

SCIENCE & TECHNOLOGY

Diverse Terrain on Earth's 'Twin'

"Surface of Venus: Evidence of Diverse Landforms from Radar Observations" by Michael C. Malin and R. Stephen Saunders, in *Science* (May 27, 1977), 1515 Massachusetts Ave., N.W., Washington, D.C. 20005.

Because of similarities in size, density, and position in the solar system, Venus is generally considered the earth's "twin" planet. Interpreting high-resolution pictures made with radar telescopes—which can penetrate the opaque, intensely hot, Venusian atmosphere—two astronomers from the California Institute of Technology suggest that even Venus's geographical features are comparable to those on earth.

Malin and Saunders find that Venus, like earth, has a mobile crust subject to the forces of tectonism (movement of crustal plates) and volcanoes. A "startling" trough system 1,400 km long, 150 km wide, and about 2 km deep bears a striking resemblance to the East African Rift system on Earth. It suggests modification of Venus's crust by tectonic spreading and extension.

Evidence of volcanic activity is found in a large dome (300 km across, 1 km high, capped by a small, steeply sloped crater), reminiscent of similar features on Mars, and in clusters of smaller mountains resembling areas on earth associated with volcanic activity, such as Arizona's San Francisco Peaks region.

The trough system and volcanic formations, the authors observe, suggest a "geologically active" planet, perhaps "rivaling the earth in the breadth of features portrayed on its surface."

Acoustical Illusions

"The Ohm-Seebeck Dispute, Hermann Von Helmholtz, and the Origins of Physiological Acoustics" by R. Steven Turner, in *British Journal for the History of Science* (vol. 10, no. 34, 1977), University of Lancaster, Department of History, Lancaster LA1 4YG, England.

In 1843, Georg Simon Ohm (1787–1854), formulator of the law of electrical circuits that bears his name, conceived a revolutionary theory of physical acoustics. "Ohm's law" stated that the ear, when exposed to complex musical waveforms, can separately analyze their distinct, component waves. The theory, writes Turner, a historian at the University of New Brunswick, was quickly discredited but later played a key role in studies of the relationship between the mind and the senses.

With the assistance of a new sound-producing device—the siren—Ohm determined that complex waves are decomposed by the ear, just as the ear "hears out" separate notes of a chord. August Seebeck countered by demonstrating that certain complex waves