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## Feature Articles

### 8 Little Science, Big Science, Multinational Science

by Robert P. Crease

*More than 30 years ago the trend toward large, expensive research projects was feared by some to be an unhealthy development. Nevertheless, as science moves into the 21st century, merely "big" productions are becoming international ones, and the megaproject more the norm than the exception.*

### 28 A Matter of Antimatter

by Robert L. Forward

*Although they annihilate with normal matter, particles of antimatter recently have been maintained for months in special "bottles" of electric and magnetic fields. Scientists soon expect to make the first antihydrogen atoms and look forward to taming antimatter for a variety of uses.*



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### 46 The Revolution in Cosmology

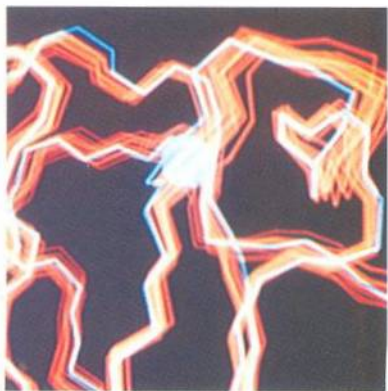
by Edmund Bertschinger

*During the past three decades astronomers have made discoveries that have revolutionized the science of cosmology. Future advances may come from particle accelerators, computer calculations, and laboratory experiments as well as from powerful new telescopes.*

### 66 Imagining Aliens

by Jack Cohen

*Though aliens in books and movies have included everything from barely disguised humans to dragonlike monsters, devising those that are scientifically possible requires an understanding of evolution on the Earth.*



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### 86 Computer-Aided Molecular Design

by Victoria A. Roberts

*The synthesis of QM212, a molecule conceived on computer screens, revealed that scientists will be able to use computers to create new molecules that might have valuable applications in medicine and industry.*

### 104 Through a Probe Brightly: The New Microscopy

by Jean-Paul Revel

*During the last decade revolutionary new developments in microscopy have allowed scientists to view and even move individual atoms. Many of the new instruments achieve their images without lenses.*



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### 122 Dead Men's Molecules

by William W. Hauswirth

*A fusion of the techniques and principles of molecular biology with classical archaeology has created the new field of molecular archaeology. Its focus is on the study of ancient human biological material, particularly DNA.*

### 138 The Chemistry of Ultrasound

by Kenneth S. Suslick

*Ultrasound—sound pitched above human hearing—has found uses ranging from dog whistles to the treatment of kidney stones. During the past few years the chemical applications of ultrasound have become an exciting new field of research.*



## 156 The Animal That Walks by Itself

by Juliet Clutton-Brock

*Long stereotyped as having the same independent, aloof personality as its wild ancestor, the domestic cat is now known to show amazingly diverse social activity and to be capable of adapting its behavior to its circumstances.*

## 178 Intelligent Vehicle-Highway Systems

by Michael J. Cassidy

*Engineers are turning to computers and various high-tech devices to reduce traffic congestion. They envision cars that will drive themselves and compute new routes to bypass traffic jams as they are developing.*

## 164 190 Climate in the Ice

by Michael C. Morrison

*Scientists from the U.S. and Europe are coring the Greenland ice cap to retrieve an unprecedented 200,000-year record of the Earth's climate. Their findings will shed light on past and future climate changes.*

### **SIDEBAR: GRIP—Partner Project of GISP2**

by Bernhard Stauffer

## 208 Baikal—The Greatest Great Lake

by Charles R. Goldman

*Siberia's Lake Baikal is the oldest and deepest large freshwater ecosystem. Russian and foreign scientists have mounted a joint effort to study the lake and the threats to it from human enterprises.*

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## 226 Chaos, Quarks, and Quantum Leaps: What's in a Scientific Name?

by Stephen S. Hall

*Scientists who bestow colorful, metaphorical names on their discoveries may be making their work more meaningful to the public. But they do so at the considerable risk of attracting criticism and ridicule from their colleagues.*

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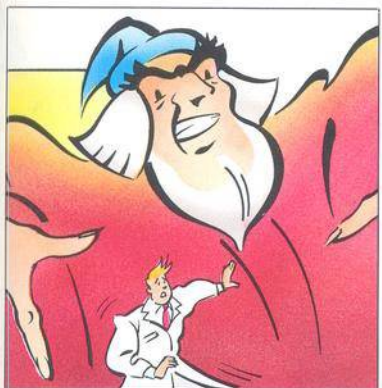
468 The Savannah River Ecology Laboratory

by Anne R. Gibbons

*In the 1950s a handful of biologists began studying the effects of a new U.S. nuclear weapons plant on the local environment. Their work laid the foundations for what is today a world-class laboratory for ecological research.*

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