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COVER: Trifid nebula in Sagittarius photographed in July by the new 158-inch reflector at Kitt Peak National Observatory. Magenta area is region of gas excited to luminosity. Blue area above is light reflected from interstellar dust. A special report on astronomy begins on p. 111. (Photo: KPNO)

Publisher	E. G. Sherburne Jr.
Editor	Kendrick Frazier
Aerospace	Everly Driscoll
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Advertising	Scherago Associates, Inc.

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Subscription Department
231 West Center Street
Marion, Ohio 43302

Subscription rate: 1 yr., \$10; 2 yrs., \$18; 3 yrs., \$25. (Add \$2 a year for Canada and Mexico, \$3 for all other countries.) Printed in U.S.A. Second class postage paid at Washington, D.C. Title registered as trademark U.S. and Canadian Patent Offices.

Published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D.C. 20036. (202-785-2255). Cable SCIENSERV.

august 18-25, 1973

COMMENT

Contemplating the cosmos

"Astronomy is useful because it raises us above ourselves; it is useful because it is grand; . . . it shows how small is man's body, how great his mind. His intelligence can embrace the whole of this dazzling immensity, in which his body is only an obscure point, and enjoy its silent harmony." So wrote Henri Poincaré in 1903. How true it is that contemplation of the universe helps us see ourselves in new perspective. But in the light of the mind-boggling discoveries in astronomy and astrophysics in the past 10 years or so (quasars, pulsars, X-ray sources, possible black holes, molecules in interstellar space) to feel that our intelligence can ever embrace the whole of the universe's mystery now seems to be anthropocentric wishful thinking on a cosmic scale.

To my mind, nothing describes the actual situation better than J. B. S. Haldane's famous statement: "The universe is not only queerer than we suppose; it is queerer than we *can* suppose." The universe presents a challenge so vast and majestic to our intellect that we are both humbled and enriched in our attempts to understand it. Or as the report last year of the Astronomy Survey Committee of the National Academy of Sciences phrased it: "The actual universe is stranger than that of science fiction; its exploration is one of the nobler adventures of the human mind."

The universe always seems to have another surprise just around the next galaxy. Like a cosmic chess game, astronomers match wits with it, trying to decipher its logic and pattern, knowing they never completely can but realizing that each small insight is its own reward.

The relationships between philosophy and astronomy are what help give astronomy its universal appeal. How was the universe created? What, if anything, existed before that? What is its destiny? What is its shape and extent? Are there undiscovered energies and forces at work? What, if anything, is beyond? Are there intelligent beings elsewhere in the universe? Will we ever communicate with them? Hardly trivial or unappealing questions. No wonder astronomy is often called everyone's "second science."

Modern astronomy deals in large part today with processes and objects beyond the limits of unaided observation. Yet, unlike many other sciences, astronomy still has a special relationship to our own senses. This makes it something all of us can enjoy and understand, whether we have special knowledge or not. An evening of star watching is to a person interested in astronomy as a walk in the woods is to a person interested in plant and animal life: Full of little self-discoveries and insights and an almost sensuous reawakening of one's capacity for curiosity and awe. We can lie beneath a starry sky and see backward in time and outward to the edge of our galaxy and contemplate the wonders of a universe that completely challenges our intellect and stimulates our senses.

* * * *

With such thoughts in mind, we present this special double issue on astronomy. As readers are well aware, SCIENCE NEWS reports the results of frontier areas of astronomical research from week to week and month to month all year long. So for this issue, we took a slightly different approach. Physical Sciences Editor Dietrick E. Thomsen explains in his introduction to the special section on p. 111.

—Kendrick Frazier

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