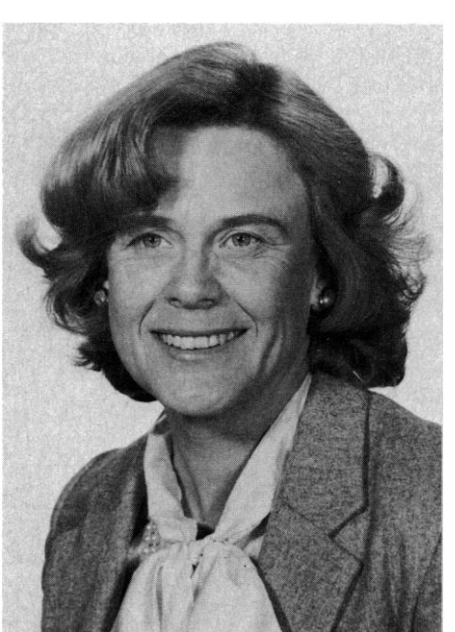
Sheila E. Widnall: President-Elect of AAAS

WILLIAM R. SEARS

THE president-elect of the AAAS, Dr. Sheila Evans Widnall, is one of the brightest stars of the firmament of aerospace engineering. She is currently the Abby Rockefeller Mauzé Professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT) and is internationally recognized for her original research in fluid mechanics and aerodynamics. Widnall is a woman of remarkable energy and productivity, who an MIT colleague describes as "a whirlwind."

A native of Tacoma, Washington, Professor Widnall arrived at MIT in September 1956 as one of only 21 women in a class of over 900 students. Her father was (among several careers) a rodeo cowboy; her mother was a juvenile probation officer. She received her undergraduate and graduate education at MIT, obtaining both the S.B. and S.M. degrees in 1961 and the Sc.D. in 1964. Upon completion of her doctorate, MIT appointed her to its faculty as an assistant professor. Her subsequent career has been marked by promotions to associate professor in 1970 and professor in 1974 and by a succession of awards, honors, and elections. These awards include the Lawrence Sperry Award of the American Institute of Aeronautics and Astronautics (AIAA) and the award for outstanding achievement of the Society for Women Engineers. She is a fellow in both the American Physical Society and AIAA and was elected to the National Academy of Engineering in 1985. She is also a fellow of AAAS and has been a member of its Board of Directors since 1982; she has served on the editorial advisory boards of *Science* and *Science 86*. She was appointed to the Abby Rockefeller Mauzé chair at MIT in 1986. This professorship is reserved for the appointment of distinguished women scholars who will encourage advancement of women in the professions, industry, and the arts.

In her original research, Dr. Widnall has been concerned with aerodynamic problems of aircraft and other vehicles. In her classroom teaching, she has applied scientific tools, both theoretical and experimental, to real engineering problems. She was one of the early experts in unsteady flows, such as the aerodynamics of airfoils and wings in unsteady motion. This is the kind of flow where the wing sheds vortices, not only from its wing tips but from its trailing edge as well, and these vortices affect the whole flow field. This expertise brought her to consider how these flows are coupled with structural deflections, which are involved in wing flutter, acoustics, and the responses of ducts and shells. She also became concerned with the aerodynamics of helicopter rotors, where the blades are perpetually in unsteady motion and interactions with tip vortices are a source of vibration and noise. Other areas of concern included problems associated with the vortical wakes of wings, such as vortex-wake hazard.



Sheila E. Widnall

Interest in the vortex structure of aircraft wakes led to an interest in vortex structure and behavior as a focus of study. Her recent research has centered on the structure, stability, and behavior of flows containing concentrated vorticity. She has identified and characterized several fundamental instabilities of such flows, including the instability of the vortex ring. Her work has found considerable application in the study of coherent structures in turbulent flows where the vortex nature of these flows has been identified. She gave the opening address to the Euromech Colloquium on Vortex Flows in England, was a delegate to the Biennial Conference on Fluid Mechanics sponsored by the Polish Academy of Sciences in 1974 and 1976, and was the Midwest Mechanics Lecturer in 1977, speaking on the stability of vortex rings.

Professor Widnall is not only a theoretician. She is credited with having conceived MIT's anechoic tunnel and has carried the responsibility for its development and use. This tunnel is being used to study the noise problems associated with V/STOL aircraft—those that can make vertical/short take-offs and landings—in forward flight, such as blade-vortex interaction noise from helicopters.

In general, her research has been in the field of fluid mechanics and in the relationship of fluid mechanics to practical engineering applications. She currently heads the Fluid Dynamics Laboratory of the Department of Aeronautics and Astronautics at MIT.

In addition to her research and teaching at MIT, Professor Widnall has numerous other accomplishments. In 1974, she took a 1-year leave of absence to serve as the first director of university research of the Department of Transportation in Washington, D.C. She has also been on the Board of Directors of AIAA and was one of the associate editors of its *Journal of Aircraft*. She currently serves as associate editor of the *Physics of Fluids* and *The Journal of Applied Mechanics*. Widnall has acted as a consultant to industrial firms, such as Bolt Beranek and Newman, American Can, and Kimberly-Clark, and as an adviser to universities, notably Princeton and the U.S. Air Force Academy. She was appointed (and subsequently reappointed) by President Carter to a 3-year term on the Board of Visitors of the academy. She chaired the board for 2 years, succeeding Senator Gary Hart; in turn, she was succeeded by Senator Barry Goldwater. Her work as an adviser is knowledgeable, incisive, articulate, and cogent.

MIT elected Widnall in 1979 to be the chairman of its 936-member faculty—the first woman so elected. She subsequently

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chaired the Committee on Undergraduate Admissions and Financial Aid.

Professor Widnall has actively promoted careers in science and engineering for women students. She has been a featured speaker at regional and local gatherings of high school women and is currently the faculty advisor to the MIT chapter of the Society of Women Engineers.

Other responsibilities of Widnall include: trustee of the Carnegie Corporation of New York, member (and vice-chairman) of the Advisory Committee for the Engineering Directorate of the National Science Foundation, and a member of the U.S. National Committee on Theoretical and Applied Mechanics. She also serves as a member of the Military Airlift Committee of the National Defense Transportation Association and has worked on numerous National Research Council and National Academy of Engineering committees. She is active in the American Physical Society and participates as a member of its Panel on Public Affairs and the Executive Committee of the Division of Fluid Dynamics.

Sheila Widnall is married to William S. Widnall, who is a well-known aeronautical engineer specializing in the controls area and an avid yachtsman. They have two children: William E., a senior at Oberlin College majoring in East Asian studies; and Ann Marie, who will begin her freshman year at Cornell with ambitions for a medical career.

AAAS has chosen a most able, experienced, energetic, and devoted member of the engineering profession as its next president.

AAAS–Philip Hauge Abelson Prize

To Be Awarded to a Public Servant or Scientist

The AAAS–Philip Hauge Abelson Prize of $2500, which was established by the AAAS Board of Directors in 1985, is awarded annually either to:

(a) a public servant, in recognition of sustained exceptional contributions to advancing science, or

(b) a scientist whose career has been distinguished both for scientific achievement and for other notable services to the scientific community.

AAAS members are invited to submit nominations now for the 1986 prize, to be awarded at the 1987 Annual Meeting in Chicago. Each nomination must be seconded by at least two other AAAS members.

Nominations should be typed and should include the following information: nominee's name, institutional affiliation and title, address, and biographical resume; statement of justification for nomination; and names, identification, and signatures of the three or more sponsors. Nominations should be submitted to the AAAS Executive Office, 1333 H Street, NW, Washington, DC 20005, for receipt on or before 25 August 1986.

The winner will be selected by a seven-member panel appointed by the Board.