GEOLOGY OF SOUTHEAST ALASKA: ROCK AND ICE IN MOTION. By HAROLD H. STOWELL. Fairbanks: University of Alaska Press, 2006. ISBN-13: 978-1-889963-81-5. xii + 140 p., maps, colour illus., notes, glossary, selected bib., index. Softbound. US$19.95.

Harold H. Stowell is professor of Geology at the University of Alabama. He began his career in 1979 as an exploration geologist and received his doctorate from Princeton University in 1987. Dr. Stowell's fieldwork has taken him to Alaska and Canada, as well as to New Zealand, Antarctica, and Svalbard. He is a fellow of the Geological Society of America.

The author's stated goal is "to guide travelers through the spectacular scenery and fascinating geology of Southeast Alaska." To accomplish this goal, Dr. Stowell first describes the geography and climate of Southeast Alaska, then guides the reader through the basics of geology, geomorphology, and ice ages, describing the evidence of past and present global climatic changes, as well as the dynamics of the glaciers that carved this country. A brief chapter with excellent diagrams describes plate tectonics and paleomagnetism in layman's terms.

In this introduction (chapters 1–3), Dr. Stowell includes numerous interesting bits of information. He describes why some glacier ice appears blue while other glacier ice is white. The reader will learn that the receding glaciers in Alaska contribute nearly eight cubic miles (33 km^3) of water to the oceans each year, and that the oldest ice core retrieved from Antarctica is about 740 000 years old. By analyzing the air trapped in the glacier ice, scientists are able to record the changes in atmospheric composition over time and thus identify past climatic changes.

Chapters 4 and 5 are devoted to basic rock type classification, earthquakes, faults, and mountain building. The reader will also learn about the differences in chemical composition and density between the earth's oceanic crust and continental crust.

The next two chapters are devoted to describing the geological setting in Southeast Alaska by first examining a simplified tectonic map of western North America from Baja California to Alaska. Of necessity, this map is drawn with a "broad brush," yet it contains a wealth of information—especially when it is compared with an illustration of four cross sections showing different stages of the tectonic history of Southeast Alaska and British Columbia.

Chapter 8, the longest and most fascinating chapter of the book, is written as a geologic and historic tour guide. It takes the visitor from Haines and Skagway south through the Inside Passage past Juneau, Petersburg, and Wrangell to Ketchikan and Misty Fiords National Monument.

With this tour guide in hand, the visitor to Glacier Bay National Park will learn that the glaciers in this area have retreated by more that 60 miles over the past 200 years. Because of this recent glacial meltdown of an estimated 3000 ft thick sheet of ice, the earth crust is currently rebounding at a rate of over 1 inch per year.

At a distance from Sitka, you can see Mt. Edgecumbe, a prominent composite volcano that has not erupted for the past 4500 years. Nevertheless, on 1 April 1974, Sitka residents thought that the volcano had come alive and that they were about to witness a new eruption—only to find out that they were the victims of an excellently executed April Fool's joke (details of this joke are described in the book).

In Juneau the visitor will learn the history of the gold discovery and the development of the Treadwell Mine, which has produced seven million ounces (about $4.5 billion at $650/oz.).

The Wrangell area is famous for its garnets. These dark-red almandine garnets, up to an inch in diameter, are found in biotite schist at the Garnet Ledge near the mouth of the Stikine River. You can also find them in most gift shops. Dr. Stowell describes his work with these garnets and explains how it was determined that the growth rate of these crystals was about 1/4 to 1/2 inch per million years.

Finally, there is a brief description and a full-page photograph of the little-known but world-class occurrence of epidote crystals from the privately owned Green Monster Mine on Prince of Wales Island. Fabulous and extremely valuable specimens of these dark green crystals are prominently displayed at the Smithsonian Institute in Washington D.C.

This well-written book is abundantly illustrated with scenic photographs and simplified charts, maps, and graphs. So often geological maps and illustrations are cluttered by too much information that obscures the larger picture, but the illustrations in this book are clear and simple and successfully convey the events in the geological history of Southeast Alaska.

Besides 12 colored maps and diagrams, the book also contains 28 colored photographs of spectacular scenic views (mostly taken on rare sunny days) and close-up photos of rocks and mineral specimens. A 12-page glossary of geological terms is provided for readers not familiar with the scientific language.

This book is well suited for the bookstores and gift shops throughout Southeast Alaska and is definitely a "must" for the thousands of travelers that are the captive audience on all the cruise ships that yearly plow the waters of the Inside Passage through Southeast Alaska. With the increased mineral exploration for platinum and palladium in southeast Alaska caused by higher prices for precious metals, the book is also "must-read" material for any junior field geologist.

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