

THIS ISSUE

Curiosity and her sister rovers (Sojourner, Spirit, and Opportunity) have captured our imagination since Sojourner safely landed on Mars in 1997. Although Sojourner and Spirit are no longer active, Opportunity continues to gather data and, in July 2014, NASA announced that she had set a new “off-world” distance record by having traveled over 40 km since her landing in 2004. Curiosity is the most recent NASA rover to explore Mars. As you will read in this issue, Curiosity is providing a wealth of petrological, geochemical, and mineralogical data that excite scientists and nonscientists alike.

Curiosity landed at Gale Crater on August 6, 2012, and is currently at the foot of a 5.5 km high mountain dubbed Aeolis Mons (popularly known as Mt. Sharp). The Mars Science Lab mission scientists chose Mt. Sharp as their primary target because it contains sedimentary rocks deposited over billions of years, potentially holding clues to Mars’ environmental past. Curiosity’s first mission, however, was to explore Yellowknife Bay, including drilling the first holes by a robot on another planet. Eleven months after landing, Curiosity pulled anchor on July 4, 2013, and began her year-long trek to Mt. Sharp, arriving in September 2014. Along the way, she mapped broad plains, rocky ridges, and sandy valleys, and sampled outcrops to search for compositional and mineralogical patterns. But, the route was not without hazards, including abundant sharp rocks that damaged the wheels (see front cover), thereby slowing the pace of exploration. On Mars, there are no emergency roadside services, and the nearest spare wheel is millions of kilometers away. Mission scientists, therefore, learned to avoid the damaging rocky ridges and to drive through the safer sandy valleys instead. Scenic overviews were traded for spectacular panoramas of layered bedrock that revealed the geologic history of the Gale Crater plains. Curiosity may not match Opportunity’s distance record, but she will definitely continue to satisfy our scientific curiosity.

Not only are Curiosity and Opportunity studying Mars’ geologic past, they are also busy documenting present-day environmental conditions. Ultimately, these robotic explorers are paving the way for manned missions to Mars; it is NASA’s goal to send humans to Mars in the 2030s. Curiosity has sent several incredible “selfies” back to Earth over her 2-year mission (see front and back cover images). It is exciting to think that in 20+ years we might see “selfies” from human geoscientists on Mars instead!

CHANGING OF THE GUARD

The *Elements* editorial team is in the midst of transition. Pierrette Tremblay has “officially” retired after 10 years at the helm of *Elements*. Tom Clark, our faithful copy editor, is retiring. So, we thought it appropriate to ask Pierrette and Tom to write this issue’s Parting Shots article. Dolores Durant, our dedicated proofreader, will also be retiring after this issue. We extend a huge THANK-YOU to them for 10 years of dedi-

cated service to *Elements*. In anticipation of Tom’s retirement, we posted an ad for a copy editor in August 2014. To our delight, we received almost 20 applications, all from qualified candidates. We are excited to announce that Patrick Roycroft joined our editorial team in January 2015. He is a PhD geologist, a talented copy editor, and an avid reader of *Elements*. Welcome Patrick!

The *Elements* editorial office has moved west and across the Canada–US border going from Québec City (Quebec) to Richland (Washington). The contact information for our new editorial office can be found on page 3. Even if you never have the opportunity to visit our office, you are invited to visit our website, www.elementsmagazine.org, and to explore our Facebook and LinkedIn pages!

INTRODUCING BERNIE WOOD,
PRINCIPAL EDITOR 2015–2017

With the start of 2015, Bernard J. (Bernie) Wood joins the *Elements* team as a principal editor. Bernie is currently a professor of mineralogy in the Department of Earth Sciences, University of Oxford (UK). He previously held positions at Northwestern University (USA), the University of Manchester (UK), and the University of Bristol (UK).

By combining high-pressure, high-temperature experimental petrology with physicochemical theory, Bernie has made wide-ranging contributions towards understanding the relationships between melts and solids in the Earth. During his career he has applied experiments to problems such as the thermodynamic properties of minerals, geobarometry and geothermometry, the nature of the seismic discontinuities in the mantle, and the factors controlling crystal–melt partitioning of trace elements. Currently his principal interest is the accretion and differentiation of the Earth.

The significance of his contributions to the fields of mineralogy, geochemistry, and petrology is evidenced not only by the 15,000+ citations of his work but also by the long list of honors and awards that Bernie has received over his distinguished career. He has Fellow status with several of *Elements* sponsoring societies as well as the American Geophysical Union, the Geological Society of America, and the Royal Society. He has also received many awards, most recently the Harry H. Hess Medal (2013) from the American Geophysical Union and the Roebling Medal (2014) from the Mineralogical Society of America. We are delighted to have Bernie join the editorial team. Bernie will be responsible for the petrology content of *Elements*. He is already hard at work handling the October 2015 issue on superegene deposits.

**John Valley, Trish Dove, Gordon Brown, Bernie Wood,
Pierrette Tremblay, and Jodi Rosso**

EDITORIAL *Cont’d from page 3*

Scientist John Grotzinger and his team of experts indicates that habitable environments were present on Mars. To date, however, there is no clear evidence of current or fossil life forms in Martian minerals and rocks. A special section on the MSL mission was published in the *New York Times* on December 9, 2014, that addresses some of these findings. A major unanswered question is: did these environments exist long enough for life to evolve? Although it may be disappointing to some that Curiosity did not find Martians similar to those described by Wells, or even lowly bacteria, NASA’s latest mission to Mars is a spectacular technological and scientific success that provides humankind with definitive new information on our sister planet and new insights into the geological processes that have shaped its surface.

Gordon E. Brown, Jr.
Principal Editor

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