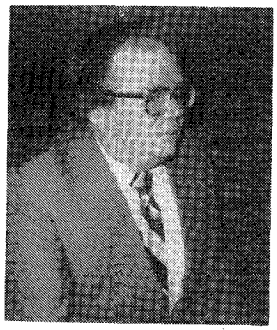
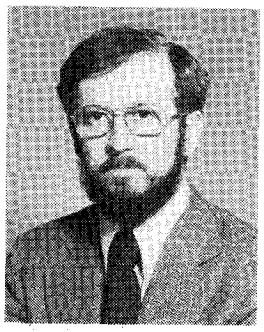
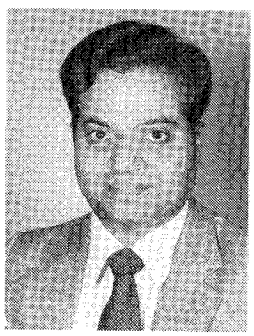

Robert E. Duffy


Franklin E. Eastep

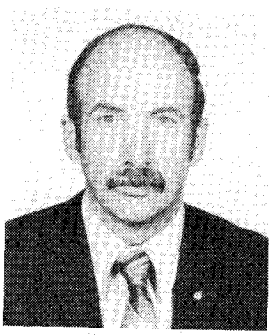

Lars E. Ericsson

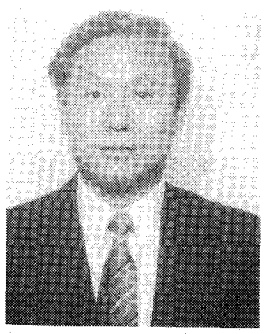

Ronald A. Hess


Harry H. Heyson


Bellur Nagabhushan


Craig D. Simcox


Thomas M. Weeks


T. Y. Yang

The 1986 Team

Robert E. Duffy

Robert E. Duffy is an Associate Professor of aeronautical engineering and astronautics at Rensselaer Polytechnic Institute. Dr. Duffy received his degrees form Rensselaer. He has worked as an aeronautical engineer at Wright-Patterson Air Force Base, as a research engineer at Grumman Aerospace Corporation, and as a consultant to numerous corporations. He is currently the technical director of Panaflight Corporation. His professional society affiliations include membership in the American Helicopter Society, the American Society of Mechanical Engineers, and the AIAA, in which he is an Associate Fellow. An author of over 45 articles and papers, Professor Duffy is currently investigating nonsteady flow effects on the aerodynamic characteristics of rotorcraft as a member of the ARO Rotocraft Center of Excellence at Rensselaer.

Franklin E. Eastep

Franklin E. Eastep is a Professor and Director of aerospace engineering at the University of Dayton. He received a B.S. from Ohio State University in 1958, an M.S. from the Air Force Institute of Technology in 1963, and a Ph.D. from Stanford University in 1968. Dr. Eastep has been teaching and conducting research within the technical areas of structural dynamics, aeroelasticity, and unsteady aerodynamics since 1968. During this period, he has been the principal thesis advisor for 5 doctoral students and over 25 master's students. He served on active duty with the U.S. Air Force for 20 years, retiring in 1978. Dr. Eastep is a member of the American Academy of Mechanics, an Associate Fellow of the AIAA, and a member of the AIAA Structural Dynamics Technical Committee.

Lars E. Ericsson

Lars E. Ericsson is a Senior Consulting Engineer in the Engineering Technology Organization of Lockheed Missiles and Space Corporation, Inc., Sunnyvale, California, where he acts as a consultant to the Satellite and Missile Systems Divisions on problems associated with aeroelasticity and vehicle dynamics. Before joining Lockheed Aircrarft Corporation in 1956, and LMSC in 1959, he was with the Aeronautical Research Institute of Sweden and the Swedish Aircraft Company, SAAB. Dr. Ericsson received his M.S. degree from the Royal Institute of Technology (KTH), Stockholm, in 1949, and his Ph.D. in 1972. He is a Fellow of the AIAA and is a member of the American Helicopter Society. Dr. Ericsson has published over 100 papers in his related fields.

Ronald A. Hess

Ronald A. Hess is a Professor in the Division of Aeronautical Science and Engineering of the Department of Mechanical Engineering at the University of California, Davis. He received B.S., M.S., and Ph.D. degrees in aerospace engineering from the University of Cincinnati in 1965, 1967, and 1970, respectively. After completing his doctoral work, he joined the faculty of the Department of Aeronautics at the Naval Postgraduate School in Monterey, California. In 1976, Dr. Hess joined the staff in the Flight Systems Research Division of NASA Ames Research Center. At NASA, he conducted research in the areas of aircraft handling qualities, control/display and design, and manual control theory. In the fall of 1982, he assumed his present position at the University of California, Davis.

Dr. Hess' current research interests lie in the areas of automatic and manual control of aircraft. He is a Member of the AIAA and Sigma Xi, and an Associate Editor of the IEEE *Transactions on Systems, Man and Cybernetics.*

Harry H. Heyson

Harry H. Heyson earned his B.Ae.E., cum laude, at the polytechnic Institute of Brooklyn in 1949. He received his M.S. in aeronautical engineering from Virginia polytechnic Institute in 1958. He joined the staff of NACA's Langley Laboratory in 1949. His research at NACA and NASA has resulted in over 70 papers on the theoretical and experimental aspects of helicopter and V/STOL induced flowfields, ground effects, and wind-tunnel wall effects, as well as on innovative new aircraft concepts. He is a frequent lecturer in university short courses and helicopter safety seminars.

Mr. Heyson is currently the Vehicle Integration Manager in the Langley Research Center's Aeronautical Systems Office. He oversees studies of future aircraft, both civil and military, in speed ranges from low subsonic to supersonic. He is an Associate Fellow of the AIAA and a member of the American Helicopter Society.

Bellur Nagabhushan

Bellur Nagabhushan received his B. Tech. degree in Aeronautical Engineering from the Indian Institute of Technology, Madras, India, in 1971 and his M.S. and Ph.D. degrees in Aerospace Engineering from Virginia Polytechnic Institute and State University in 1973 and 1977. He has been with the Defense Systems Division of Goodyear Aerospace Corporation since 1976. His early work focused on evolving conceptual and preliminary designs of advanced buoyant aircraft. He was responsible for developing related performance prediction codes and piloted flight simulation capability and for evaluating flying qualities of several point designs. Subsequently he was involved in developing aircraft-based tactical weapon systems. He has conceived and experimentally demonstrated a unique munition-dispensing concept which advances the state of that art. He also serves as a technical consultant on problems related to aircraft systems design and performance. Dr. Nagabhushan has authored over 40 papers and has received a dozen Goodyear Engineering Awards for technical achievement. He is an Associate Fellow of AIAA and a member of the V/STOL Aircraft Systems Technical Committee.

Craig D. Simcox

Craig D. Simcox received a B.S.A.E. from Iowa State University in 1962, his M.S.A.E. from Stanford University in 1965, and his Ph.D. from Purdue University in 1969. He was employed at NASA Ames Research Center from 1962 to 1965. Studies there included aerodynamics of preliminary SST designs, gasdynamic effects of planetary atmospheres, and development of low-temperature ablators for model testing. In 1965 he was admitted to Purdue University, where he conducted research on shock wave attenuation and acoustic-turbulent interactions with application for free jet spreading.

Since joining The Boeing Company, Dr. Simcox has worked in research and management on the Noise Technology Staff. His first research was to study the noise generated by hot and cold choked jets with emphasis on shock-related noise fields. Research included jet noise characteristics of coannular (bypass) jets, in-flight effects, and suppressor systems. He served as program manager on several proposal teams and research contracts. He is currently Manager-Technology Staff on the 767 Airplane Program. Dr. Simcox is a Fellow of the AIAA.

Thomas M. Weeks

Thomas M. Weeks completed his degree work at Syracuse University, Department of Mechanical and Aerospace Engineering in 1965. He entered active commissioned service that year, assigned to the Air Force Flight Dynamics Lab at Wright-Patterson AFB, Ohio. He chose to work in the area of electrogasdynamics at the nearly completed 50 MW facility. In 1968, he separated from the Air Force but chose to remain at the same location working as a civilian.

He was assigned in 1972 to the Analysis Group attached to the Aeromechanics Staff working on transonic wind tunnel wall interference. In 1976, he became Tech Manager of the External aerodynamics Group of the Aerodynamics and Airframe Branch. He is currently the manager of the X-29A (advanced technology demonstrator) Program at the Air Force Wright Aeronautical Laboratories. Dr. Weeks is an Associate Fellow of the AIAA.

T. Y. Yang

Henry T. Y. Yang is a Professor in the School of Aeronautics and Astronautics and Dean of Engineering at Purdue University. He received his B.S. from National Taiwan University in 1962, his M.S. from West Virginia University in 1965, and his Ph.D. from Cornell University in 1968. He has been teaching and researching at Purdue since 1969. His areas of specialty are aircraft structures, dynamics, and materials. He has authored a book, 90 archival journal articles, and several dozen conference proceedings papers in these areas. He is an Associate Fellow of AIAA.

1986—A Year For Filling In the Spaces

I HAVE, for the past year or two, been actively seeking good papers in areas not presently well covered in these pages. Although limited success can be reported in such areas as weather hazards and applied numerical aerodynamics, many virtually untapped areas remain. It is time to aggressively identify these areas (spaces) and fill them in. To do this, I need your help.

First off, what are the unfilled spaces? Before reading further, let's get on common ground by reviewing the Scope statement on the inside front cover. It represents the latest, comprehensive judgement of the various Editors-in-Chief as to what this Journal (your Journal) should cover. Now, how do you feel about this Scope? Is it adequate? Are there areas you feel should be added (deleted)? Let me know by letter as soon as you finish reading this. My address is also on the inside front cover. As you list new subject areas, think of some potential Authors and perhaps Reviewers who can produce good material on the subject. Suggest possible survey articles to initiate dialogue and offer challenges.

I've been concentrating recently on obtaining good papers in the broad area of aircraft reliability and maintainability (R&M). The area is of obvious high importance for both military as well as commercial aviation. It requires much attention, from an economic analysis standpoint as well as technical innovation needs.

Please indulge me as I attempt to develop a personal interest on your part in this vital subject. A recent relevant report was released in April, which should be mandatory reading for you. I'm referring to the report "National Aeronautical R&D Goals, Technology for America's Future." The report was developed by a committee composed of government, industry and academic experts. As might be anticipated, several goals, each in the broad areas of subsonic, supersonic and transatmospheric flight were identified. Before focusing on R&M aspects, it is useful to recap these goals to provide context. The subsonic goal is for a new generation of fuel-efficient (double the current level) aircraft operating in a National Aerospace System (safe, congestion free). The goal also incorporates military aircraft, long endurance, helicopter and V/STOL spinoffs. Integral technologies to achieve this goal include laminar flow control, composite high-strain structure, super bypass engines

and fully integrated flight controls. Primary supersonic goal is sustained supersonic cruise with enabling technologies including improved engine thrust to weight, powder metallurgy, superplastic forming, load alleviation using fault tolerant computers and supersonic laminar flow. Triple fuel efficiency is sought. Sonic boom overpressure reduction is seen as a compatible fallout. Transatmospheric goals recognize a "growing convergence of aeronautics and space technology." The transatmospheric regime remains largely unexploited. A capability to routinely cruise and maneuver into and out of the atmosphere is sought as an option with global importance. The technology needed includes an extrapolation of current trends (propulsion, materials, fuels, aerodynamics, system concepts, etc.) as well as new developments in artificial intelligence, hybrid air-breathing propulsion, etc.

Within this challenging context, I now turn to the R&M aspects and the issue of affordability. And here is where you come in. The report places a burden on university, government and industry to emphasize basic research and technology to meet the stated goals. But, as the report points out, future systems must also be affordable. Cost will be a major impediment to progress in achieving these goals unless concrete steps are taken. The current problem, in my view, is that we have not provided for cost/risk assessment early enough in the research and technology application process. It usually comes at the "mid-phase" or "final-phase," far too late, leading to short circuits of the system, costly overruns while bugs are being worked out while production stalls. You need to begin advocating for the building of cost models, including full provision for R&M, at the front end of the process.

Let's start with analysis and preliminary design methods. Think of a half dozen or so with which you are familiar. How many include a cost function model? How many could incorporate such a model? For example, what is the appropriate distribution of aerodynamic load along the span of an advanced subsonic transport wing designed to minimum cost?

Next look at demonstration experiments. The real value of experimental aircraft to demonstrate, prior to production commitment, certain advanced technologies, is a controversial subject. Few will argue that a flight demonstration may be the only way to determine whether some technical concept is achievable in flight. A case in point was the X-21 Laminar Flow Control aircraft of the early '70s. The aircraft did indeed show that fully laminar boundary layers can be achieved in flight. Even so, the program was criticized for not having addressed key R&M issues (keeping bugs off the leading edge or slots free of dirt during ground servicing). Nor did it address the integrated system (suction system power and weight trades). Project managers for such programs argue that program cost prevents such consideration from being fully addressed. I believe that we can no longer not afford to incorporate these considerations into flight demonstration programs. The appropriate systems application cost modeling tools must be developed and implemented as part of any proposed experimental demonstration.

You can help with all this. Apply your influence in formulation of plans to address cost issues at the beginning of aerospace R&D endeavors. Become acquainted with the above report, along with NASA plans to prepare roadmaps to lay out a national strategy and technical approach toward achieving the goals. You might also wish to review a copy of the USAF Reliability and Maintainability Action Plan: R&M 2000, released in February 1985.

Let me now turn to other matters, after having convinced you to spend some of your valuable time on R&M issues. Of course, you'll direct important, timely results, including good economic analyses, to these pages.

You see above the pictures of our voluntary Editorial Staff. These gentlemen are responsible for the technical content of the Journal. They solicit papers, obtain reviews, recommend changes, accept, refer to other journals, and, occasionally, decline to publish. If you have questions regarding this process, look them up at technical meetings (or write directly).

The volunteer Editors are supported by an Editorial Staff in New York AIAA Headquarters. Norma Brennan continues to serve as the highly capable Director of the Editorial Department. She deserves a dozen roses daily for her diligent attention to detail and management skills. Elaine Camhi, for the past several years the Managing Editor for all the Journals, has just recently left the Department, but not the Institute, to become Managing Editor of *Aerospace America*. Over the years she has managed to keep in close touch with other aspects of the AIAA publication business, providing a well balanced perspective and encouraging novel ideas in Journal presentation. I welcome Bob Inman as new Journal Publications Managing Editor. Bob also continues to serve as Senior Editor for the *Journal of Spacecraft and Rockets* and the *Journal of Guidance, Control, and Dynamics*. My immediate right arm has been Kathleen Felix, aided by Faith Florer. They keep me up to date on backlog, compile each issue and otherwise proficiently handle the mechanics of producing JA. Kathleen's position also changes as she becomes Senior Editor of *AIAA Journal*.

Finally, please scan the list of Reviewers for 1985 (through August). They have given their time to assure timeliness and quality of each article in each issue.

Send me your Comments.

Thomas M. Weeks
Editor-in-Chief

Reviewers for the *Journal of Aircraft*—1985*

Ahuja, K.
Aiken, E.
Allburn, J.
Allen, D.
Amiet, R.
Anderson, E.
Anderson, J., Jr.
Anderson, M.
Aronson, M.
Ashley, H.
Baghdadi, S.
Banger, R.
Barger, D.
Barger, R.
Barnes, T.
Barns, C.
Barsoum, R.
Batina, J.
Bauer, D.
Beckwith, I.
Bennett, R.
Berry, D.
Bertin, J.
Bevilaqua, P.
Bhateley, I.
Binion, T., Jr.
Bobbit, P.
Bobbitt, P.
Bober, L.
Boppe, C.
Borland, C.
Bowditch, D.
Boyden, R.
Brandon, J.
Briggs, C.
Briley, W.
Bristow, D.
Buell, D.
Burnet, C.
Burton, C.
Bushnell, D.
Butler, M., Jr.
Calico, R.
Cannon, P.
Carlson, L.
Carmichael, R.
Carr, L.
Cenko, A.
Chang, J.
Chapman, G.
Chen, A.
Chen, R.
Christian, T.
Christian, T., Jr.

*This list represents names received through October 1985. We regret the inadvertent omission of the following reviewers' names from the list published in the January 1985 issue.

Dillenius, M.
Fidler, J.
Geller, E.
Hakkinen, R.
Hemsch, M.
Kohlman, D.
Mercer, J.
Moran, J.
Nixon, P.
Robinson, M.
Smith, A.
Stahara, S.
Theisen, J.
Widnall, S.