



CARDONA



ANDERSON



HOUGEN

Stuttgart.

The 1984 George E. Pake Prize is going to Arthur G. Anderson. Anderson is the first recipient of the prize, which is sponsored by the Xerox Corporation. He is cited for "pioneering work on vhf pulse techniques and on nuclear magnetic resonance in metals; in addition, for innovative executive direction of International Business Machines Corporation's research organization as well as its component development operation."

Anderson received his bachelor's degree from the University of San Francisco in 1949, his MS from Northwestern in 1951, and his PhD in physics

from New York University in 1958. Starting in 1951 as a technical engineer, he has worked at IBM ever since. He was director of the San Jose Research Laboratory 1961-63, associate director of research 1967-70, vice president and group executive, informations systems and technology group, since 1981. His research has concerned nmr in solids and computer engineering.

Jon T. Hougen is the winner of the 1984 Earle K. Plyler Prize, sponsored by the George E. Crouch Foundation, "for his contributions to the theory and analysis of high resolution molecular spectra, especially the concept of vibration-rotation double groups and a uni-

fied treatment of rotational energy levels and line intensities in diatomic molecules." Hougen received a BSc degree from the University of Wisconsin in 1956 and from Harvard, an AM in 1958 and a PhD in physical chemistry in 1960. He worked at the National Research Council (Ottawa) as a postdoctoral fellow 1960-62 and as a member of the molecular spectroscopy group 1962-66. He joined the National Bureau of Standards in 1967, becoming chief, molecular spectroscopy section, in 1969. From 1974 he was research scientist; since 1983, senior research fellow. He has studied quantum mechanical problems in spectroscopy.

ASP presents awards to six astronomers

The Astronomical Society of the Pacific has presented its 1983 awards to: Yakov B. Zel'dovich, who receives the Catherine Wolf Bruce Medal for a lifetime of achievement in astronomical research; Donald Winge and Nicholas Suntzeff, who receive Robert J. Trumpler Awards for outstanding PhD theses; Helen Sawyer Hogg, who receives the Klumpke-Roberts Award for contributions to public understanding of astronomy; François and Monique Spite, who were given the Muhlmann Prize for research done at one of the observatories on Mauna Kea in Hawaii; and Jay Gunter, who won the Amateur Achievement Award.

Zel'dovich receives the Bruce medal for his contributions to the theory of galaxy formation, to models of the early stages of the expanding universe, to the theory of accretion onto black holes and neutron stars, and for his many other ideas in relativistic astrophysics and cosmology.

Zel'dovich currently directs the work of scientific research teams in astrophysics at the Institute of Applied

Mathematics and the Space Research Institute, both at the USSR Academy of Sciences, as well as a group at the Sternberg State Astronomical Institute. In addition, he is a professor at the Moscow State University. Zel'do-

ZEL'DOVICH



vich received his Doctor of Science degree from the Institute of Chemical Physics in 1939. In addition to his work in astrophysics, he has also done considerable research in hydrodynamics, plasma physics, nuclear physics, and

WINGET



the physics of elementary particles.

The thesis for which Winget received the Trumpler award was completed at the University of Rochester. It involved a theoretical study of the so-called ZZ Ceti stars, a class of variable white dwarfs. Winget was able to construct a model that not only matched the stars' unusual behavior but also explained their variability in a straightforward way from the basic characteristics of these condensed objects. Winget then used his models to predict a new class of variable white dwarfs, those with only helium detectable in their outer atmosphere. After completing his PhD work, Winget went to the University of Texas at Austin, where he and several co-workers proceeded to discover just such a variable white dwarf, GD 358. This is the first instance in which the existence of a new type of variable star was predicted from theoretical considerations before it was discovered. (See PHYSICS TODAY, January 1983, page 21.)

Suntzeff did the work for his award-winning thesis at the University of California at Santa Cruz. The thesis contains a detailed examination of the abundances of the elements in two well-studied globular clusters of stars, M3 and M13. It had been known for some time that, although these two old clusters had the same age and the same abundance of iron and iron-like elements, there were sharp differences among the more evolved stars in the two clusters. Suntzeff was able to show that a plausible cause of the difference between the clusters is the amount of rotation in the stars of the clusters. Such rotation will affect the way these stars evolve and the elements they produce, particularly in the later stages of their lives. Recent evidence confirms Suntzeff's conclusions—stars in M13 do in fact seem to rotate more rapidly than those M3.

Hogg, who is professor emerita at the

SUNTZEFF



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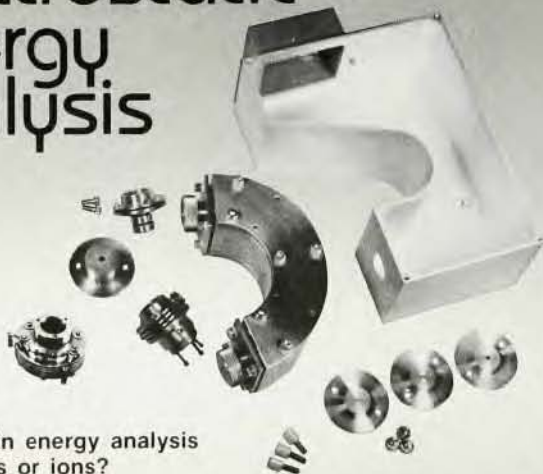


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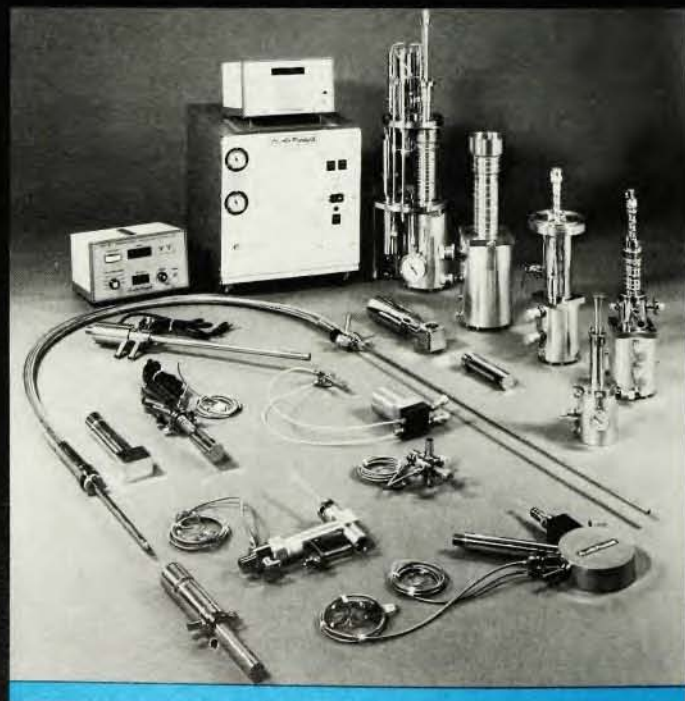
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HOGG

University of Toronto, won the Klumpke-Roberts Award for her long involvement in bringing astronomy to the public. For 30 years she wrote a weekly column, "With the Stars," for the *Toronto Star*, Canada's largest newspaper. She has conducted a series of programs on astronomy for Ontario educational television and has written a popular introductory book, *The Stars Belong to Everyone*. Hogg taught introductory astronomy at Toronto for 35 years and wrote a regular column on historical astronomy for the *Journal of the Royal Astronomical Society of Canada*. Hogg received her bachelor's degree from Mt. Holyoke in 1926 and her PhD from Radcliffe in 1931. She taught at Mt. Holyoke and at the Dominion Astrophysical Observatory in British Columbia before coming to Toronto in 1935.

The Muhlmann prize, which is being given for the first time, was endowed by Eric and Maria Muhlmann, who live on the island of Hawaii. To further astronomy in Hawaii, they have endowed

MONIQUE AND FRANÇOIS SPITE



this prize for research done at one of the telescopes on Mauna Kea, which, at nearly 14 000 feet above sea level, is one of the premier observing sites in the world.

The Spites, who are based at the Paris Observatory, were honored for their pioneering work on the abundance of the element lithium in old dwarf stars in the halo of the Milky Way. Using the 3.6-meter Canada-France-Hawaii telescope, they were able to take high-resolution spectra of these dim stars. Because there is evidence that the lithium in these ancient stars has not been affected by their subsequent evolution, the Spites' data provide information on the amount of lithium produced in the Big Bang. The primordial lithium abundance is an important parameter in cosmological models; the value derived from the Spites' observation implies that there may not be enough matter in the universe to close it and stop its expansion.

Gunter, a retired pathologist living in Durham, North Carolina, receives the Amateur Achievement Award for his 12-year effort to popularize asteroid hunting among amateurs and especially for his bimonthly newsletter, *Tonight's Asteroids*, which keeps amateur observers around the world abreast of news about asteroids. The exact details of the occultation of a star or other object by an asteroid can provide new information about both the asteroid and the occulted object.

Physicists honored by Franklin Institute

At a ceremony on 17 January, the Franklin Institute presented medals to 11 researchers. Among those honored were several physicists: Herbert B. Callen (University of Pennsylvania), who received the Elliott Cresson Medal; Paul C. Lauterbur (SUNY at Stony Brook), who received the Howard N. Potts Medal; and Hyatt M. Gibbs (University of Arizona), who received the Albert A. Michelson Medal.

The Cresson Medal is given to Callen for "his contributions to the statistical theory of irreversible processes and thermodynamic fluctuation theory, and especially for his formulation and proof of the general fluctuation-dissipation theorem."

Callen received his BA and MS degrees from Temple University in 1941 and 1942, respectively. He received his PhD from MIT in 1947 and has been at Penn since 1948. His research has involved solid-state physics, statistical mechanics and spin systems.

Lauterbur receives the Potts Medal for "his conception and description of

using controlled field gradients with nmr to obtain internal images of physical objects and for his continued contribution to the development and application of nmr imaging both in research and clinical diagnosis."

Lauterbur received his BS from Case Institute of Technology in 1951 and his PhD from the University of Pittsburgh in 1962. In 1963 he joined the faculty at Stony Brook, becoming professor of chemistry in 1969. By using gradients of the magnetic field to modulate nmr frequencies, Lauterbur showed how to recover information about the spatial distribution of materials from nmr data. This insight may prove very useful in clinical diagnosis, as a noninvasive and non-damaging diagnostic tool. (See the article by Paul Moran, R. Jerome Nickles and James A. Zagzebski, July, page 37.)

The Michelson Medal honors Gibbs for his "outstanding contributions to the field of quantum optics and especially for his definitive experiments on self-induced transparency, superfluorescence and optical bistability."

Gibbs received his BS from North Carolina State University in 1960 and his PhD from Berkeley in 1965. After two years at Berkeley he moved to Bell Labs, working there from 1967 to 1980. In 1980 he joined the Optical Sciences Center at the University of Arizona. Gibbs's research has ranged broadly through quantum optics and has included, in addition to the cited work, investigations of pulse propagation, laser spectroscopy, Faraday rotation, optical turbulence and coherent optics.

In addition to these awards, metallurgists Louis F. Coffin (G. E. Research and Development Center) and S. Stanford Manson (Case-Western Reserve) received Francis J. Clamer Medals for their contributions to the understanding of metal fatigue; meteorologist Verner E. Suomi (Wisconsin) received the Franklin Medal for his contributions to the development of satellite meteorology; and meteorologist Robert M. White (National Academy of Engineering) received the Delmer S. Fahrney medal for his leadership in the development of an operational weather-satellite network and his contributions to oceanography and meteorology.

Royal Society presents Hughes Medal to Ward

Among its awards for 1983, the Royal Society presented the Hughes Medal to John C. Ward (Macquarie University, Australia) for his "highly influential and original contributions to quantum field theory, particularly the Ward Identity and the Salam-Ward theory of weak interactions."

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