

Ramjet propulsion for single-stage-to-orbit vehicles. James A. Martin (JSR, SYN) 259

### *Missile Systems*

Approximate velocity of bodies powered by cold-gas thrusters with small propellant mass. M. D. Bennett (JSR, EN) 187  
Fleet ballistic missile system: Polaris to Trident. R. A. Fuhrman (JSR, von Karman Lectureship in Astronautics) 265  
Model for bomblet ejection from missiles. Raymond Sedney (JSR) 229

### *Sounding Rocket Systems*

Spar I liquid mixing experiment. C. F. Schafer and G. H. Fichtl (AIAA J) 425

## MARINE TECHNOLOGY

### *Marine Hydrodynamics, Vessel and Control Surface*

Added resistance of ships in waves. Nils Salvesen (JH) 24  
Bilge keels with discontinuous end plate. C. Y. Liu, K. T. Chua, and K. O. Low (JH, EN) 47  
Comments on "Controlling the separation of laminar boundary layers in water: heating and suction." Andrzej Wortman (JH, TC) 87  
--Reply by authors to A. Wortman, J. Aroesty and S. A. Berger (JH, TC) 88  
Comparative study of the aerodynamics and hydrodynamics of a tunnel boat hull. T. H. Reif and D. A. Guenther (JH, EN) 166  
Performance potential of semisubmerged ships. Peter R. Payne (JH) 149  
Simulation of maneuvering control during underway replenishment. Samuel H. Brown and Reidar Alvestad (JH) 109  
Turbulent separation avoidance for tail-loaded fully cavitating hydrofoil sections. Blaine R. Parkin (JH) 35  
Turbulent wake behind slender propeller-driven bodies at angle of attack. Joseph A. Schetz, Edward B. Daffan, and Antoni K. Jakubowski (AIAA J, SYN) 6  
Use of a water channel for model tests on planing hulls. Adrian Millward (JH) 129

### *Marine Mooring Systems and Cable Mechanics*

Effect of initial stresses on the small deformations of a composite rod. S. Nair and G. Hegemier (AIAA J) 212

### *Marine Propulsion*

Noise due to interaction of boundary-layer turbulence with a compressor rotor. N. Moiseev, B. Lakshminarayana, and D. E. Thompson (JA) 53  
Steady metal combustor as a closed thermal energy source. E. G. Groff and G. M. Faeth (JH) 63  
Simulation of maneuvering control during underway replenishment. Samuel H. Brown and Reidar Alvestad (JH) 109

### *Marine Vessel Design (including Loads)*

Performance potential of semisubmerged ships. Peter R. Payne (JH) 149  
Recent United Kingdom hovercraft development. R. L. Wheeler (JH, SP) 3

### *Marine Vessel Systems, Submerged and Surface*

Shipboard guidance for operation in heavy weather. D. Hoffman and G. L. Petrie (JH) 142  
Steady metal combustor as a closed thermal energy source. E. G. Groff and G. M. Faeth (JH) 63

### *Marine Vessel Trajectories, Stability and Control*

Heave motion of air cushion vehicles. M. Robinson Swift and David Lebel (JH, EN) 85  
Performance potential of semisubmerged ships. Peter R. Payne (JH) 149  
Seakeeping dynamics of a single cushion, peripheral cell-stabilized air cushion vehicle. Robert Carrier, Allen H. Magnuson, and M. Robinson Swift (JH) 49  
Simulation of maneuvering control during underway replenishment. Samuel H. Brown and Reidar Alvestad (JH) 109

### *Marine Vessel Vibration*

Free vibration of neutrally buoyant inflatable cantilevers in the ocean environment. V. J. Modi and D. T. Poon (JH) 55

### *Oceanography, Physical and Biological*

Algorithm for inferring wind stress from SeaSat-A. W. Linwood Jones, Frank J. Wentz, and Lyle C. Schroeder (JSR) 368  
Applications of Seasat to the offshore oil, gas, and mining industries. A. G. Mourad and A. C. Robinson (JH) 137  
Ocean mining requirements. B. J. Livesay, A. Steen, and Richard L. DeMott (JH) 89  
Ocean surface measurement using elevations from GEOS-3 altimeter. C. D. Leitaio, N. E. Huang, and C. G. Parra (JSR) 362  
Skylab detection of an algal bloom in the Gulf of Mexico. William R. Johnson and Dean R. Norris (JSR, EN) 317  
Weakly-nonlinear, long internal gravity waves in stratified fluids of finite depth. T. Kubota, D. R. S. Ko, and L. D. Dobbs (JH) 157

### *Sea Pollution and Containment Control*

Mechanics of a restrained layer of floating oil above a water current. Jerome H. Milgram and Robert J. Van Houten (JH) 93

### *Underwater Acoustics*

Dynamics of an initially stressed fluid-immersed cylindrical shell. H. Reismann and G. J. Meyers (JH) 118

## PROPULSION

### *Airbreathing Propulsion*

Aerodynamic analysis of several hypersonic research airplane concepts from  $M = 0.2$  to  $6.0$ . Jim A. Penland, James L. Dillon, and Jimmy L. Pittman (JA) 716  
Application of dual fuel (JP-LH<sub>2</sub>) for hypersonic cruise vehicles. John P. Weidner (JA) 686  
Application of formal optimization procedures to film cooling design. J. Karl Hedrick, Darryl E. Metzger, and Donald I. Takeuchi (JE) 210  
Combustion behavior of solid-fuel ramjets. C. J. Mady, P. J. Hickey, and D. W. Netzer (JSR, SYN) 131  
Demonstration of a cooled laminated integral axial turbine. R. W. Vershure, Jr., H. R. Fisk, and J. A. Vonada (JA) 735  
Detecting abnormal turbine engine deterioration using electrostatic methods. Robert P. Couch (JA) 692  
Digital computer application in the F-15 engine air inlet control system. C. J. Scherz and L. E. Williams (JGC) 420  
Effects of external compression on an axisymmetric turbulent near wake. D. H. Neale, J. E. Hubbart, W. C. Strahle, and W. W. Wilson (AIAA J) 940  
Engine life, usage, and cycle selection. M. L. Roberts (JA) 240  
Evaluation of NO<sub>x</sub> prediction-correlation equations for small gas turbines. P. M. Rubins and N. R. Marchionna (JA) 497  
Experimental investigation of rough burning in a dump combustor of a small volume. P. Roy Choudhury and M. Lobell (PS, V. 58) 471  
Experimental study on base drag reduction with combined lateral and axial injection. K. C. Shadow and D. J. Chieze (AIAA J) 1084  
Fluid dynamic characterization of sudden-expansion ramjet combustor flowfields. James E. Drewry (AIAA J) 313  
Future aviation turbine fuels. A. V. Churchill, C. L. Delaney, and H. R. Lander (JA) 731  
High-energy fuels for cruise missiles. G. W. Burdette, H. R. Lander, and J. R. McCoy (JE) 289  
Influence of compressor exit conditions on diffuser performance. S. J. Stevens, U. S. L. Nayak, J. F. Preston, P. J. Robinson, and C. T. J. Scrivener (JA) 482  
Inlet boundary-layer shapes on four aircraft forebodies at Mach 6. Pierce L. Lawing and Charles B. Johnson (JA, EN) 62  
Integrated scramjet installation effect on the subsonic performance of a hypersonic aircraft. P. J. Johnston, J. L. Pittman, and J. K. Huffman (JA) 326; JA, ERR 640  
Investigation of strut-wall intersection losses. T. J. Barber (JA) 676  
Mixing of a transverse jet with a high Mach number stream. R. Rosen and D. W. Harvey (AIAA J, TN) 1011  
Model applications to solid-fuel ramjet combustion. David W. Netzer (JSR, SYN) 263  
Modeling of anasymmetric turbulent near wake using the interaction hypothesis. G. David Huffman and B. Sun-Hong Ng (AIAA J, SYN) 193  
Multivariable quadratic synthesis of an advanced turbofan engine controller. R. L. DeHoff and W. E. Hall Jr. (JGC) 136  
Noise due to interaction of boundary-layer turbulence with a compressor rotor. N. Moiseev, B. Lakshminarayana, and D. E. Thompson (JA) 53  
Nonuniform flow through nozzles. Reiner Decher (JA) 416  
Normal modes vibration analysis of the JT9D/747 propulsion system. John L. White and Edward S. Todd (JA) 28  
Prediction methods for jet V/STOL propulsion aerodynamics. Max F. Platzer and Richard J. Margason (JA, SP) 69