

## From the Editors

### The planetary science in meteoritics

The processes through which materials pass to become achondrites have been debated for over a century; but now, as artificial satellites and astronomical spectroscopy give us hard data on asteroids and the Apollo samples and lunar meteorites give us new insights to the history of the Moon, these considerations take on entirely new perspectives. Views of asteroid differentiation, inspired by the meteorites and the moon, are described by Jeff Taylor and his colleagues in the Invited Review in this issue. The concept of a global magma ocean springs some surprises when applied to asteroid-sized objects, and the absence of basaltic counterparts to the enstatite achondrites and ureilites gives rise to the idea that volcanism could be violent enough to eject basaltic material into space, an appropriate idea to emanate from the University of Hawaii.

Since there have also been suggestions that the Earth was made of differentiated asteroids, their study may also have implications for our planet. The cosmochemistry of the Earth is also of considerable interest to *Meteoritics* and the editorial board is pleased that a major paper from Azbel and Tolstikhin on xenon and the degassing of the early Earth has been added to our growing list of Invited Reviews. The paper will appear in the 1993 December issue.

The second paper in this issue which illustrates my thesis that meteoritics is planetary science is the paper by Allan Treiman and his colleagues on the Lafayette meteorite. This meteorite, featured on the cover, is one of the exotic few that many of us think originated on Mars. Trieman and company find veins of "weathered" material cutting across the meteorite, which were present before atmospheric passage produced the fusion crust. In other words, to explore these veins is to explore the meteorology of Mars without landing on the planet.

Of course, Mars is not the only extraterrestrial body guilty of aqueous processes. Martin Lee gives us some fascinating new insights into aqueous effects on the CM chondrite parent object, looked at in terms of the calcium sulfate. His paper is the subject of an editorial by Hap McSween. Similarly, Langenauer and Krähenbühl report on the details by which meteorites acquire halogens in Antarctic climates. Also in this issue, Makjanic and co-workers describe a study of carbon in the matrices of ordinary chondrites, using a novel combination of nuclear and laser-Raman methods.

Some of the least ambiguous evidence concerning meteorite histories, their break-up, relationships to asteroids and the means of transmittal to Earth, involves the study of their cosmogenic isotopes. In a major multi-group effort, Stephan Vogt and colleagues discuss Bur Gheluai and the growing number of meteorites which have experienced multi-stage

exposure histories. Ludolf Schultz has more to say on this in his editorial. Radiogenic studies are also well-represented in this issue by Smoliar's comprehensive review of Rb-Sr studies of eucrites.

Research on lunar history continues, of course, and *Meteoritics* is determined to play an active part in the process. We are very pleased that two related invitations to prepare reviews on the terminal cataclysm have been accepted; Graham Ryder will present the case for such an event and Bill Hartmann and Dave Grinnspon will present the case against. The papers will appear back-to-back in the 1994 March issue. Meanwhile, in this editorial, Paul Warren presents a detailed and most valuable report on last December's Apollo 17 workshop.

We have six notes in the present issue: Bob Fudali looks at stratigraphic relationships of australites; Tim McCoy and his colleagues report classifications for five new Roosevelt County meteorites; Andrew Graham describes a new type 3 ordinary chondrite from Julesburg, Colorado; George Delisle and his colleagues describe their recovery of the 1988/89 EUROMET samples; Alan Rubin reports his observations of some unusual chondrules in CK chondrites, the small diverse but fascinating group of oxidized and metamorphosed carbonaceous chondrites; and Glenn MacPherson and his colleagues describe Magombedze, a new regolith breccia. There are also six book reviews, three on meteorite books, one on a compilation of asteroid names, one on comets and, for contrast, we have a review on a particularly beautiful book for the armchair astronomer in us all.

The March issue is also the issue in which we present citations and addresses for the Society's awards. We separate these papers because they represent something special—an acknowledgment by our community of the uniquely important contributions certain individuals have made. Last year the Society acknowledged John Wasson, Ed Chao and Paul Barringer and the Barringer Crater Company for their very different and very special individual contributions. *Meteoritics* is honored to have their achievements documented on its pages.

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Editor