

# Quasars may mark edge of space

By WARREN E. LEARY  
AP Science Writer

WASHINGTON — New evidence strongly indicates that some of the mysterious, star-like objects called quasars are located near the very edge of time and space, serving as distant beacons marking the beginnings of the universe, astronomers announced yesterday.

Detailed observations of relatively nearby quasars should end the debate over whether the bodies are as luminous and as distant as they seem, or whether their characteristics are illusions reflecting some unknown law of physics, they said.

The astronomers said they verified that quasars have companion galaxies that travel with them at high velocities similar to those of the quasars themselves. A galaxy is a grouping of millions of stars, such as the Milky Way galaxy that contains the Sun.

Verifying these speeds, which can approach that of light, is "the most convincing demonstration to date" that quasars were born when the universe began, they said. This means that quasars at apparent distances of up to 10 billion light-years from the Earth are the most distant objects in the expanding universe.

And that, in turn, could mean that we are seeing light that originated billions of years ago, at the beginning of time, from material that was part of the original expansion of matter which created the universe.

Light travels at a speed of 186,000 miles per second and a light-year is the distance light travels in a year, about six trillion miles.

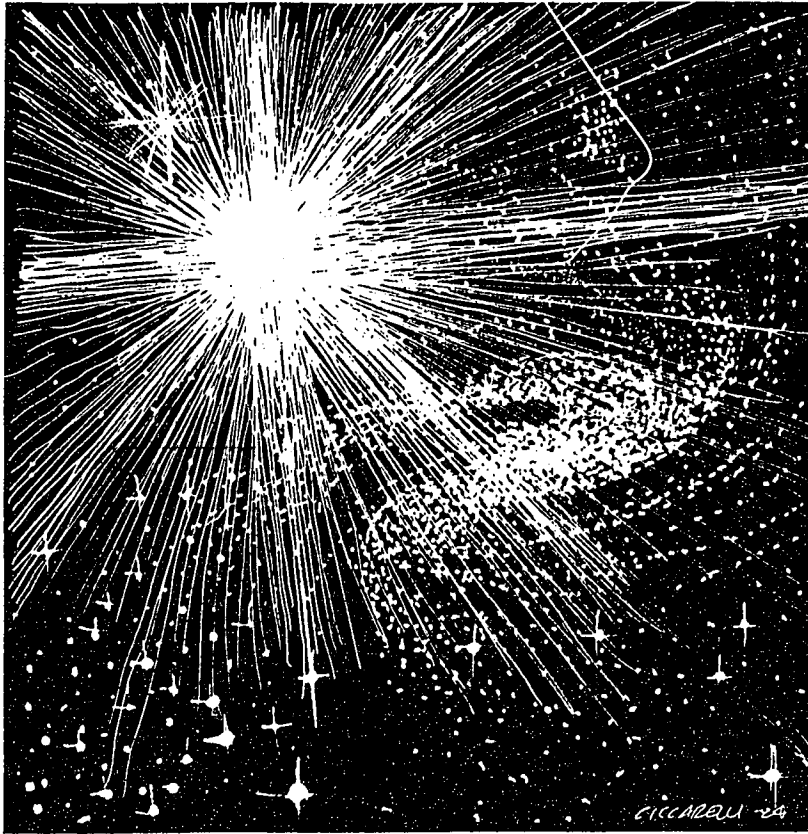
The latest findings were published in The Astronomical Journal by Timothy M. Heckman and Eric P. Smith of the University of Maryland, Gregory D. Bothun of the California Institute of Technology and Bruce Balick of the University of Washington and Leiden University in the Netherlands.

The astronomers made their observations using 158-inch telescopes of the National Optical Astronomy Observatories at Kitt Peak, Ariz., and in Cerro Tololo, Chile. The work was financed by the National Science Foundation, which announced the results.

Scientists have been divided about the nature of quasars since they were discovered in 1963. Some quasars — the name is short for quasi-stellar objects — appear to have velocities approaching 90 percent of the speed of light and to generate more energy than hundreds of galaxies combined.

Since no known process would generate this much energy and no other objects approach this speed, some astronomers propose that what we see as quasars result from some unknown law of physics or that what instruments read as quasar velocities is material being ejected from galaxies at great speed.

Central to proving the nature of quasars is verifying the existence of galaxies suspected of being close to them and determining the speed of



these companion galaxies. Earlier pictures showed that "fuzz" seen near quasars had the general properties of galaxies and often appeared to be receding at similar velocities.

However, some galaxies that appeared to be near quasars have vastly slower speeds, which would mean that they are not really close to the

quasars or that the quasar velocity is an illusion.

In the latest work, astronomers did detailed studies of relatively nearby and slow quasars moving at 20 percent or less of light speed. The researchers then looked at galaxies that were so close to the quasars that they could only be companions.

## Chimon Island: Home for refugee heron

By MARTIN J. WATERS  
Associated Press Writer

NORWALK, Conn. — A small island off the Connecticut coast and a stretch of beach are at the center of efforts to establish a federal sanctuary for birds that have been driven from their natural breeding areas far to the south.

Scientists say the advent of 70-acre Chimon Island as a major summer nesting spot for more than a dozen species of wading birds resulted

primarily from destruction of their natural habitats in the southeastern United States.

Heron were first found nesting on Chimon Island, just 35 miles northeast of Manhattan, in the 1960s. When intensive study began in 1981, researchers found eight species of herons.

"It's just an amazing setup for herons there," said Milan Bull, the Connecticut Audubon Society's chief of research for its 4-year-old Chimon Island project. "It's probably the most important in the Northeast."

"Three hundred years ago, there was no need for these birds to move north, because they had plenty of natural habitat" for mating rituals and rearing of young, he said.

"At that time, Miami Beach was a natural habitat, for example. Now it's all condos," he said.

Congress is considering legislation to create the Chimon Island National Wildlife Refuge, including the island, the neighboring 60-acre Sheffield Island and two smaller specks of land along Long Island Sound.

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