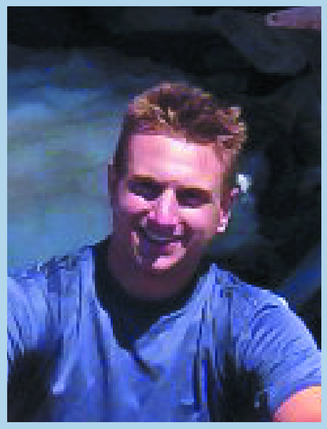
BURCH FELLOW 2003



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Some of the most beautiful and most dangerous places in the world are a result of geologic activity. The red glowing lavas of Hawaii, the amazing cliff faces of Yosemite National Park, California, the beautiful blue, green, and red steaming pools of Yellowstone National Park, and the shear contrast of Mt. Adams, Mt. Rainier, and Mt. St. Helens and their surrounding flatlands are all some of the most photographed and studied parts of our natural world. My Burch Fellowship allowed me to experience these, and so many more, amazing geologic features.

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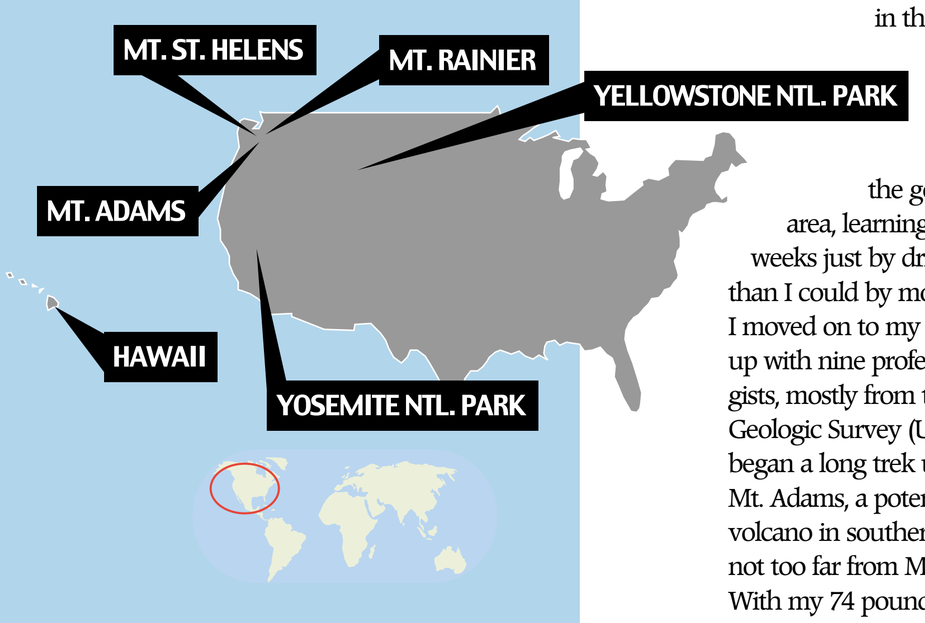
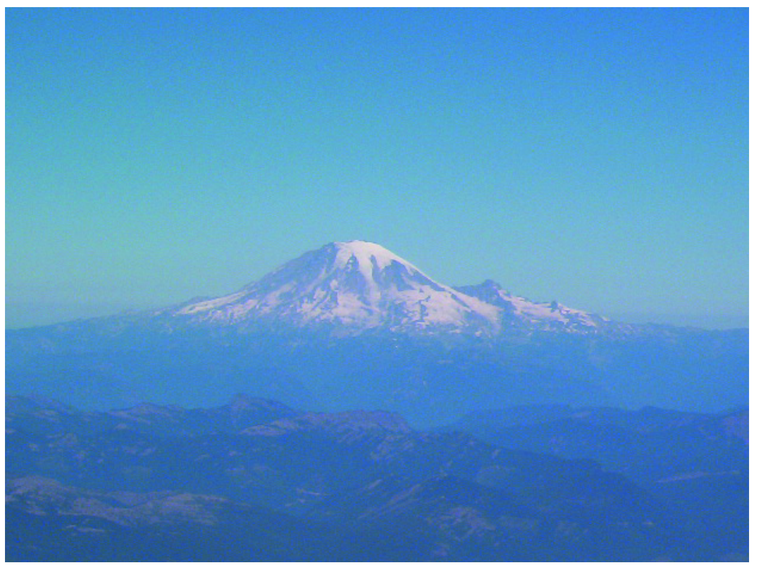


Geology in the Pacific Northwest:

From the Grand Tetons to Mt. St. Helens



I began my trip with a hands-on introduction to the geology of the Northwest United States. I flew into Portland Oregon and began my trek east. The trip took me from geologic setting to geologic setting as I traveled from green mountains and winding rivers, to the desert flatlands of Idaho to the most beautiful mountains I have ever seen: the Grand Tetons. I then worked my way through Yellowstone and Glacier National Parks before heading west again to the rainforest in Olympic National Park in Washington, and the pride and joy of this adventure: the Cascade stratovolcanoes. I then climbed Mt. Rainier, went to what remains of Mt. St. Helens, and made a long trip down to Sonora Pass California before returning to Mt. Adams in southern Washington.

In my travels I saw six major mountain ranges and hundreds of different geologic settings. Although these mountains are within driving distance of each other, and often look quite similar, they are all unique and were formed by different geologic processes. I had 4 am wakeup calls from a bison chewing on my tent. I went from flat ground with giant pimples in the Cascades, to desert, to boiling puddles of water in Yellowstone, to Iceberg lake of Glacier National Park, to rainforests in the northwest corner of the U.S.

After I familiarized myself with the geology of this area, learning more in three weeks just by driving and hiking than I could by months of reading, I moved on to my research. I met up with nine professional geologists, mostly from the United States Geologic Survey (USGS), and soon began a long trek up the flank of Mt. Adams, a potentially dangerous volcano in southern Washington not too far from Mt. St. Helens. With my 74 pound pack on my back, I started up the 12,276ft mountain. Luckily, the rocks we were interested in all lay within the top 1,000ft. We spent three days atop the mountain collecting magnetics data, as well as hand samples so we could determine weak points in the mountain. All the while, the pungent smell of sulfur filled the air. The sulfur atop the mountain is most likely responsible for the chemical deterioration of portions of the mountain, making them optimal paths for an eruption. With the data collected on this trip I, along with the USGS team, will attempt to pinpoint areas susceptible to failure in the event of an eruption. In turn, this will allow us to create hazard maps of the area that could tell us the areas where evacuation will be necessary for saving lives of the millions who live in cities such as Seattle, Washington and Portland, Oregon.

From this experience I learned you cannot fully understand something until you see it with your own eyes. I would never have thought that Rainier or Adams could pose a great threat to the survival of the cities of Washington and Oregon, until I stood atop them and stared in awe at the flatness of the surrounding areas. The giant mountains are distributed like candy dots pasted to wax paper that we used to eat when we were little, but those flat lands hold the potential to carry dangerous lava flows from the steep sides of the Cascade volcanoes hundreds of miles, wherein the danger to human civilization lies.

Geology is a field of study based on understanding field aspects of the Earth. I can sit here and say Yellowstone is one of the most beautiful places on Earth, and it is a geothermal field in the remnants of a giant, explosive volcano. Or, I can say Mt. Adams will erupt in the near future and holds the potential to kill millions of lives, let alone destroy the environment of the Northwestern US. But, until you go to Yellowstone and see these steaming 180 degree vents gushing steam and water from the ground, or you climb to

the top of Mt. Adams and smell the rotting egg stench that is wet sulfur, you cannot fully understand the significance of these two places.

The Burch Fellowship allowed me to see and experience these amazing geologic features first hand. I could have read in books that the last eruption from the Yellowstone Caldera erupted ash into the Gulf of Mexico and Mt. St. Helen's sent ash into Montana. But, instead the Burch program made it possible for me to feel the rumbles of trapped gas under Old Faithful and see the missing pinnacle of St. Helen's. This put geologic hazards into perspective and I can now see why thousands of people work together every day determining ways to save lives in the event of a large scale geologic event such as a volcanic eruption.

What the Burch Fellowship has done for me is amazing. I teamed up with some of the world's best geologists, saw some of the most beautiful places in the world, hiked a few 10,000+ ft. mountains, and learned what it really means to be a geologist. With this new found information, I am utilizing this experience and writing a thesis which hopefully will prove helpful in determining the potential eruptive path of Mt. Adams. My research sponsored by the Burch Fellowship will be key in the creation of a hazard prevention plan put together by the United States Geologic Survey (USGS) and the Cascade Volcano Observatory (CVO). In a way I feel I have helped saved millions of lives from something that may have otherwise gone undetected. I learned so much about Volcanoes and why they behave the way they do on this adventure, and I got to sit around a boiling pot of beans and talk with 9 people, of whose published papers I have read over 30 in the past 3 years. This was an amazing experience not soon to be forgotten. The Burch Fellowship I received has introduced me to a new level of thinking and research, as well as allowed me to visit places I have only dreamed of.