Preface

Iceland's Golden Circle provides a unique opportunity to observe and understand many of Earth's natural forces in action. These include those that move the Earth's tectonic plates, rupture the crust, and generate earthquakes and volcanic eruptions. Earthquakes and volcanoes, in turn, provide the paths and the heat sources for hot springs and geysers. These are internal forces which, in combination with external forces, are also responsible for forming the landscape. The external forces relate to the actions of glaciers and rivers that erode the Earth's surface so as to generate waterfalls, river canyons, and, eventually, mountains.

The Golden Circle does not only illustrate natural forces but also natural resources. Among these is plenty of exceptionally clean and readily available groundwater. As humankind moves towards renewable energy, potential or actual renewable energy resources become of gradually greater importance. Those you can see—some from a distance—while travelling the Golden Circle include waterfalls (hydropower), geothermal fields (geothermal power), waves (wave energy) and—perhaps occasionally less welcome—the wind (wind power).

The Golden Circle is normally travelled (driven) in one day. There are many other exciting places that can be visited during one-day excursions. Here I describe four additional excursions that are less well known than the Golden Circle and all of which offer a deeper understanding of the processes that shape our planet as well as places of great landscapes and beauty. Since most visitors to Iceland stay in the Greater Reykjavik area (the Capital Region), all the excursions described here begin and end in Reykjavik. However, these excursions can be made wherever you stay in the southwestern part of the country.

More specifically, the book describes five one-day excursions in the southwestern part of Iceland. The first excursion is the classic Golden Circle, which includes the well-known sites of rifting at Thingvellir (Þingvellir), the geothermal

area of Geysir, the waterfall Gullfoss, and the volcanic crater Kerid (Kerið). The second excursion is to the beautiful fjord Halfjördur (Hvalfjörður), north of Reykjavik, where you can observe the deep interiors of volcanoes and volcanic zones as well as a variety of impressive landscape features. The third excursion focuses on the unique landscape, volcanic activity, and geothermal energy of the Hengill Volcano, south of Lake Thingvallavatn. The fourth excursion is to the Reykjanes Peninsula, south of Reykjavik, which contains the Blue Lagoon and the 'Bridge between two continents' and focuses on lakes, explosion craters, geothermal fields, volcanic fissures, and lava fields. The fifth excursion is to South Iceland and includes the main earthquake zone in this part of Iceland but focuses on the famous volcanoes Hekla (erupted in 2000), Eyjafjallajökull (erupted in 2010), and Katla (erupted in 1918), as well as the waterfalls, sandur plains, and the beautiful rock columns at the beach of Reynisfjara.

The book is written for the general visitor to Iceland. In particular, the book is for people who not only wish to enjoy Iceland's unique beauty, but also to appreciate and understand the processes that create that beauty. No geological knowledge is assumed. Technical terms are avoided as much as possible, and those that must be used are explained using non-technical language in main text and in a detailed glossary at the end of the book. I have been a guide on numerous geological excursions in Iceland, including all those described in the book. Some of the excursions have been primarily for people educated in geosciences, whereas others have been for people with no such background. While the book is aimed primarily at people with no background in geosciences, many geoscientists and students may benefit from the well-illustrated field examples and explanations of processes presented in the book. Many readers may neither have the time nor inclination to read the entire book. I have therefore written the chapters so as to make them comparatively independent of other chapters. It is thus possible to go for a single excursion and read the relevant chapter without having to read all the other chapters. For this reason there is considerable repetition of various terms, principles, and processes. To clarify points of interest or under discussion there is, however, much cross-referencing between chapters and, in particular, figures.

In many science books for the general public most of the figures are line drawings, cartoons. This book is unusual in that, while line drawings are used to illustrate certain geological processes, the focus is on explaining the geological structures and processes through annotated photographs. The advantage is that the processes are then explained in terms of structures as you really see them in nature. As a consequence the book has more than 240 illustrations, the great majority of which are photographs. Most of the photographs show the geological features exactly as you will see them during the excursions. There are, in addition, many

photographs taken from aircrafts, providing aerial views of the same features. These are meant to explain processes and structures at a different scale from that seen on the ground, as well as to underline and emphasise the unique beauty of the geology of Iceland.

Egham, UK Agust Gudmundsson

http://www.springer.com/978-3-319-55151-7

The Glorious Geology of Iceland's Golden Circle

Gudmundsson, Á.

2017, XIII, 334 p. 216 illus. in color., Softcover
ISBN: 978-3-319-55151-7