## IN BRIEF

At the Eastern Analytical Symposium to be held in November, **Paul C. Lauterbur** of the University of Illinois at Urbana-Champaign and **Richard N. Zare** of Stanford University will be among those receiving 1997 EAS Awards. Lauterbur will be honored for achievements in magnetic resonance and Zare for accomplishments in analytical chemistry. The awards are sponsored by a group of organizations that include several sections of the American Chemical Society.

The Franklin Institute honored **Federico Capasso** in May by awarding him the John Price Wetherill Medal for "his pioneering contributions to the technique of bandgap engineering and its innovative use in solid state electronics, optoelectronics and semiconductor science, and in particular, for his invention and experimental demonstration of the quantum cascade laser." Capasso is the head of the quantum phenomena and device research department at Bell Laboratories, Lucent Technologies, in Murray Hill, New Jersey.

# OBITUARIES

## Clyde William Tombaugh

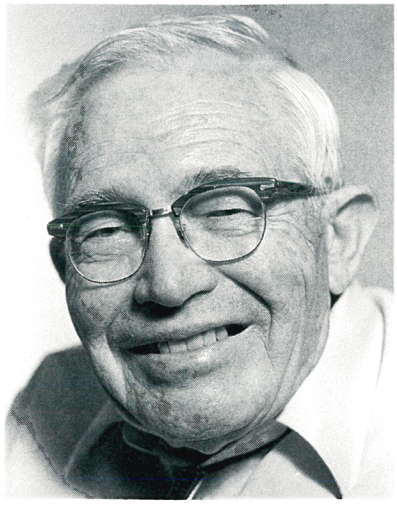
Clyde Tombaugh, known for his discovery of Pluto in 1930, was born on 4 February 1905 in Streator, Illinois, and died of congestive heart failure on 17 January 1997 in his home in Las Cruces, New Mexico.

In 1928, Clyde, an amateur astronomer who had made his own 8-inch telescope, sent some of his drawings of Mars to Lowell Observatory in Flagstaff, Arizona. Although all he wanted was suggestions for improving his observing technique, the Lowell administrators recognized Clyde's skills and hired him as an assistant observer to participate in a systematic search for a ninth planet.

Clyde's first tasks were to bring a new telescope on line and to develop an observing procedure for seeking a distant planet. He systematically photographed overlapping regions of the sky when they were on the meridian so that relative motions would be perpendicular to his line-of-sight, causing greatest displacement. Matched pairs of images, separated by several days, were searched for moving objects. Asteroids, with relatively large displacements, were noted and excluded from the search.

Although Percival Lowell had predicted the expected location of a planet, based on the orbital positions of Neptune and Uranus, Clyde was committed to carrying out a systematic search of the entire ecliptic. The search had been under way for ten months before he found Pluto. The discovery, announced on 13 March 1930, was somewhat disappointing because Pluto was so faint that it would have had to be extremely dark or dense to have been massive enough to exert the reported perturbation on Neptune's orbit.

After receiving the Jackson-Gwilt Medal from the Royal Astronomical Society in 1931 for his discovery, Clyde started his undergraduate education at the University of Kansas in 1932. He continued to work at Lowell during the summer and returned there full-time after earning a BA in astronomy in 1936 and an MA in astronomy three years later.



CLYDE WILLIAM TOMBAUGH

The fact that Pluto was not as bright as it should have been to be a giant planet motivated Clyde to continue a systematic search for other bodies. This photographic program, centered on the ecliptic, covered 75% of the sky and would have detected any planets as large as Earth within 100 astronomical units (the average distance to Pluto is 40 AU). The null result from this systematic study has shaped the thinking of the astronomical community for more than 50 years.

During World War II, Clyde taught navigation at Arizona State College. In 1946, following the war, he became an astronomer at the Ballistics Research Laboratory at White Sands Proving Grounds in New Mexico, where he developed tracking systems to determine the flight paths and characteristics of rockets. In 1955, he moved to New Mexico State University, at first as an astronomer in the physical sciences laboratory and eventually as a professor of Earth science and astronomy. From 1953 to 1958, he directed a photographic search, carried out in Ecuador, for natural Earth-orbiting debris. Again, a systematic search yielded a null result. This time the result was welcome; near-space was not hostile to manned activity. At New Mexico State, Clyde developed a program to provide a systematic set of planetary images to support the NASA Mariner and Viking missions to Mars and Voyager mission to the outer planets.

From 1955 until his retirement in 1973, Clyde taught both geology and astronomy classes. His commitment was contagious, and his interest in and dedication to public education did not flag as he entered retirement. He continued to make an amazing effort to satisfy the demands of the public. In 1980, in collaboration with Patrick Moore, he published his version of the discovery of Pluto, *Out of the Darkness: The Planet Pluto* (Stackpole Books, 1980).

From 1985 to 1990, in response to his concern about poor professional opportunities for young scientists, he and his wife Patricia toured the US and Canada, presenting public lectures and raising funds for the Clyde W. Tombaugh Scholars Fellowship, to provide support for a postdoctoral fellow at New Mexico State University.

In his last years, Clyde remained involved in NASA missions, assisting the Jet Propulsion Laboratory team to publicize its plans for a feasible mission to Pluto. If and when that mission flies, the spirit of Clyde Tombaugh will go with it.

To the last weeks of his life, when he was not inflicting puns on those close to him, he was enthusiastically following new developments in the space program. He will be missed by friends and the general public, who appreciated and admired him. Always the gracious discoverer and hero to children and amateur astronomers, Clyde Tombaugh set high standards in public outreach and education for all of us to follow.

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## Yuli Borisovich Khariton

Russian and world science suffered a grievous loss on 19 December 1996 with the death, at the age of almost 93, in Sarov, Russia, of academician Yuli Borisovich Khariton, the long-time scientific director of the nu-