal, 22, 199–209.
- Woodcock, N.H. (1987b) Kinematics of strike-slip faulting, Builth Inlier, Mid-Wales. *Journal of Structural Geology*, 9, 353–63.



Woodcock, N.H. (1988) Strike-slip faulting along the Church Stretton Lineament, Old Radnor Inlier, Powys. *Journal of the Geological Society of London*, 145, 925–33.

Woodcock, N.H. and Gibbons, W. (1988) Is the Welsh Borderland fault System a terrane boundary? *Journal of the Geological Society of London*, 145, 915–23.

Woodcock, N.H., Awan, M.A, Johnson, T.E. *et al.* (1988) Acadian transpression in Wales during Avalonia/Laurentia convergence. *Tectonics*, 7, 483–95.