

Sorgnit, E. F. (see Dembrow, D. W.)	
Sowle, D. H. (see Gilvarry, J. J.)	
Speiser, Evelyn (see Beale, Robert J.)	
Stahle, C. V., Stouffer, C. G., and Silver, W. Inertia-compensated balance for wind-tunnel buffet measurements (EN).....	690
Stegg, C. W., Jr., Pesando, M., and Filias, G. Operational flight control for saturn boost vehicles.....	185
Stern, R. G. and Chu, S. T. Landing site coverage for orbital lifting re-entry vehicles (EN).....	429
Stewart, Brian (see Landon, Vernon D.)	
Stewart, Warner L. (see Glassman, Arthur J.)	
Stoffmacher, George. Hydrodynamic impact of conical-nosed vehicles during vertical water entry (TC).....	222
Stouffer, C. G. (see Stahle, C. V.)	
Svaton, E. M. (see Harmon, D. B.)	
Szpiro, Edward J. (see Molder, Sannu)	
Tarter, James H. (see McArthur, Gerald L.)	
Thielbahr, William H. Thermal stresses in an orthotropic, edge-grain-orientated cylinder.....	243
Thompson, A. B. (see Mayo, A. M.)	
Thompson, A. S. (see Hilton, J. L.)	
Tien, C. L. and Abu-Romia, M. M. A method of calculating rocket plume radiation to the base region (EN).....	433
Tietz, T. E. and Perkins, R. A. Refractory metal alloys in sheet form: availability, properties, and fabrication (SA).....	225
Tinling, Bruce E. and Merrick, Vernon K. Exploitation of inertial coupling in passive gravity-gradient-stabilized satellites.....	381
Todd, James P. (see Ducati, Adriano C.)	
Tonelson, Nathan and Wall, Mark. Optimization of random satellite systems through the use of integer programming techniques (EN)...	563
Tunnell, Phillips J. (see Lessing, Henry C.)	
Vander Velde, W. E. (see Hailey, W. C.)	
Vaughan, William W. (see Scoggins, James R.)	
Vicente, F. A. Effects of various re-entry vehicle parameters on radio frequency attenuation.....	653
Vliet, G. C., Brogan, J. J., Sheppard, T. S., Morse, F. H., and Hines, F. L. Stratified layer flow model: a numerical approach to liquid temperature stratification.....	566
Wadleigh, K. H., Galloway, A. J., and Mathur, P. N. Spinning vehicle nutation damper.....	588
Walchner, Otto, Sawyer, Frank M., and Koob, Stephen J. Dynamic stability testing in a Mach-14 blowdown wind tunnel (EN).....	437
Walker, R. E. and Shandor, M. Influence of injectant properties for fluid-injection thrust vector control.....	409
——(see Perini, L. L.)	
Wall, Mark (see Tonelson, Nathan)	
Walton, Thomas E., Jr., Rashis, Bernard, and Winters, Clyde W. Free-flight investigations of subliming ablators and transpiration cooling at hypersonic velocities.....	498
Walton, W. C., Jr., Herr, R. W., and Leonard, H. W. Studies of touchdown stability for lunar landing vehicles.....	552
Waltzer, Herman (see Ducati, Adriano C.)	
Wan, Chee-Gen (see Fan, Liang-Tseng)	
Weber, Tom. Atmospheric toxicants in manned space stations (EN)	122
Wells, Philip B. (see Reinikka, E. Arnold)	
Whisenhunt, G. B. (see Mayo, A. M.)	
Widger, William K., Jr. Possible approach to cross-track radiometric scanning from a cartwheel satellite (EN).....	427
Wilson, W. E. (see Perini, L. L.)	
Winters, Clyde W. (see Walton, Thomas E., Jr.)	
Womack, James R. (see Beale, Robert J.)	
Wu, Jain-Ming (see Sehgal, Robert)	
Wu, William L. S. and Yakut, Mahmoud M. Biologistics for a manned space station based on the metabolic approach.....	204
Yakut, Mahmoud M. (see Wu, William L. S.)	
Yen, H. H. (see Datis, Angelo)	
Zee, Chong-Hung. Effect of aerodynamic drag on low-thrust ascending-spiral trajectories (EN).....	435
Zigrang, D. J. Comment on "Cost minimization of a space system by multiple launchings" (TC).....	447
——Further comments on "Cost minimization of a space system by multiple launchings" (TC).....	694

SUBJECTS

AERODYNAMICS OF BODIES, COMBINATIONS, AND INTERNAL FLOW

Effect of aerodynamic drag on low-thrust ascending-spiral trajectories. Chong-Hung Zee (EN).....	435
Dynamic stability testing in a Mach-14 blowdown wind tunnel. Otto Walchner, Frank M. Sawyer, and Stephen J. Koob (EN).....	437

ASTRONOMY AND ASTROPHYSICS

Requirements for efficient Mars launch trajectories. Lars F. Helgostam.....	539
Spinning vehicle nutation damper. K. H. Wadleigh, A. J. Galloway, and P. N. Mathur.....	588
Velocity requirements and re-entry flight mechanics for manned Mars missions. E. Brian Pritchard.....	605
Venus swingby mode for manned Mars missions. Robert L. Sohn (EN).....	565

AUXILIARY SYSTEMS

Thermodynamic characteristics of Brayton cycles for space power. Arthur J. Glassman and Warner L. Stewart.....	25
Integration of cryogenic dynamic power system with vehicle cooling system. Gerald L. McArthur and James H. Tarter.....	149
Solar energy thermionic electrical power supplies. W. R. Menetrey and A. Smith.....	659

COMMUNICATIONS

Bi-static correlation radar for velocity sensing in spacecraft. Frank R. Dickey Jr. and Samuel E. Craig.....	508
Effects of various re-entry vehicle parameters on radio frequency attenuation. F. A. Vicente.....	653
Radar video data handling. Thomas J. Burke (EN).....	118

FACILITIES, RESEARCH AND SUPPORT

Recent developments in wind-tunnel testing techniques at transonic and supersonic speeds. Rudolph W. Hensel (SA).....	449
Hot-water ejectors for engine test facilities. O. Frenzl.....	333
TV missile terminal-flight simulator. LeRoy P. Lopresti and G. Fred Dunnire (EN).....	345

FLUID DYNAMICS

Effects of three-dimensional roughness elements on boundary-layer transition and aerodynamic heating. Michael G. Dunn.....	68
Chemical nonequilibrium effects in hypersonic pure air wakes. Michael Lenard and Maurice E. Long.....	290
Freezing of liquids on sudden exposure to vacuum. John B. Gayle, Carl T. Egger, and James W. Bransford.....	323
Mixing in turbulent axially symmetric free jets. Gdalia Kleinstein.....	403
Shock reflection and interaction at hypersonic speeds. Sannu Molder and Edward J. Szpiro (EN).....	688
Hydrodynamic impact of conical-nosed vehicles during vertical water entry. George Stoffmacher (TC).....	222
Landing loads for ocean-recovered rocket boosters: reply by author to G. Stoffmacher. J. M. Armstrong (TC).....	223

GEOPHYSICS

Space-debris hazards of interplanetary exploration. Sydney D. Black.	317
Design of a separating high-altitude probe. M. Sevik, L. L. Mitchum, and D. R. Barnes.....	649

HEAT TRANSFER AND THERMODYNAMICS

Charring ablators on lifting entry vehicles. E. Arnold Reinikka and Philip B. Wells.....	73
Multidimensional ablation and heat flow during re-entry. H. Hurwicz, S. Fifer, and M. Kelly.....	235
Thermal similitude studies. Billy P. Jones.....	364
Analysis of movable louvers for temperature control. Joseph A. Plamondon.....	492
Free-flight investigations of subliming ablators and transpiration cooling at hypersonic velocities. Thomas E. Walton Jr., Bernard Rashis, and Clyde W. Winters.....	498
Thermal radiation from the exhaust plume of an aluminized composite propellant rocket. S. J. Morizumi and H. J. Carpenter.....	501
Stratified layer flow model: a numerical approach to liquid temperature stratification. G. C. Vliet, J. J. Brogan, T. S. Sheppard, F. H. Morse, and F. L. Hines.....	666
A method of calculating rocket plume radiation to the base region. C. L. Tien and M. M. Abu-Romia (EN).....	433
Rapid technique for calculating times of maximum thermal stress in simple shapes. H. Dershin and R. G. Shook (EN).....	571
Heat transfer in the vicinity of two-dimensional protuberances. Angelo Datis, B. G. Broach, and H. H. Yen (EN).....	678
Application of Biot's variational method to convective heating of a slab. Hugh N. Chu (EN).....	686

INSTRUMENTATION AND PHOTOGRAPHY

Gridding of satellite observations. R. G. DeBiase.....	160
Fluxgate magnetometer for space application. S. C. Ling.....	175

LIFE SCIENCES

Gaseous environment during space missions. Frank J. Hendel (SA)...	353
Control, replenishment, and stability of life support systems. Henry Davis and Robert Novosad.....	96
Biologistics for a manned space station based on the metabolic approach. William L. S. Wu and Mahmoud M. Yakut.....	204

Feasibility of regeneration of carbohydrates in a closed-circuit respiratory system. G. C. Akerlof.	303
Atmospheric toxicants in manned space stations. Tom Weber (EN) . . .	122
Waste-combustion and water-recovery system. Martin Macklin (EN)	349

MACHINE ELEMENTS AND PROCESSES

Review of static seals for cryogenic systems. R. F. Robbins and P. R. Ludtke.	253
Elastomeric seals in hard vacuum. Ted R. Carrell and Harold Blair (EN)	113

MATERIALS, METALLIC

Refractory metal alloys in sheet form: availability, properties, and fabrication. T. E. Tietz and R. A. Perkins (SA)	225
Analytical studies of beryllium ablation and dispersion during re-entry. Alexander L. Feild Jr.	31
Cost and performance considerations in the selection of structural materials for ultra-large-size booster motors. R. V. Alexander and C. A. Fournier.	62
Failure mechanisms in dense tungsten alloy rocket nozzles. Eugene L. Olcott and James D. Batchelor.	635
Analysis of self-cooling with infiltrated porous tungsten composites. F. B. Gessner, J. D. Seader, R. J. Ingram, and T. A. Coultas.	643

MATERIALS, NONMETALLIC

Stiffness and buckling in filament-wound motors. Richard Ravenhall.	260
Secondary reinforcing systems for Spiralloy structures. Victor G. Parady	264
Ultra-lightweight, highly efficient, high-temperature, thermal-insulation system. Bertram Klein (EN)	352

MATHEMATICS

Computer method for perspective drawing. H. R. Puckett.	44
Optimization of random satellite systems through the use of integer programming techniques. Nathan Tonelson and Mark Wall (EN)	563

METEOROLOGY

Problems of atmospheric wind inputs for missile and space vehicle design. James R. Scoggins and William W. Vaughan.	181
--	-----

NAVIGATION AND GUIDANCE

Inertial guidance, navigation, and control systems. Robert Clifton Duncan and Alf S. Gunnersen Jr. (SA)	577
Fine guidance sensor for high-precision control of the OAO. Norman A. Gundersen	91
Lunar landing and long-range earth re-entry guidance by application of perturbation theory. Henry C. Lessing, Phillips J. Tunnell, and Robert E. Coate.	191
Improvement in Doppler navigator performance through spectral compression. Ralph G. McManus and James C. Rand.	388
Results of studies on a twin-gyro attitude-control system for space vehicles. Armando E. Lopez, Jack W. Ratcliff, and Jerry R. Havill.	399
Precursor orbital guidance. W. C. Hailey, P. Mosner, and W. E. Vander Velde.	520
Simply mechanized attitude control for spinning vehicles. George W. LeCompte and Jerrel G. Bland.	593
Missile attitude stabilization by Lyapunov's second method. Antony W. Merz.	598
Explicit rendezvous guidance mechanization. Thomas L. Gunckel II (EN)	217
Miniguide—a simplified attitude control for spin-stabilized vehicles. Henry J. E. Reid Jr. and H. Douglas Garner (EN)	342
Lunar landing guidance using cross-product steering. William J. Budurka and Norman L. Pleszkoch (EN)	431
Gyroscopic attitude stabilization. Ronald L. Huston (EN)	562
Nutational stability of an axisymmetric body containing a rotor. Vernon D. Landon and Brian Stewart (EN)	682

PHYSICS, GENERAL

Impact of dislocation theory on engineering. John E. Dorn and Jack B. Mitchell.	48
--	----

PHYSICS, PLASMA

Investigation of magnetohydrodynamic flight control. William B. Ericson and Algirdas Maciulaitis.	283
--	-----

Hall-current accelerator utilizing surface contact ionization. Edward A. Pinsley, Clyde O. Brown, and Conrad M. Banas.	525
---	-----

PROPELLANTS AND COMBUSTION

Analysis of stored gas pressurization systems for propellant transfer. Frank Bizjak, Chres Oki, William J. Hines, and Donald J. Simkin. . .	103
Subcritical, controlled-ullage, cryogenic tankage concept. Clifford N. Hall.	370
Re-entry behavior of zirconium hydride-uranium fuel elements. Fred E. Littman.	421
Thermal aspects of long-term propellant storage on the moon. Tibor Buna.	484
Equivalent inert weights for consumable rocket materials. R. M. Salemkka and J. M. Eastman (EN)	213
Correlation for maximum pressure of "High-Lo" igniter. Raymond L. Beauregard and Charles F. Sharn (EN)	676
Ignition transient control through inhibiting of propellant grain. Howard Gibby (EN)	692

PROPULSION

Selecting cooling techniques for liquid rockets for spacecraft. Clifford D. Coulbert (SA)	129
Electric space cruiser for high-energy missions. Robert J. Beale, Evelyn W. Speiser, and James R. Womack.	19
Thrust and impulse requirements for jet attitude-control systems. V. E. Haloulakos.	84
Scale model testing of 90° supersonic turn ejector systems for altitude simulation. R. E. Nelson, G. O. Patmor, B. L. McFarland, and B. Mandell.	108
Prediction of design reliability of very large solid-rocket motors. P. Kluger.	139
Fuel-containment requirements for gaseous-fuel nuclear rockets. Robert V. Meghreblian.	143
Application of d.c. plasma arc heating to hypersonic propulsion testing. S. D. Raezer, E. A. Bunt, and H. L. Olsen.	155
Electrical propulsion for control of stationary satellites. Roland A. Boucher.	164
Ion propulsion system for stationary-satellite control. Jerome H. Molitor.	170
Hypothetical fusion propulsion rocket vehicle. J. L. Hilton, J. S. Luce, and A. S. Thompson.	276
1-kw arcjet-engine system-performance test. Adriano C. Ducati, Harold Humpal, Joseph Meltzer, Erich Muehlberger, James P. Todd, and Herman Waltzer.	327
Influence of injectant properties for fluid-injection thrust vector control. R. E. Walker and M. Shandor.	409
Advanced space mission capabilities of nuclear rockets. W. C. Beckwith and H. L. Johnson.	414
Preliminary design of a solar-electric test satellite. Robert N. Olson and Roland A. Boucher.	471
Radioisotope propulsion. Jacob B. Romero.	532
Thrust vector control by liquid injection into rocket nozzles. Robert Sehgal and Jain-Ming Wu.	545
Preliminary study of air augmentation of rocket thrust. L. L. Perini, W. E. Wilson, R. E. Walker, and G. L. Dugger.	626
Weight minimization of a step rocket by the discrete maximum principle. Liang-Tseng Fan and Chee-Gen Wan (EN)	123
Transient surface temperatures in rocket nozzles. George T. Y. Chao, John A. Jacobsen, and James T. Anderson (EN)	219
Correlations for theoretical rocket thrust with shifting expansion. Leonard Greiner (EN)	339
Storability design criteria for space propulsion. Philip D. Gray (EN) .	340
Space propulsion by magnetic-field interaction. J. F. Engelberger (EN)	347
Fission-fragment-caused shear stress in gaseous vortex reactors. D. B. Harmon and E. M. Svaton (EN)	444
Apparent anomalies in correlations for theoretical rocket thrust with shifting equilibrium. Leonard Greiner (EN)	446
Optimization of ion engine control systems for synchronous satellites. Jerome H. Molitor and Marshall H. Kaplan (EN)	557
Nuclear-thermal vs chemical drives for super-orbital velocities. R. Sandri (EN)	568
Experimental evaluation of solid propellant rocket motors under acceleration loads. John G. Horton II (EN)	673
Erratum: "Correlations for theoretical rocket thrust with shifting expansion." Leonard Greiner (TC)	571

SPACE RADIATION

Design criteria for a manned space-laboratory environmental-control system. A. M. Mayo, A. B. Thompson, and G. B. Whisenhunt.	296
Radiation shielding considerations in manned spacecraft design. Sidney L. Russak.	310

SPACE SCIENCES

Effects of air drag on near-circular satellite orbits. J. Otterman and K. Lichtenfeld.	513
Solar simulation in space environment. Allan D. LeVantine and Robert P. Lipkis (EN)	116

- Orbital elements from Doppler tracking of three satellites. Robert R. Newton (EN)..... 441

SPACE VEHICLES

- Range maximization of a surface-to-surface missile with in-flight inequality constraints. Walter F. Denham..... 78
- TIROS preflight testing and postlaunch evaluation. Edwin A. Goldberg..... 374
- Exploitation of inertial coupling in passive gravity-gradient-stabilized satellites. Bruce E. Tinling and Vernon K. Merriek..... 381
- SYNCOM satellite program. Richard M. Bentley and Albert T. Owens..... 395
- Vacuum-air missile boost system. Sudhir Kumar, Jai R. N. Rajan, and James J. Murray..... 464
- Single-plane simulation of a rolling missile. Robert E. Joffs (EN)..... 215
- Possible approach to cross-track radiometric scanning from a cartwheel satellite. William K. Widger Jr. (EN)..... 427
- Landing site coverage for orbital lifting re-entry vehicles. R. G. Stern and S. T. Chu (EN)..... 429
- Approximation of time of ballistic entry. Tom T. Kumagai (EN)..... 675
- Alouette topside sounder satellite: experiments, data, and results. John H. Chapman (EN)..... 684

SPACE VEHICLE (Launch Vehicles)

- Operational flight control for saturn boost vehicles. C. W. Steeg Jr., M. Pesando, and G. Filias..... 185
- Economy of large launch vehicles including orbital labor cost. Krafft A. Ehrlicke..... 611
- Cost minimization of a space system by multiple launchings. Ralph W. Allen (EN)..... 112
- Rocket vehicle weight trades for injection missions. Richard J. Pollak (EN)..... 344
- Approximate payload capabilities of boosters for planetary missions. Alan B. Baker (EN)..... 439
- Inertia-compensated balance for wind-tunnel buffet measurements. C. V. Stahle, C. G. Stouffer, and W. Silver (EN)..... 690
- Comment on "Cost minimization of a space system by multiple launchings." D. J. Zigrang (TC)..... 447
- Reply by author to D. J. Zigrang. Ralph W. Allen (TC)..... 448
- Further comments on "Cost minimization of a space system by multiple launchings." D. J. Zigrang (TC)..... 693

SPACE VEHICLES (Spacecraft)

- Factors influencing configuration and performance of multipurpose manned entry vehicles. Eugene S. Love (SA)..... 3
- Gemini rendezvous program. James A. Chamberlin and James T. Rose..... 13
- Quadrupedal landing gear systems for spacecraft. Raymond J. Black..... 196
- Approach to space station logistics optimization. Nicholas Kallay..... 209
- Thermal design of the orbiting astronomical observatory. Louis H. Hemmerdinger..... 477
- Studies of touchdown stability for lunar landing vehicles. W. C. Walton Jr., R. W. Herr, and H. W. Leonard..... 552
- Orbital burden rates for manned space missions. H. Hermann Koelle..... 620
- Manned space station orbiting in the Van Allan belt. J. J. Gilvarry and D. H. Sowle (EN)..... 127
- Theoretical vs actual Nike-Apache sounding rocket performance. D. W. Dembrow and L. B. Jamieson (EN)..... 221
- Fin temperature measurements: Nike Cajun sounding rocket. D. W. Dembrow and E. F. Sorgnit (EN)..... 559

STRESSES AND LOADS

- Thermal stresses in an orthotropic, edge-grain-orientated cylinder. William H. Thielbahr..... 243
- Fatigue of aluminum with alclad or sprayed coatings. G. E. Nordmark (EN)..... 125
- Impact force per crater area related to the tensile strength. R. F. Rolsten and H. H. Hunt (EN)..... 351
- Some measurements of the effects of ring baffles in cylindrical tanks. H. Norman Abramson and Luis R. Garza (EN)..... 560
- Buckling of a slender prismatic rod at high impact velocity. Charles W. Bert (EN)..... 569
- Effect of rocket engine vibration on an air-core superconducting magnet. Leroy J. Krzycki, William M. Byrne Jr., and James B. Lee (EN)..... 680

STRUCTURAL DESIGN

- Effectiveness of foam structures for meteoroid protection. S. J. Pipitone and B. W. Reynolds..... 37
- Structural optimization and design based on a reliability design criterion. William C. Broding, F. W. Diederich, and Philip S. Parker..... 56
- Analysis of a nuclear reactor support structure. A. H. Marchertas and G. M. Smith..... 247
- Self-sealing spacecraft structures. James J. Piechocki..... 270
- Design guides for tapered transition sections for pressure vessels. I. W. Dingwell (EN)..... 115
- Design of cylinder-cone intersections. Herbert Becker (EN)..... 120