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**COVER** Fresh pahoehoe lava on Kilauea volcano, Hawaii. The interplay between structure and dynamics in the glassy surface layer of the flow and in its mixed crystal plus liquid interior are reflected in the complex forms developed on cooling. Nuclear magnetic resonance spectroscopy is becoming increasingly useful in elucidating both local atomic structure and motion in geological materials. See page 257. [Photograph by J. F. Stebbins]

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