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Primitive Achondrites, Irons-with-silicates and Shocked Quartz

A new martian meteorite (quite different from the others), the most comprehensive study of a primitive achondrite to date, descriptions of three new "CL-like" (now to be called "R") chondrites, a study of the Watson IIE iron meteorite (which has the largest silicate inclusion yet found in an iron meteorite), and a review of shock metamorphism of quartz–one reviewer described as destined to be a bench-mark paper–are some of the articles in this issue. The papers on the R chondrites and the martian meteorite are discussed below in editorials by Rhian Jones and Paul Warren.

The primitive achondrites are a group of meteorites with igneous textures but essentially chondritic compositions. They are otherwise known as brachinites and acapulcoites. Happy Canyon, an enstatite meteorite with igneous texture and EL6 composition, also appears to be in this category and indicates that no realm of the early Solar System was immune from whatever process was responsible. In this issue, Michael Petaev and his colleagues propose a fairly straight forward sequence of partial melting, melt removal and crystallization to explain the present properties of another primitive achondrite, Divnoe. What is especially interesting in their study is that most of the steps in their mechanism are represented as clasts and lithologies in the breccia.

The Watson silicate shows all the properties we now associate with these silicates in iron meteorites: igneous texture, H chondrite affiliations, fast cooling rates and 3.5 Ga formation ages. Like the silicate inclusions in other IIE irons, an emplacement of silicates in metal appears to have been a surface or near-surface event, but the meteorite-to-meteorite details differ.

Robert Walker's Leonard Award paper suffered unavoidable delay due to personal difficulties, but hopefully will appear in the May issue. Dieter Stöffler's Barringer award paper, co-authored by Falko Langenhorst, appears in this issue by dint of immense efforts on the part of its senior author who changed institutions during its preparation. The paper documents the physics of shock, analytical techniques for examining the effects and the phase transformations and the physical changes observed, including spectroscopic effects. A second part of the paper, to appear in a later issue of *Meteoritics*, will deal with the planetary aspects of studies of shocked quartz. In view of the size and excellent technical reviews of this paper, the Barringer Crater Company kindly agreed to cover the costs of its publication. We are grateful to Drew and Paul Barringer and the Company for their continued support of our journal.

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Editor