

ser plasma theory group at the Max Planck Institute for Quantum Optics in Garching, Germany; **Guillermo Velarde**, director of the Institute of Nuclear Fusion at the Polytechnic University of Madrid; and **George Zimmerman**, a group leader at Lawrence Livermore National Laboratory.

**Adolf Goetzberger** was awarded the 1997 Karl W. Böer Solar Energy Medal of Merit by the University of Delaware at a ceremony in May. Goetzberger was the founder of the Fraunhofer Institute for Solar Energy Systems in Freiburg, Germany, and is a professor at the University of Freiburg.

## OBITUARIES

### Victor Amazasp Ambartsumian

**V**ictor Amazasp Ambartsumian, a leading Armenian theoretical astrophysicist who predicted stellar associations and the activity of galactic nuclei, passed away in Byurakan, Armenia, on 12 August 1996.

Ambartsumian was born on 18 September 1908 in Tbilisi, Georgia. During his student years at Leningrad (now St. Petersburg) State University, he published his first scientific papers, in mathematics, astrophysics and physics. After his graduation from Leningrad University in 1928 and postgraduate studies at nearby Pulkovo Observatory in 1928–31, he returned to the university, where he founded the first department of astrophysics in the Soviet Union and became a professor in 1934.

In 1943, Ambartsumian was one of the founding members and the first vice president of the Armenian Academy of Sciences. From 1947 to 1993, he was the academy's president, and after 1993 he was its honorary president.

In 1946, Ambartsumian founded the academy's Byurakan Astrophysical Observatory, northwest of Yerevan, the capital of Armenia, and remained its director until 1988. Under his leadership, it became one of the best well-known observatories in the world.

Ambartsumian explored many topics in astrophysics, and in nearly every case his work led the field in a new direction. His classic studies of the physics of gaseous nebulae and radiation transfer theory played an important role in the theory of multiple light scattering. The invariance principle, which he formulated in these works, found wide application in mathematical physics, radiophysics, geophysics and nuclear physics. While studying interstellar absorbing matter in the Milky Way, Ambartsumian put forward an idea about its ragged structure and worked out the theory of fluctuations of light in the Galaxy. In stellar dynamics, he established the base for a new statistical mechanics of stellar systems. The application of this statisti-



VICTOR AMAZASP AMBARTSUMIAN

cal method to binary stars and star clusters led to fundamental conclusions about the age of the Galaxy, the most efficient mechanisms for the decay of star clusters and so forth.

Ambartsumian's investigations of the problem of stellar evolution, begun in 1937, led in 1947 to the conclusion that some star groups, which he called stellar associations, were younger than most other stars. The existence of stellar associations—dynamically non-stable and disintegrating systems—was the first observational evidence in favor of continuing star formation within our Galaxy. Ambartsumian put forward a hypothesis about the joint origin of the diffuse matter and stars of dense matter of unknown nature—protostars. In connection with this new hypothesis, Ambartsumian, together with Gourgen S. Sahakian, worked out a theory of superdense matter, or matter as dense as the atomic nucleus.

Ambartsumian got fundamental results in the study of the early stages of evolution of stars and stellar systems. He showed that, in the early stages of evolution, the instability of the state reveals itself as a regular phase of the cosmogonic processes. Ambartsumian's contributions also included the existence of stellar systems of positive total energy in the Galaxy,

the nonthermal nature of ultraviolet stellar radiation of T Tauri type and flare stars and the establishment of the evolutionary status of the flare stars.

Working on the evolution of galaxies, Ambartsumian showed that the central regions of galaxies play a decisive role in the mighty phenomena of instability. Besides the stars and diffuse matter, they must contain dense, massive bodies of unknown nature. The activity of galactic nuclei defines their evolution. Ambartsumian's 1958 concept of the idea of galactic nuclei was accepted skeptically and only after many years, under the pressure of new observational results.

In the opinion of the late prominent Dutch astrophysicist Jan Oort, Ambartsumian's studies on the activity of galactic nuclei and the process of star formation in the expanding stellar associations are the "most important contribution" in astronomy of any of the scientists of the former Soviet Union.

Ambartsumian attracted to astrophysics numerous groups of students, working in many universities and observatories. All have had a significant impact on astrophysics.

An outstanding organizer of science, Ambartsumian promoted international scientific cooperation. He served as vice president (1948–55) and president (1961–64) of the International Astronomical Union, and he was elected twice to the presidency of the International Council of Scientific Unions.

Ambartsumian always appreciated new ideas, even about well-known phenomena. He was very considerate and thoughtful with his friends and students, and especially valued those who were devoted to the search for scientific truth. He will remain forever as one of the most outstanding scientists of the 20th century.

ARTASHES R. PETROSIAN

HAIK A. HARUTYUNIAN

AREG M. MICKAELIAN

*Byurakan Astrophysical Observatory  
Byurakan, Armenia*

### Henry Herman Barschall

**H**enry Herman Barschall, the Emeritus John Bascom Professor of Physics, Nuclear Engineering and Medical Physics at the University of Wisconsin—Madison, died on 4 February 1997 after a brief illness. In addition to achieving a distinguished record in systematic measurements of fast-neutron cross sections and in applications of neutrons to medical uses