

Point source of gammas

A 10-year search for a gamma-ray star ends in Sagittarius

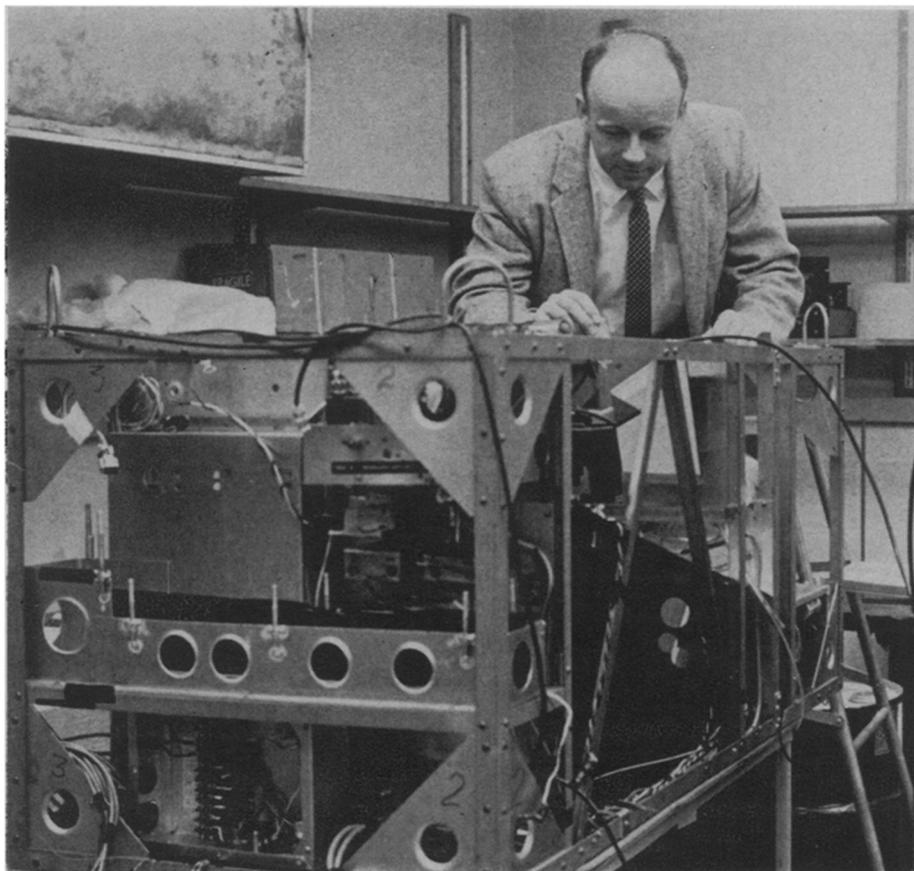
by Dietrick E. Thomsen

Astronomy began with visible light. For thousands of years everyone has known that the universe contains concentrated objects, point sources as they may be called, that emit light, and astronomers have studied the light from the stars to see what they could learn about them.

When technology made it possible, astronomers began to look beyond the visible. Over the last 30 years point sources, called stars even though they may not be the same kind of objects as visible stars, have been found in the radio, X-ray, infrared and ultraviolet ranges.

Now there is a report of a point source of high-energy gamma rays, in the shortest wavelength end of the spectrum. The discoverers are Drs. Glenn M. Frye Jr., J. A. Staib, Alan D. Zych and J. L. Maynard of Case Western Reserve University and Drs. Victor D. Hopper, W. R. Rawlinson, J. A. Thomas and J. A. Panettieri of the University of Melbourne in Australia. The discovery was made by equipment flown in balloons from Parkes, New South Wales.

The gamma-ray source is located in the constellation Sagittarius some 20 degrees below the galactic equator. The rays that the experiment measured range in energy between 50 and 500 million electron volts. This corresponds to wavelengths between a few ten-thousandths of an angstrom and a few hun-



Photos: Case Western Reserve

Frye: A spark chamber to find a weak point signal in a strong background.

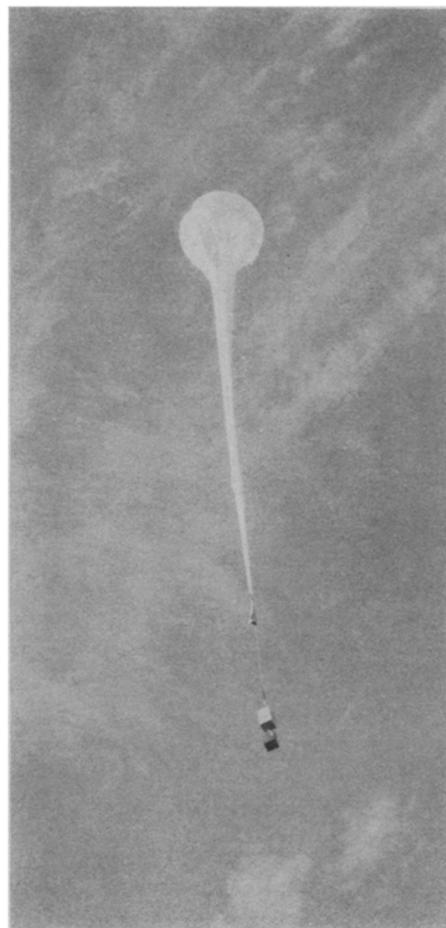
dred-thousandths of an angstrom: visible light lies between 4,000 and 7,000 angstroms.

The discovery culminates 10 years of search by this and other groups. Probably there are more such sources, says Dr. Zych, but the reason that none were discovered before now is that equipment wasn't sensitive enough. There is a large background of gamma rays produced in the atmosphere above the balloons, and the detectors have a hard time picking out weak point sources against it.

Better detectors might show more point sources, says Dr. Zych. One reason for looking in the Southern Hemisphere, he says, was that present detectors showing nothing in the North.

There is yet no suggestion as to what sort of object this is. Theorists have predicted that quasars or the Crab nebula might emit gamma rays of this range, but so far, says Dr. Zych, searches of known locations of those objects have shown nothing.

The next step, says Dr. Zych, is to look in more detail at the gamma-ray spectrum of the object in the hope of finding clues to its nature. The discoverers also hope, he says, that people with observing equipment for other spectral ranges, radio or X-rays for instance, might look in this direction to see whether the object radiates in those ranges. ◇



Catching gamma rays on the fly.