

we hear that

winner in physics, has been named the Battelle Distinguished Professor of Physics at the University of Washington, following his retirement from Cornell University.

Formerly an assistant division chief at Zenith Radio Corporation, **Daniel R. Smith** has been promoted to operations manager of Zenith's recently expanded optical systems group.

At Itek Corporation's Central Research Laboratories in Lexington, Massachusetts, **Juan J. Amodei**, previously head of quantum-electronics research at RCA Laboratories, has been appointed director of the optics and electro-optics research laboratory; **Leonard R.**

Weisberg, formerly director of the semiconductor device research laboratory at RCA, will direct operations of the materials research laboratory.

Karl A. Stetson, the former supervisor of the optics group at Ford Motor Company, has joined United Aircraft Research Laboratories, East Hartford, Connecticut, as a senior research engineer. **Jon E. Sollid** has been promoted from senior research scientist to supervisor of the optics group at Ford.

At the Massachusetts Institute of Technology **Judah L. Schwartz**, a staff member at MIT's Education Research Center and a senior research scientist in the physics department there, has been named professor of engineering science and education in the School of Engineering.

obituaries

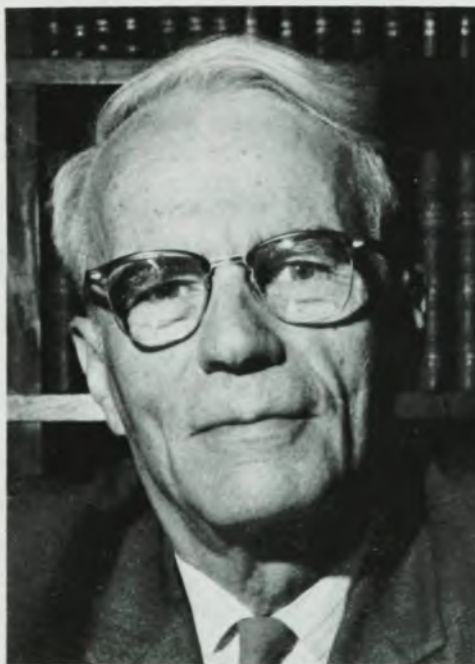
Ira Sprague Bowen

Ira Sprague Bowen, distinguished service member of the Carnegie Institution of Washington, former professor of physics at the California Institute of Technology, and former director of the Mount Wilson and Palomar Observatories, died on 6 February. A physicist by training and early experience, Bowen profoundly influenced the development of modern astrophysics and observational astronomy through his many diversified scientific contributions and his firm leadership of the Observatories through a period of change and growth.

After receiving his AB from Oberlin College in 1919, he began his graduate studies in atomic spectroscopy as research assistant to Albert A. Michelson and Robert A. Millikan at the University of Chicago. In a collaboration that lasted until after 1930, he and Millikan set out to provide basic laboratory data on the energy levels and spectroscopic behavior of a wide variety of ionized elements. In 1921, induced by Millikan, he joined the faculty of the newly reorganized California Institute of Technology, where he received his PhD and later rose to the rank of professor. He became director of the Mount Wilson Observatory in 1946 and of the combined Mount Wilson and Palomar Observatories (now the Hale Observatories) in 1948. He held this post until his retirement in 1964.

In 1927 Bowen achieved international acclaim when, on the basis of measurements by W. H. Wright and his own intimate familiarity with electron-

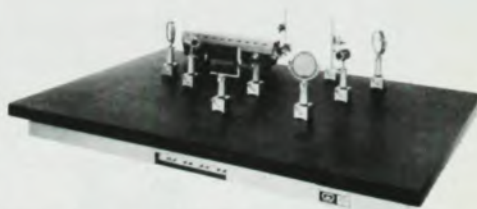
ic energy levels of atoms, he correctly interpreted the hitherto unidentified "nebulium" lines prominent in the emission spectra of gaseous nebulae as



BOWEN

due to "forbidden" transitions from metastable levels in familiar elements in various stages of ionization. In succeeding years he extended his investigation of the spectra of gaseous nebulae, working out in essentially complete form the mechanism of excitation of metastable levels by electron impact, and the mechanism of excitation of certain permitted lines of O III and N III from the 304 Å line of He II by a resonant fluorescence. He applied these results to the study of the chemical composition and structure of the

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we hear that

gaseous nebulae. With the 36-inch refractor of the Lick Observatory he set out, in collaboration with A. B. Wyse, to search for even fainter lines and for lines of additional elements and ions in planetary nebulae. To facilitate this work, Bowen devised the image slicer to increase the effective throughput of a slit spectrograph in photographing sources of low surface brightness, and he introduced the practice of hypersensitization by baking to reduce the reciprocity failure of photographic plates during long exposures.

From the 1930's Bowen was associated with the planning of the Palomar project. He came into increasing contact with astronomers of the Pasadena area and elsewhere in the course of his work during World War II on the Cal Tech Ordnance Rocket Project. As director of the Observatories after 1946, he took personal charge of the final stages of refined adjustment and optical finishing and testing of the newly completed 200-inch telescope during the first two years of its operation. He initiated and participated in the design of nearly all the original auxiliary instrumentation of the 200-inch telescope. It was in large part due to his influence that the Palomar Sky Survey, which has proven of immense value to astronomers the world over, was pursued, beginning in 1949, as the exclusive first task of the newly completed 48-inch Schmidt telescope.

Bowen remained in vigorous health and actively engaged in optical work after his retirement in 1964 until the very end of his life. He devised an impressive number of new instruments for the advancement of optical astronomy, ranging from a variety of high-speed cameras for image-tube systems to the optical designs of the Palomar 60-inch telescope and the wide-field 40-inch and 100-inch telescopes for the Carnegie Institution's Las Campanas Observatory in Chile. His advice on matters of instrumentation and optics was widely sought, and he served as a consultant in the design of most of the major telescopes that have been built in recent years or are now under construction. His own wealth of experience in applying optics to the problems of observational astronomy was summarized in a succession of articles, widely regarded as definitive, on Schmidt cameras, telescopes and astronomical spectrographs. Bowen was known and respected by scientists throughout the world, and by his colleagues, for the originality, breadth, and thoroughness of his work.

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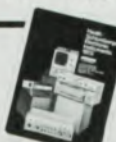
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