
7 References

The *Geological Survey Memoir of 1928* (pp. 277–283) contains an exhaustive bibliography of publications dealing with Arran. Any papers on the geology of the island that have appeared since that date are included in the following list of publications to which reference is made in the text of the Excursion Guide.

Allport, A. 1872. On the microscopic structure of the pitchstones of Arran. *Geol. Mag.*, 9, 1–10.

Allport, A. 1872a. On the microscopic structure of the pitchstones and felsites of Arran. *Ibid.*, 9, 536–545.

Anderson, J. G. C. 1945. The Dalradian rocks of Arran. *Trans. geol. Soc. Glasgow.*, 20, 264–86.

Anderson, J. G. C. 1947. The geology of the Highland Border; Stonehaven to Arran. *Trans. roy. Soc. Edinb.*, 61, 479–515.

Anderson, J. G. C. 1954. Hutton's Unconformity. *Geol. Mag.*, 91, 85–86.

Anderson, J. G. C. and J. Pringle. 1944. The Arenig rocks of Arran and their relationship to the Dalradian series. *Geol. Mag.*, 81, 81–87.

Ashford, J. H. 1959. The Structure and Petrology of the Eastern Part of the Central Igneous Complex of Arran. *Unpubl. Ph. D. Thesis, Univ. of Glasgow.*

Astin, T. R. and D. I. M. Macdonald. 1983. Syn-depositional and valley-fill breccias in the Permo-Trias of Arran. *Scott. J. Geol.*, 19, 47–58.

Bailey, E. B. 1926. Subterranean penetration by a desert climate. *Geol. Mag.*, 63, 276–280.

Bailey, E. B. 1926a. Domes in Scotland and South Africa: Arran and Vredefort. *Ibid.*, 63, 481–495.

Balfour, J. A. and others. 1910. *The Book of Arran*. Glasgow.

Barrett, B. H. 1925. The Permain Breccia of Arran. *Trans. geol. Soc. Glasg.*, 17, 264–270.

Bluck, B. J., A. N. Halliday, M. Aftalion and R. M. Macintyre. 1980. The age and origin of the Ballantrae ophiolite and its significance to the Caledonian orogeny and Ordovician time scale. *Geology*, 8, 492–495.

Bonney, T. G. 1877. On certain rock-structures, as illustrated by pitchstones and felsites in Arran. *Geol. Mag.*, 14, 499–511.

Bremner, A. 1942. The origin of the Scottish river system. *Scott. geogr. Mag.*, 58, 15–20, 54–59, 99–103.

Briggs, D. E. G., W. D. I. Rolfe and J. Brannan. 1979. A giant myriapod trail from the Namurian of Arran, Scotland. *Palaeont.*, 22, 273–291.

Bryce, J. 1872. *The Geology of Arran and the other Clyde Islands (4th Edition)*. Glasgow and London.

Bryce, T. H. 1910. The sepulchral remains of Arran. *In* Balfour and others, 33–155.

Cadell, H. M. 1886. The Dumbartonshire Highlands. *Scott. geogr. Mag.*, 2, 337–347.

Cadell, H. M. 1913. *The Story of the Forth*. Edinburgh.

- Callander, J. G. 1929. Land movements in Scotland in prehistoric and recent times. *Proc. Soc. Antiq. Scotland*, 63, 314–322.
- Challinor, J. 1961. *Dictionary of Geological terms*. Cardiff.
- Cowie, C. R. 1905. Notes on the Shoals at Catacol Point and Kirn Point, Arran. *Trans. geol. Soc. Glasgow*, 12, 156–158.
- Craig, G. Y. 1965. *The geology of Scotland*. Oliver and Boyd, Edinburgh.
- Curry, G. B., J. K. Ingham, B. J. Bluck and Alwyn Williams. 1982. The significance of a reliable Ordovician age for some Highland Border rocks in Central Scotland. *J. geol. Soc. London*, 139, 451–454.
- Dagley, P., A. E. Mussett, R. L. Wilson and J. M. Hall. 1978. The British Tertiary igneous province: palaeomagnetism of the Arran dykes. *Geophys. J. R. astr. Soc.*, 54, 75–91.
- De Souza, H. A. F. 1982. Age data from Scotland and the Carboniferous time scale. In *Numerical Dating in Stratigraphy* (edit. G. S. Odin), Wiley.
- Dewey, J. F. 1961. A note concerning the age of the metamorphism of the Dalradian rocks of Western Ireland. *Geol. Mag.*, 98, 339–405.
- Dickin, A. P., S. Moorbath and H. J. Welke. 1981. Isotope, trace element and major element geochemistry of Tertiary igneous rocks, Isle of Arran, Scotland. *Trans. roy. Soc. Edinburgh*, 72, 159–170.
- Donner, J. J. 1957. Geology and vegetation of the late-Glacial retreat stages in Scotland. *Trans. roy. Soc. Edinburgh*, 57, 633–646.
- Donner, J. J. 1959. Late-Glacial and post-Glacial raised beaches in Scotland. *Suomalainen Tiedeacademia*, 55, 1–25.
- Donner, J. J. 1963. The late- and post-glacial raised beaches in Scotland II. *Annal. Acad. sci. Fenn.* AIII 68, 1–13.
- Evans, A. L., F. J. Fitch and J. A. Miller. 1973. Potassium-argon age determinations on some British Tertiary rocks. *J. geol. Soc. London*, 129, 419–443.
- Evans, J. W. and C. J. Stubblefield. 1929. *Handbook of the Geology of Great Britain*. London.
- Fleet, H. 1938. Erosion surfaces in the Grampian Highlands of Scotland. *Rapp. Comm. cart. surf. d'Appl. Tert.*, 91–94, *Union Geogr. Internat.*, Paris.
- Flett, W. R. 1942. The contact between the granites of North Arran. *Trans. geol. Soc. Glasgow*, 20, 180–204.
- Friend, P. F., W. B. Harland and H. Gilbert Smith. 1970. Reddening and fissuring associated with the Caledonian unconformity in north-west Arran. *Proc. Geol. Assoc.*, 81, 75–85.
- Friend, P. F., W. B. Harland and J. D. Hudson. 1964. The Old Red Sandstone and the Highland Boundary in Arran. *Trans. Edinburgh geol. Soc.*, 19, 363–425.
- Geikie, A. 1897. *The Ancient Volcanoes of Great Britain*. London. George, T. N. 1955. Drainage in the Southern Uplands: Clyde, Nith, Annan. *Trans. geol. Soc. Glasgow*, 22, 1–34.
- George, T. N. 1958. The Geology and Morphology of the Glasgow District. In "The Glasgow Region", 17–61, *British Assoc. Handbook*. Glasgow.
- George, T. N. 1960. The stratigraphical evolution of the Midland Valley. *Trans. geol. Soc. Glasgow*, 24, 32–107.
- George, T. N. 1966. Geomorphic evolution in Hebridean Scotland. *Scott. J. Geol.*, 2, 1–34.

- Gibb, F. G. F. and C. M. B. Henderson. 1978a. Possible high-pressure relics within titaniferous augites in a basic sill. *Geol. Mag.*, 115, 55–62.
- Gibb, F. G. F. and C. M. B. Henderson. 1978b. The petrology of the Dippin Sill, Isle of Arran. *Scott. J. Geol.*, 14, 1–27.
- Goodwin, H. 1961. Radiocarbon dating and Quaternary history in Britain. *Proc. roy. Soc. (B.)*, 153, 287–320.
- Gregory, J. W. 1913. *The Nature and Origin of Fjords*. London.
- Gregory, J. W. 1915. The Permian and Triassic rocks of Arran. *Trans. geol. Soc. Glasgow*, 15, 174–187.
- Gregory, J. W. 1920. The pre-Glacial valleys of Arran and Snowdon. *Geol. Mag.*, 57, 148–164.
- Gregory, J. W. 1927. The fjords of the Hebrides. *Geogr. J.*, 69, 192–212.
- Gregory, J. W. and G. W. Tyrrell. 1924. Excursion to Arran. *Proc. geol. Assoc.*, 35, 401–423.
- Gunn, W. 1897. Notes on the geology of the Isle of Arran. *Trans. Edinburgh geol. Soc.*, 7, 268–276.
- Gunn, W. 1899. On the old volcanic rocks of the island of Arran. *Trans. geol. Soc. Glasgow*, 11, 174–191.
- Gunn, W. 1903. The Geology of North Arran, South Bute and the Cumbraes. (Explanation of Sheet 21.) *Mem. Geol. Surv. . G G. B.*
- Harker, A. 1903. Petrography of the Tertiary igneous rocks. *In Gunn 1903*, 103–127.
- Harker, A. 1929. Igneous rocks of Tertiary age. *In Evans and Stubblefield*, 440–456.
- Harland, W. B. and J. L. F. Hacker. 1966. "Fossil" lightning strikes 250 million years ago. *Advmt Sci.*, . 22, 663–671.
- Heddle, M. F. 1901. *The Mineralogy of Scotland* (edited by J. G. Goodchild). Edinburgh.
- Henderson, C. M. B. and F. G. F. Gibb. 1977. Formation of analcime in the Dippin sill, Isle of Arran. *Miner. Mag.*, 41, 534–537.
- Herriot, A. 1972. A note on the composite intrusions of Bennan, Arran. *Proc. geol. Soc. Glasgow*, Sessions 111 and 112, 3–7.
- Herriot, A. 1975. Observations on the Tighvein "Complex", Arran. *Proc. geol. Soc. Glasgow*, for 1972–1974, 7–11.
- Herriot, A. 1981. The composite intrusions of Bennan, Arran: a further note. *Proc. geol. Soc. Glasgow*, for 1980–1981.
- Herriot, A. 1982. The Pre-Tertiary dykes of Catacol, Arran. *Trans. Leeds geol. Assoc.*, 9, 85–94.
- Himus, G. W. 1954. *A Dictionary of Geology* (Penguin Reference Books R8). London.
- Hodgsen, B. D. 1981. Magnetostratigraphy of the Tertiary igneous rocks of Arran, Scotland. *Unpubl. Ph. D. Thesis, Liverpool University*.
- Holgate, N. 1978. A composite tholeiite dyke at Imachar, Isle of Arran: its petrogenesis and associated pyrometamorphism. *Miner. Mag.*, 42, 141–142 & M1–4.
- Holmes, A. 1960. A revised geological time-scale. *Trans. Edinburgh geol. Soc.*, 17, 183–216.
- Howie, R. A. and J. N. Walsh. 1981. Riebeckitic arfvedsonite and aenigmatite from the Ailsa Craig microgranite. *Scott. J. Geol.*, 17, 123–128.

- Hutton, J. 1975. *Theory of the Earth, with proofs and illustrations*. Edinburgh.
- Hutton, J. 1899. *Theory of the Earth, with proofs and illustrations*. Vol. 3, edited by Sir A. Geikie and published by the Geol. Soc. of London.
- Jehu, T. J. 1912. Discovery of fossils in the Chert and Black Shale Series at Aberfoyle. *Nature*, London, 89, 347.
- Jehu, T. J. and R. Campbell. 1917. The Highland Border rocks of the Aberfoyle district. *Trans. roy. Soc. Edinburgh*, 52, 175–212.
- Johnson, T. I. and I. G. Meighan. 1975. The Northern Granite Complex, Isle of Arran. *J. geol. Soc. London*, 131, 331.
- Judd, J. W. 1893. On composite dykes in Arran. *Quart. J. geol. Soc. London*, 49, 536–564.
- Kennedy, W. Q. 1958. The tectonic evolution of the Midland Valley of Scotland. *Trans. geol. Soc. Glasgow*, 23, 107–133.
- Khan, M. A. 1960. The remanent magnetization of the basic Tertiary igneous rocks of Skye. *Geophys. J.*, 3, 45–62.
- King, B. C. 1954. Gabbro tuff in the central volcanic complex of Arran. *Trans. geol. Soc. Glasgow*, 21, 440–446.
- King, B. C. 1955. The Ard Bheinn area of the central igneous complex of Arran. *Quart. J. geol. Soc. London*, 110, 323–354.
- King, B. C. 1959. Age of the granites of the Ard Bheinn area, Arran. *Proc. geol. Soc. London*, 1958–1959, 134.
- Kynaston, H. 1903. Notes on the petrography of the Old Red Sandstone igneous rocks. *In Gunn 1903*, 171–174.
- Leitch, D. 1942. The Upper Carboniferous rocks of Arran. *Trans. geol. Soc. Glasgow*, 20, 141–154.
- Linton, D. L. 1949. Watershed breaching by ice in Scotland. *Trans. Inst. Brit. Geogr.*, 15, 1–16.
- Linton, D. L. 1951. Problems of Scottish scenery. *Scott. geogr. Mag.*, 67, 65–85.
- Longman, C. D., B. J. Bluck and O. Van Breeman. 1979. Ordovician conglomerates and the evolution of the Midland Valley. *Nature*, London, 280, 578–581.
- Lovell, J. P. B. 1971. Petrography and correlation of sandstones in the New Red Sandstone (Permo-Triassic) of Arran. *Scott. J. Geol.*, 7, 162–169.
- Lovell, J. P. B. 1981. Intertidal sediments in the Auchenheew Beds (Triassic) of Arran. Lett. to Eds. *Scott. J. Geol.*, 17, 223.
- Macculloch, J. 1819. *A. Description of the Western Isles of Scotland, including the Isle of Man*. London. (Arran, vol. ii, 311–439.)
- Macgregor, M. 1944. In "Barytes in Central Scotland". (Wartime Pamphlet No. 38.) *Mem. Geol. Surv. . G. B.* (Arran, 22–33.)
- Macgregor, M. and A. G. MacGregor. 1948. The Midland Valley of Scotland (2nd edition). *Brit. reg. Geol., Inst. Geol. Sci.*
- Mackinder, H. J. 1907. *Britain and British Seas*. London.
- McCallien, W. J. 1937. *Scottish Gem Stones*. Glasgow. (Reprinted 1971, University Microfilms Ltd.)
- McLean, A. C. and C. E. Deegan (eds.). 1978. The solid geology of the Clyde sheet (55 N/6 W). *Rep. Inst. Geol. Sci.* No. 78/9.

- Meighan, I. G. 1979. The acid igneous rocks of the British Tertiary Province. *Bull. Geol. Surv. . G. B. .*, 70, 10–22.
- Miller, J. A. and P. E. Brown. 1965. Potassium-argon age studies in Scotland. *Geol. Mag.*, 102, 106–134 (esp. Table 6, p. 125).
- Miller, J. A. and W. B. Harland. 1963. Ages of some Tertiary intrusive rocks in Arran. *Miner. Mag.*, 33, 521–523.
- Mort, F. 1911. The sculpture of the Goatfell mountain group. *Scott. geogr. Mag.*, 27, 623–643.
- Mort, F. 1914. The sculpture of North Arran. *Scott. geogr. Mag.*, 30, 393–404.
- Mussett, A. E. 1980. British Tertiary Igneous Province probably not associated with East Greenland lavas. *Nature*, London, 284, 376–377.
- Mykura, W. 1960. In "Summary of Progress for 1959", pp. 38–39. *Mem. Geol. Surv. . G. G. B.*
- Mykura, W. 1965. The age of the lower part of the New Red Sandstone of south-west Scotland. *Scott. J. Geol.*, 1, 9–18.
- Peach, B. N. and J. Home. 1910. The Scottish Lakes in relation to the geological features of the country. In Sir T. Murray and L. Pullar, *Bathymetrical Survey of the Scottish Fresh Water Lochs*, vol. 1, 439–513.
- Peach, B. N. and J. Home. 1930. *Chapters on the geology of Scotland*. London.
- Piper, D. J. W. 1970. Eolian sediments in the basal New Red Sandstone of Arran. *Scott. J. Geol.*, 6, 295–308.
- Pollard, J. E. and J. P. B. Lovell. 1976. Trace fossils from the Permo-Triassic of Arran. *Scott. J. Geol.*, 12, 209–225.
- Pollard, J. E. and R. J. Steel. 1981. Intertidal sediments in the Auchenhew Beds (Triassic) of Arran, a reply. *Scott. J. Geol.*, 17, 225.
- Price, R. J. 1973. *Glacial and fluvioglacial landforms*. Oliver and Boyd, Edinburgh.
- Price, R. J. 1982. The magnitude and frequency of late Quaternary environmental changes in Scotland: implications for human occupation. *Scott. archaeol. Review*, 1, 61–72.
- Pringle, J. 1940. The discovery of Cambrian trilobites in the Highland Border rocks near Callander, Perthshire. *Advanc. Sci.*, London, 1, 252.
- Pringle, J. 1942. On the relationship of the Green Conglomerate to the Margie Grits in the North Esk, near Edzell; and on the probable age of the Margie Limestone. *Trans. geol. Soc. Glasgow*, 20, 136–140.
- Ramsay, A. C. 1841. *Geology of the Island of Arran from original survey*. Glasgow.
- Rao, M. S. 1958. Composite and multiple intrusions of the Lamlash—Whiting Bay region, Arran. *Geol. Mag.*, 95, 265–280.
- Rao, M. S. 1959. Minor acid intrusions and dykes of the Lamlash—Whiting Bay region, Arran. *Geol. Mag.*, 96, 237–246.
- Richey, J. E. 1961. The Tertiary Volcanic Districts (3rd Edition). *Brit. reg. Geol.* (Arran, 103–113).
- Rogers, N. W. and I. L. Gibson. 1977. The petrology and the geochemistry of the Creag Dubh composite sill, Whiting Bay, Arran, Scotland. *Geol. Mag.*, 114, 1–8.
- Scott, A. 1915. A note on the pitchstone-porphphy of Glen Shurig. *Trans. geol. Soc. Glasgow*, 15, 147–150.
- Scott, A. 1918. Notes on the physiography of Arran. *Scott. geogr. Mag.*, 34, 90–99.

- Shackleton, R. M. 1958. Downward-facing structures of the Highland Border. *Quart. J. geol. Soc. London*, 113, 361–389. (Arran, 377–378.)
- Simpson, J. B. 1933. The late-Glacial re-advance moraines of the Highland Border, west of the River Tay. *Trans. roy. Soc. Edinburgh*, 57, 633–646.
- Simpson, J. B. 1951. The age of Tertiary vulcanicity in Scotland. *Brit. Assoc. Progr.*, 63.
- Sissons, J. B. 1963. Scottish raised shoreline heights with particular references to the Forth Valley. *Geogr. Annlr*, 45, 180–185.
- Sissons, J. B. 1966. Relative sea-level changes between 10,300 and 8,300 B.P. in part of the Carse of Stirling. *Tram. Inst. Brit. Geogr.*, 39, 19–30.
- Sissons, J. B. 1967. *The evolution of Scotland's scenery*. Edinburgh.
- Smith, J. 1896. A new view of the Arran granite mountains. *Trans. geol. Soc. Glasgow*, 10, 216–256.
- Sutherland, D. S. (ed.) 1982. *Igneous rocks of the British Isles*. Wiley.
- Tarr, R. S. 1908. Glacial erosion of the Scottish Highlands. *Scott. geogr. Mag.*, 24, 575–587.
- Teal, J. J. H. 1888. *British Petrography*, London.
- Thomson, J. 1898. On the stratified rocks of the shore-line from Clauchland Point to the Cock of Arran. *Trans. geol. Soc. Glasgow*, 11, 12–31.
- Thomson, J. and E. A. Wunsch. 1877. Note on discovery of derived Carboniferous fossils in the conglomerates at the north end of Arran. *Trans. geol. Soc. Glasgow*, 5, 313.
- Thomson, R. N. 1982. Magmatism of the British Tertiary Volcanic Province (The Carnegie Review Article). *Scott. J. Geol.*, 18, 49–107.
- Tilley, C. E. 1957. A note on the pitchstones of Arran. *Geol. Mag.*, 94, 329–333.
- Tomkeieff, S. I. 1946. Magmatic Rolls. *Nature*, London, 158, 420. Tomkeieff, S. I. 1953. "Hutton's Unconformity", Isle of Arran. *Geol. Mag.*, 90, 404–408.
- Tomkeieff, S. I. 1961. Isle of Arran. No. 32 in Excursion Guide Series, *Geol. Assoc.*
- Tomkeieff, S. I. and Margaret Longstaff. 1961. The magmatic complex at Kingscross Point, Isle of Arran. *Trans. Edinburgh geol. Soc.*, 18, 194–201.
- Tyrrell, G. W. 1915. On the boundary between the upper and lower divisions of the Red Rock series, near Whiting Bay and in the Slidery Water, Arran. *Trans. geol. Soc. Glasgow*, 15, 188–199.
- Tyrrell, G. W. 1928. The Geology of Arran. *Mem. Geol. Surv. G. B.*
- Tyrrell, G. W. 1948. In Arran and south-west Scotland. *Int. Geol. Congr. Guide to Excursion A* 15, 2–11.
- Warrington, G. 1973. Miospores of Triassic age and organic-walled microplankton from the Auchenhew Beds, south-east Arran. *Scott. J. Geol.*, 9, 109–116.
- Watson, R. B. 1864. On the great drift beds with shells in the south of Arran. *Trans. roy. Soc. Edinburgh*, 23, 523–546.
- Whitelaw, C. E. 1910. The Castles of Arran. In Balfour and others, 241–251.

Whitten, D. G. A. and J. R. V. Brooks. 1972. *The Penguin Dictionary of Geology*. Harmondsworth.

Wright, W. B. 1937. *The Quaternary Ice Age*. London.