



The Geological Society of London Celebrates GSA's 125th Anniversary

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The Geological Society of London celebrated GSA's 125th Anniversary through two five-day field trips in the Northwest Highlands of Scotland. These were held in May and June 2013. One trip explored "The Great British Tertiary Volcanoes" on Skye and Rum (Field Trip Leaders: Dougal Jerram, Kathryn Goodenough, and Val Troll), and the other explored the "Structure and Tectonics of the NW Highlands of Scotland" (Field Trip Leaders: Rob Butler and Rick Law).

As GSA's president, and as a devoted field-oriented structural geologist, I participated in the structure-tectonics Northwest

Highlands trip, along with more than 25 international participants (Fig. 1; Australia, Austria, Hungary, Poland, Spain, UK, and U.S. all represented). Participants on a tectonics studies group field excursion, which was run by students, also joined in on the trip. This trip was impeccably designed and led. Day after day, Rob Butler and Rick Law served up dazzling, extraordinary outcrops, and they framed our field experience in an integrated context of structural geology, petrology, and tectonics.

Imagining that the trip would be all about the Moine Thrust, I had not anticipated the vast geological range of what we would cover in five days: Lewisian basement with its bizarre expressions of magmatism, migmatization, anatexis, and deformation; Scourie dykes, the margins of which we observed to be marked by localized shearing, pseudotachylite, and flanking folds; transposition and interference fold patterns in intensely deformed Moine rocks; the thrusting of Moine metasediments over Cambrian limestone; the thrusting of Lewisian basement over Cambrian quartzite; folded mylonites; intensely and systematically fractured pebbles within tectonically extended Permo-Triassic conglomerates; superb coastline expressions of the Great Unconformity between Devonian Old Red Sandstone and basement rocks below (Fig. 2); and thin, delicate extensional shear zone systems in Jurassic black shale and sandstone.

Added to the excellence of these outcrop relationships was the steady diet of "Butler-Law narratives" on the history of geological debate and discovery in the Highlands. Their stories reminded us of why we love extracting "truth" from "impossible" field relationships. A case in point was the afternoon we spent on the flank of Ben Arnaboll, where Rob and Rick quite literally led us to the hypocenter of the Highlands Controversy (Fig. 3). None other than Murchison himself concluded that the rock sequence in the Northwest Highlands was a simple homocline marked by dipping beds "younging" eastward. He stayed with this interpretation even



Figure 1 (top and above): The participants. Photograph by Rob Butler. From left to right: 1. John Schneider; 2. Mirosław Ludwiniak; 3. Hannah Watkins; 4. Elena Druguet; 5. Steven Johansen; 6. Bernard Skillerne de Bristowe; 7. Ioannis Tsiantis; 8. Richard McIntosh; 9. Steven Habesh; 10. Christine Hodgson; 11. Melvyn Jones; 12. Rick Law; 13. Clare Marshall; 14. Rod Holcombe; 15. Joseph Nievoll; 16. Julien Moreau; 17. Taija Torvela; 18. Robert Freer; 19. Brian Marshall; 20. Scott Paterson; 21. Thelma Thompson; 22. Rob Butler; 23. Valbone Memeti; 24. Peter Thompson; 25. Joanna Uroda; 26. Michal Wygladala; 27. Alice Gripp; 28. Gustavo Jose Guariguata Rojas; 29. Pedro Galindo; 30. Myriam Rada de Guariguata; 31. Alistair McCay; 32. George Davis; 33. Brigitte Vogt; and 34. John Spring.



Figure 2. Great unconformity between Old Red Sandstone (above) and crystalline basement (below). Note topographic relief on this ancient erosion surface. Portskerra locale. Photograph by George Davis.

though the limestone and sedimentary quartzites within this package were interbedded with gneisses and schists (Murchison and Geikie, 1861). Later, both Callaway (1883) and Lapworth (1884) concluded that this sequence was laced with low-angle structural contacts that “repeated” rock units. Moreover, Lapworth (1885) recognized that foliation at these structural contacts was not bedding, but a deformational fabric that had formed during shearing. He named this fault rock “mylonite.” Geikie realized that Lapworth and Callaway had it right, coined the term “thrust,” and scrambled swiftly to publish (Geikie, 1884). Butler (2010) has archived this rich history in the “Blue Monster” (Law et al., 2010), as we came to know it. Personally, I cherish the afternoon we worked the classic Arnaboll thrust exposure while learning the saga from Rob and Rick. Though I had heard bits and pieces of this history in the classroom, it was on the flank of Ben Arnaboll that I actually *experienced* this history.

As we celebrate GSA’s 125th Anniversary, I now realize that Lapworth’s settling of the Highlands Controversy in 1885 does not seem so very long ago. He settled matters on the eve of the birth of the Geological Society of America (1888). I confess that I am no longer overawed by the concept of 125 years, for I attended my very first GSA Annual Meeting as a college junior in 1962, and thus have experienced 50 years (40%) of GSA’s legacy. As I triangulate these several facts, I am left with an especially clear grasp of the youth of our science and our Society, as well as the promise of things to come—*on both fronts*—for they are intertwined.

Let me say that the set of field-trip gifts from our sister Society could not have been improved upon. The words of David Shilston, President of the Geological Society of London, capture the warmth of this initiative: “The field trips visited classic areas of British geology and it was a pleasure to provide these opportunities for a gathering of geologists with a wide range of interests. ... Field work is the heart of much of what we do, and ... it is always good to get together to talk about rocks in the field.”

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Figure 3. The Arnaboll Thrust in its type locality, with Lewisian gneisses (gray, upper plate) separated from Cambrian quartzites (orange, lower plate) by mylonitic Lewisian gneisses (dark gray). View is to the south. Tectonic transport direction is from east to west. Rob Butler points to “type” mylonite. Photograph by George Davis.