

Scientific Program of 32nd Annual Aerospace Medical Association Meeting Chicago, Illinois, April 24-27

Leading scientists in the field of aviation and aerospace medicine will present more than 180 research and clinical reports at the 32nd annual meeting of the Aerospace Medical Association at the Palmer House, Chicago, Illinois, April 24-27, 1961. A complete scientific program, including a topic summary, is announced in this issue of AEROSPACE MEDICINE.

Monday, April 24, 1961

Morning Sessions

Opening Ceremony—8:30 A.M.

ADDRESS—Dr. G. J. Kidera, President, Aerospace Medical Association
THE LOUIS H. BAUER LECTURE—Speaker to be Announced

Aerospace Pathology—April 24, 10:30 A.M.

Chairman: KENNETH E. DOWD

Co-Chairman: LOYD E. GRIFFIS

Factors Influencing Postmortem Level of Brain Lactic Acid in the Determination of Hypoxia

A. M. Dominguez, L. R. Goldbaum, J. R. Halstead and F. M. Townsend, Armed Forces Institute of Pathology, Washington, D. C.

The Effect of Putrefaction on Carboxyhemoglobin Saturation of Various Body Tissues

H. E. Christensen, L. R. Goldbaum and F. M. Townsend, Armed Forces Institute of Pathology, Washington, D. C.

Two Years' Experience in Combined Engineering and Pathology Investigation of Aircraft Accidents

F. M. Townsend, B. C. Doyle and W. H. Davidson, Armed Forces Institute of Pathology and Civil Aeronautics Board, Washington, D. C.

Current Flying and Accident Potential

Anchard F. Zeller, Office of USAF Deputy Inspector General for Safety, Norton Air Force Base, California

The Mars Bluff Case—A Medicolegal Case History in a Nuclear Weapons Incident, Florence, South Carolina

J. C. Bedwell, Jr., A. F. Meyer, Jr. and H. B. Mitchell, Jr., Offutt Air Force Base, Nebraska

Aerospace Physiology I—April 24, 10:30 A.M.

Chairman: E. G. REINARTZ

Co-Chairman: W. F. HALL

The Head Down Tilt and Adaptability for Aerospace Flight

L. E. Lamb and J. Roman, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Psychobiologic Effects of Hypodynamics Induced by Water Immersion

D. E. Graveline, B. Balke, R. E. McKenzie and B. Hartman, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Oxygen Consumption During Human Vibration Exposure

J. V. Gaerman, G. N. Hoover and W. F. Ashe, Department of Preventive Medicine, Ohio State University, Columbus, Ohio

SCIENTIFIC PROGRAM

Physical Evaluation of a Polarographic PO₂ Sensor and Its Application As a Hypoxia Warning Device
R. A. Stubbs, A. C. Bryan and W. G. Leach, Royal Canadian Air Force, Institute of Aviation Medicine, Toronto, Canada

Effects of Inorganic and Organic Buffers on Oxygen Toxicity in Mice
G. G. Nabas and C. Sanger, Columbia University College of Physicians and Surgeons, New York, New York

Effect of Hypoxia on Heart and Liver Mitochondrial Respiration and Phosphorylation
E. H. Strickland, E. Ackerman and A. Anthony, Biophysics Laboratory, Pennsylvania State University, University Park, Pennsylvania

The Determination of the Time of Useful Consciousness When Breathing From a Full Pressure Suit at 35,000 Feet
E. L. Michel and J. L. Ragsdale, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pennsylvania

Aerospace Otology—April 24, 10:30 A.M.

Chairman: C. H. GOWAN

Co-Chairman: P. A. CAMPBELL

The Effect of Static Air Pressure in the External Auditory Meatus on Hearing by Bone Conduction
R. G. Hansen, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Effects of Selected Gases Upon Auditory Threshold Shift
C. W. Nixon, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Audiometric Findings in a Large Air Force Population Sample
D. L. Waldron, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

The Relationship of Age and Rate of Acquisition of Flying Time Versus the Summation of Hearing Loss Amongst Canadian Civilian Licensed Pilots
J. A. Sullivan, W. E. Hodges and W. A. Prowse, Division of Civil Aviation Medicine, Department of National Health and Welfare, Toronto, Canada

Audiometry: Measure of Recruitment in Hearing Losses of Flying Crews
A. E. Hustin, Otorhinolaryngology Services, Sabena Air Lines, Brussels, Belgium

Audition and Radio Frequency Energy
A. H. Frey, Advanced Electronics Center, General Electric, Ithaca, New York

Afternoon Sessions

Operational Aerospace Medicine, I—April 24, 2:00 P.M.

Sponsored by: THE USAF FLIGHT SURGEONS

Chairman: H. G. ARMSTRONG

Co-Chairman: B. A. STRICKLAND

Aeromedical Support in World War II
D. N. W. Grant, Former Surgeon General, USAF, Washington, D. C.

Aeromedical Support of the B-58 Operations
R. J. Kelly, USAF Hospital, Carswell Air Force Base, Texas

Physiological Support of Extreme High Altitude Flying Program
R. J. Bruneau, Laughlin Air Force Base, Texas

Aviation Medicine in the Military Air Transport Service
M. B. Johnston, Office of Command Surgeon, Headquarters MATS, Scott Air Force Base, Illinois

Aeromedical Support of the Research and Development Program
J. Bollerud, Directorate of Research and Technology, Headquarters USAF, Washington, D. C.

SCIENTIFIC PROGRAM

Aerospace Physiology, II—April 24, 2:00 P.M.

Chairman: J. R. POPPEN

Co-Chairman: D. G. SIMONS

Human Tolerance to Rapid Recompression

J. W. Raeke, Human Factors Group, Los Angeles Division, North American Aviation, Inc., Los Angeles, California

The Effect of Certain Variations in Physiologic State on Tolerance to Explosive Decompression

P. Close and R. Ireland, U. S. Naval School of Aviation Medicine, Pensacola, Florida

Pulmonary Function Evaluation in Air and Space Flight

R. G. Bartlett, Jr., U. S. Naval School of Aviation Medicine, Pensacola, Florida

Further Considerations of the Roentgenologic Evaluation of Flying Personnel at Simulated Altitude

G. W. Parker and R. B. Stonehill, USAF Hospital, USAF Aerospace Medical Center, Lackland Air Force Base, Texas

Biological Effects of Magnetic Fields

D. E. Beischer, U. S. Naval School of Aviation Medicine, U. S. Naval Medical Center, Pensacola, Florida

Aerospace Cabin Simulators—April 24, 2:00 P.M.

Chairman: W. E. KELLUM

Co-Chairman: C. P. PHOEBUS

Life Support in the Small Space Bioprobe

G. H. Kydd, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Observations in the SAM Two-Man Space Cabin Simulator

I. Logistic Aspects

B. E. Welch and T. E. Morgan, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Observations in the SAM Two-Man Space Cabin Simulator

II. Biomedical Aspects

T. E. Morgan and B. E. Welch, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Observations in the SAM Two-Man Space Cabin Simulator

III. System Operator Performance Factors

R. E. McKenzie, B. O. Hartman and B. E. Welch, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Observations in the SAM Two-Man Space Cabin Simulator

IV. Behavioral Factors in Selection and Performance

D. E. Flinn, J. J. Monroe, D. H. Hagen and E. H. Cramer, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Operational Aerospace Medicine, II—April 24, 4:00 P.M.

Sponsored by: THE USAF FLIGHT SURGEONS

Chairman: O. O. BENSON

Co-Chairman: C. H. ROADMAN

Aeromedical Support of the Tactical Air Force

R. Fenno, 839th Tactical Hospital, Stewart Air Force Base, Tennessee

Education in the Aerospace Age

H. V. Ellingson, Medical Service School, Gunter Air Force Base, Alabama

SCIENTIFIC PROGRAM

Problems in Aeromedical Support of Flight Test Programs

H. R. Bratt, Edwards Air Force Base, California

Missile Operations Support

R. C. Yerg, Vandenburg Air Force Base, California

Space Programs and the Future

C. A. Berry, Office of the Surgeon General, Headquarters USAF, Washington, D. C.

Thermal Stress—April 24, 4:00 P.M.

Chairman: B. L. JARMAN

Co-Chairman: N. L. BARR

Snail Haemolymph as a Source of Food and Water in Desert Survival

J. Billingham, RAF Institute of Aviation Medicine, Farnborough, Hants, England

Electrical Analog Simulation of Temperature Regulation in Man

R. J. Crosbie, R. A. Hall and J. D. Hardy, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

The Physiological Control of Human Body Temperature

J. H. Benzinger, A. W. Pratt and C. Kitzinger, Naval Medical Research Institute and National Institute of Health, Bethesda, Maryland

Cold Water Immersion: Estimation of Tolerance Times

G. B. Smith and E. F. Hames, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Skin Temperature Responses to Simulated Nuclear Flash

W. C. Kaufman, H. T. Davis and A. G. Swan, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Effect of Elevated Ambient Temperature and Vibration Upon the Rectal Temperature of the Restrained Rat

H. Megel and F. M. Keating, Boeing Airplane Company, Seattle, Washington

Escape from High Performance Aircraft—April 24, 4:00 P.M.

Chairman: B. GROESBECK, JR.

Co-Chairman: F. B. VORIS

Effect of Meteoroid Impacts Into Pressurized Crew Compartments

C. F. Gell and A. B. Thompson, Vought Astronautics, Division of Chance Vought Corporation, Dallas, Texas

Environmental Aspects of the B-70 Mach 3 Escape Capsule

J. F. Hegenwald, Jr., Human Factors Group, Los Angeles Division, North American Aviation, Inc., Los Angeles, California

Escape Systems of Current USAF Fighter Aircraft

L. F. Johnson, Jr., School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Naval Aircraft Escape Systems—Past, Present and Future

R. A. Bosee and C. T. Koochembere, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

Evaluation of High Speed and Thunderstorm Effects on Ejections

J. P. Stapp and S. E. Neely, USAF Aerospace Medical Center, Brooks Air Force Base, Texas, and USAF Office of Inspector General for Safety, Norton Air Force Base, California

SCIENTIFIC PROGRAM

Tuesday, April 25, 1961

Morning Sessions

Symposium on Aerospace Radiobiology, I—April 25, 8:30 A.M.

Presiding: H. J. SCHAEFER

Guest Speakers: To be Announced

**Federal Aviation Agency Medical Examiners Forum—
April 25, 8:30 A.M.**

Presiding: J. L. GODDARD

Linear Acceleration, I—April 25, 8:30 A.M.

Chairman: M. M. KALEZ

Co-Chairman: D. FLICKINGER

Effects of High Acceleration on Rats

K. H. Dickerson and G. H. Kydd, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Increase in the Tolerance of Acceleration Stress With the Dimethylaminoethyl Ester of P-Chlorophenoxyacetic Acid

B. D. Polis, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Acceleration Protection by Means of Stimulation of the Reticulo-Endothelial System

E. R. Stiehm, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Precision of a Lever-Displacement Response of Rats Following Exposures to Positive *G*

R. M. Herrick, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

The Effect of Back Angle and Molded Support Upon Intra-Pulmonary Pressure During Forward (+*G_x*) Accelerations

A. S. Hyde, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Aerospace Radiobiology, II—April 25, 10:30 A.M.

Chairman: H. J. SCHAEFER

Co-Chairman: J. E. PICKERING

Shielding of Nuclear-Interacting Secondaries of Cosmic Rays and Solar Particles

S. P. Shen, Department of Physics, St. John's University, New York, New York and State University of New York, Albany, New York

Limitations of the RBE Concept in the Dosimetry of Ionizing Radiation in Space

H. J. Schaefer, U. S. Naval School of Aviation Medicine, Pensacola, Florida

Biological Effects of Heavy Ions

R. A. Deering and F. Hutchinson, Biophysics Department, Yale University, New Haven, Connecticut

Heavy Ion and Millibeam Irradiations on Mammalian Tissue

H. B. Chase, Biology Department, Brown University, Providence, Rhode Island

Sequence of Pathological Changes in the Rat Brain Following Exposure to Alpha Particles From the 60-inch Cyclotron

W. Haymaker, A. Behar, J. Klatzo and C. Tobias, Armed Forces Institute of Pathology, Washington, D. C., National Institute of Neurological Diseases and Blindness, National Institute of Health, Bethesda, Maryland and Donner Laboratories, University of California, Berkeley, California

SCIENTIFIC PROGRAM

Linear Acceleration, II—April 25, 10:30 A.M.

Chairman: W. R. LOVELACE, II

Co-Chairman: V. A. BYRNES

Effects of Positive G on Chimpanzees Immersed in Water

K. R. Coburn, P. H. Craig and E. L. Beckman, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Changes in Performance Proficiency Under Conditions Simulated by Water Immersion and Centrifugation

R. M. Chambers, D. A. Morway, E. L. Beckman and V. G. Benson, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Some Physiological Changes Observed in Human Subjects During Zero G Simulation by Immersion in Water Up to Neck Level

E. L. Beckman, K. R. Coburn, R. M. Chambers, R. E. DeForest and V. G. Benson, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Effects of Prolonged Total Body Water Immersion on Human Tolerance to Positive Acceleration

V. G. Benson, E. L. Beckman and K. R. Coburn, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Physiological Instrumentation Systems for Measuring Pilot Response to Stress Including Studies of the Effects of High G and Zero G

G. R. Holden, J. R. Smith, N. M. McFadden, M. Sadoff, and H. A. Smedal, NASA, Ames Research Center, Moffett Field, California

Some Observations of the Effects of 100 Per Cent Oxygen and Positive Acceleration on R. A. F. Aircrew

J. D. Green and B. F. Burgess, R. A. F. Institute of Aviation Medicine, Farnborough, Hants, England

Afternoon Sessions

Aerospace Radiobiology, III—April 25, 2:30 P.M.

Chairman: H. J. SCHAEFER

Co-Chairman: C. S. WHITE

Biological Effect of Stress Following Ionizing Radiation

Jerome J. Gambino, Human Factors Group, North American Aviation, Inc., Los Angeles, California

Genetic Studies in the Lower Radiation Belt

A. G. DeBusk, Department of Biological Sciences, Florida State University, Tallahassee, Fla.

Cosmic Radiation—Laboratory Observations

R. W. Zellmer and R. G. Allen, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Review of Biological Effectiveness of Galactic Primary Cosmic Radiation

D. G. Simons and J. E. Hewitt, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Aerospace Ophthalmology—April 25, 2:30 P.M.

Chairman: H. B. WRIGHT

Co-Chairman: J. P. POLLARD

Eye Movement and the Optogural Illusion

G. H. Byford, R. A. F. Institute of Aviation Medicine, Farnborough, Hants, England

On the Reliability of the Electroretinogram as a Response to Light Stimulus

A. M. Ercoles and L. Ronchi, Istituto Nazionale di Ottica, Arcetri-Firenze, Italy

Early Detection of Glaucoma in Aging Aircrew Personnel

S. Diamond, Pan American World Airways, Overseas Division, San Francisco, California

Shape Perception Under Near Threshold Conditions

M. Bittini, A. M. Ercoles, A. Fiorentini and L. Ronchi, Istituto Nazionale di Ottica, Arcetri-Firenze, Italy

SCIENTIFIC PROGRAM

Early Ocular Effects of High Energy Proton and Alpha Radiation

J. F. Culver and N. L. Newton, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Linear Acceleration, III—April 25, 2:30 P.M.

Chairman: J. C. ADAMS

Co-Chairman: J. P. STAPP

Human Acceleration Tolerance While Breathing 100 Per Cent Oxygen at 5 PSIA Pressure

C. C. Clark and W. Augerson, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania and NASA Space Task Group, Langley Research Center, Hampton, Virginia

Studies of Cardiac Output and Circulatory Pressures in Human Beings During Forward Acceleration

E. F. Lindberg, H. W. Marshall, W. F. Sutterer, T. F. McGuire and E. H. Wood, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Comparison of Changes in Arterial Oxygen Saturation During Transverse Acceleration as Indicated by Ear Oximetry and by Direct Photometry on Arterial Blood.

T. F. McGuire, H. W. Marshall, A. C. Nolan, E. F. Lindberg and E. H. Wood, Mayo Foundation and Mayo Clinic, Rochester, Minnesota

Measurements of Eye Movement During Low-Frequency Vibration

J. C. Guignard and A. Irving, R. A. F. Institute of Aviation Medicine, Farnborough, Hants, England

Personnel—Selection and Training—April 25, 4:10 P.M.

Chairman: M. S. WHITE

Co-Chairman: J. E. SMITH

The Use of Newly Designated Aviators As Instructors

J. H. Johnson and J. R. Berkshire, U. S. Naval School of Aviation Medicine, Pensacola, Florida

Subject Selection: Pertinent Criteria for Subjects in Aerospace Human Factors Research

R. B. Ziegler and J. Lazo, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

The Selection of Potential Astronauts

R. Ambler, J. R. Berkshire and W. F. O'Connor, U. S. Naval School of Aviation Medicine, Pensacola, Florida

The Significance of Lipid Spectrum Analysis in USAF Test Pilots

G. D. Talbott, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Physiological Factors in the Training of Aircrews in the Use of R. A. F. Partial Pressure Suits

P. R. Wagner and D. Becton, R. A. F. Institute of Aviation Medicine, Farnborough, Hants, England

Routine Partial Pressure Suit Indoctrination; Results of a 2½-Year Program in the Strategic Air Command

H. C. Moritz, Jr. and N. C. Nicholas, Office of the Surgeon, Headquarters, Second Air Force, Barksdale Air Force Base, Louisiana and Altitude Chamber Indoctrination Unit, Carswell Air Force Base, Texas

Oxygen Equipment—April 25, 4:10 P.M.

Chairman: J. C. COLB

Co-Chairman: R. A. BOSEE

Factors Related to Selective Fitting Aviators' Oxygen Breathing Masks

A. Bloom, Sierra Engineering Company, Sierra Madre, California

Earlobe Oximetry Determination of Oxygen Tension as a Test for Oxygen System Efficiency

R. L. McLaughlin, Douglas Aircraft Company, Inc., Santa Monica, California

SCIENTIFIC PROGRAM

Performance Tests of a Passenger Oxygen System for Altitudes to 45,000 Feet

F. C. Thiede, J. W. Raeke, W. R. Santschi and J. Freedman, Human Factors Group, Los Angeles Division, North American Aviation, Inc., Los Angeles, California

Scientific Evaluation of Oxygen Systems for Civil Transports Flying Above 40,000 Feet

W. V. Blockley and P. Webb, Webb Associates, Santa Monica, California, and Yellow Springs, Ohio

Turbine Transport Oxygen Requirements

F. D. Enfield and G. E. Hanff, Lockheed Aircraft Corporation, California Division, Burbank, California

Linear Acceleration, IV—April 25, 4:10 P.M.

Chairman: A. GRAYBIEL

Co-Chairman: J. D. HARDY

Muscle Strength Under Forward Acceleration

R. S. Zeigen, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

The Effect of Acceleration on the Relation Between Visual Acuity and Luminance Level

W. J. White, Cornell Aeronautical Laboratory, Inc., Buffalo, New York

Diaphragm Movement Under Positive Acceleration

D. H. Glaister, R. A. F. Institute of Aviation Medicine, Farnborough, Hants, England

Convulsive Syncope Induced by the Valsalva Maneuver in Subjects Exhibiting Low G-Tolerance

R. C. Duvoisin, F. Kruse, Jr. and D. Saunders, USAF Hospital, USAF Aerospace Medical Center, Lackland Air Force Base, Texas

The Ventilatory Advantage of Backward Transverse Acceleration

J. A. Rogers and H. A. Smedal, NASA, Ames Research Center, Moffett Field, California

Injuries During Ejection Seat Training

K. H. Cooper and F. M. G. Holmstrom, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Wednesday, April 26, 1961

Morning Sessions

Panel Presentation—The Cardiological Examination— April 26, 8:30 A.M.

Sponsored by: CIVIL AVIATION MEDICAL ASSOCIATION, I

Presiding: L. G. WELCH

Guest Speakers: To be Announced

Development and Test of Protective Clothing—April 26, 8:30 A.M.

Chairman: E. M. WURZEL

Co-Chairman: H. V. ELLINGSON

Catechol Amine Excretion in Urine During Simulated Flight

P. R. Tiller, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

Evaluation of Pressure Garments for High Performance Aircraft

T. J. Cook and G. E. Hanff, Lockheed Aircraft Corporation, Burbank, California

Effects of Venous Impediment and Muscular Effort on Motor Performance

T. D. Hanna, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

SCIENTIFIC PROGRAM

An Evaluation of Foot Insulation for Aircrew Personnel

L. J. SantaMaria, V. M. Busler and J. P. Ratner, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

Effects of Exposure of Human Hands, Feet and Other Skin Areas in a Near Vacuum

C. L. Wilson, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

A Significant Development in Light Weight Arctic and Wet Weather Clothing

S. E. Alexander, Royal Canadian Air Force, Institute of Aviation Medicine, Toronto, Canada

Crash Forces and Personnel Protection—April 26, 8:30 A.M.

Chairman: C. F. GELL

Co-Chairman: A. M. MAYO

Crash Protection of Air Transport Passengers by Improved Seat Materials Design

J. P. Stapp and B. Nutt, Advanced Studies Group, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Human Crash Deceleration Tests on Seat Belts

J. J. Ryan, University of Minnesota, Minneapolis, Minnesota

Human Forward Facing Impact Tolerance

E. L. Beeding, Aeromedical Field Laboratory, Holloman Air Force Base, New Mexico

Kinematic Behavior of the Human Body During Deceleration

J. J. Swearingen, A. H. Hasbrook and R. G. Snyder, Civil Aeromedical Research Institute, Federal Aviation Agency, Oklahoma City, Oklahoma

Abrupt Acceleration of Human Subjects in the Semi-Supine Position

R. N. Headley, J. W. Brinkley and K. K. Kaiser, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Investigation to Determine Human Tolerance to Abrupt Acceleration in Capsule Systems

G. A. Holcomb, Human Factors, Stanley Aviation Corporation, Aurora, Colorado

Aviation Medicine—April 26, 10:40 A.M.

Sponsored by: CIVIL AVIATION MEDICAL ASSOCIATION, II

Chairman: H. F. FENWICK

Co-Chairman: G. E. WIGHT

Medical Investigation of Civil Aircraft Accidents

C. E. Wilbur, Bureau of Aviation Medicine, Federal Aviation Agency, Washington, D. C.

Problems in Air Traffic Management: I. Longitudinal Prediction of Effectiveness of Air Traffic Controllers

D. K. Trites, Civil Aeromedical Research Institute, Federal Aviation Agency, Oklahoma City, Oklahoma

Problems in Air Traffic Management: II. Prediction of Success in Air Traffic Controller School

B. B. Cobb, Civil Aeromedical Research Institute, Federal Aviation Agency, Oklahoma City, Oklahoma

Personal Approach to Aircraft Accident Prevention

H. D. Vickers, Little Falls, New York

An Epidemiological Survey of Civil Airman Medical Records

P. T. Bruyere, Bureau of Aviation Medicine, Federal Aviation Agency, Washington, D. C.

Bioengineering—April 26, 11:00 A.M.

Chairman: C. E. WILBUR

Co-Chairman: F. K. SMITH

Anthropometry of U. S. Navy Pilots

W. L. Jones and E. C. Gifford, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

SCIENTIFIC PROGRAM

Bioengineering of an Anti-Suffocation Device

L. Carlyle, Douglas Aircraft Company, Inc., El Segundo, California

Computer Simulation of Man-Integrated Systems

H. Ozkaplan and R. Gettig, Republic Aviation Corporation, Farmingdale, New York

Weapon System Safety

M. C. Robbins, Boeing Airplane Company, Seattle, Washington

Performance of an Interchangeable, Mobile-Pilot-Restraint-System Designed For Use in a Moderately High Acceleration Field

H. C. Vykukal, G. W. Stinnett and R. P. Gallant, NASA, Ames Research Center, Moffett Field, California

Personnel Performance—April 26, 10:40 A.M.

Chairman: J. C. EARLY

Co-Chairman: J. N. WAGGONER

The Measurement of Operator Efficiency

N. M. Burns and T. D. Hanna, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

Human Psychomotor Performance During Prolonged Vertical Vibration

A. D. Catterson, G. N. Hoover and W. F. Ashe, Ohio State University, Columbus, Ohio

Prolonged Human Performance as a Function of the Work-Rest Cycle

O. S. Adams, J. T. Ray and W. D. Chiles, Lockheed Aircraft Corporation, Marietta, Georgia, and Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Effects of Loud Brief Noise on Operant Behavior

W. E. Evans, J. J. Dreber and D. C. Raskin, Lockheed Aircraft Corporation, Burbank, California

Immediate Auditory Retrieval of N Verbal Units From a 2N Ensemble

J. J. Dreber, W. E. Evans and D. C. Raskin, Lockheed Aircraft Corporation, Burbank, California

Afternoon Sessions—April 26, 1961

Aviation Medicine—April 26, 2:00 P.M.

Sponsored by: CIVIL AVIATION MEDICAL ASSOCIATION, III

Chairman: H. R. BOHLMAN

Co-Chairman: G. B. McNEELY

Studies on the Biodynamic Potential of Air Traffic Management Personnel: An Interdisciplinary Approach

B. Balke, Civil Aeromedical Research Institute, Federal Aviation Agency, Oklahoma City, Oklahoma

Pressure Caudal Injection and Back Manipulation

J. H. Brown, Seattle, Washington

Sanitation and Today's Airliner

J. L. Johanson, Boeing Airplane Company, Seattle, Washington

Inflight Rupture of the Tympanic Membrane Secondary to Exostosis of the External Auditory Canal

S. H. Bear, USAF Hospital Wiesbaden, Wiesbaden, Germany

Aeromedical Aspects of Turbo-Jet Commercial Aircraft

C. C. Gullett, Trans World Airlines, Inc., Kansas City, Missouri

Aerospace Medicine—Telemetry, I—April 26, 2:00 P.M.

Chairman: J. P. HENRY

Co-Chairman: J. BOLLERUD

Development of an Internalized Animal Telemetry System

B. W. Pinc and B. L. Ettelson, Air Force Ballistic Missile Division, Los Angeles, California and Spacelabs, Inc., Van Nuys, California

SCIENTIFIC PROGRAM

Internalized Animal Telemetry System—Engineering Considerations

W. N. Cooper and M. A. Beaupre, North American Aviation, Inc., Los Angeles, California

Internalized Animal Telemetry System—Electronic Considerations

D. W. Douglas and H. R. Seal, Spacelabs, Inc., Van Nuys, California

Internalized Animal Telemetry System—Biomedical and Surgical Considerations

G. Sullivan and T. A. Schulkins, Spacelabs, Inc., Van Nuys, California

Angular Acceleration, I—April 26, 2:00 P.M.

Chairman: E. J. BALDES

Co-Chairman: W. R. FRANKS

Coriolis Effects on Operator Movements in Rotating Vehicles

C. P. Greening, North American Aviation, Downey, California

Use of the Optical Eye Marker Camera in Aerospace Medicine

E. Llewellyn Thomas, Defence Research Medical Laboratories, Toronto, Canada

Human Orientations

W. R. Franks, RCAF Institute of Aviation Medicine, Toronto, Canada

The Importance of the Otoliths in Disorientation

W. H. Johnson and N. B. G. Taylor, Defence Research Medical Laboratories, Toronto, Canada

Participation of the Vertical Semicircular Canals in Adaptation to Stimulation of the Horizontal Semicircular Canals

R. N. Krus, E. W. Moore, J. P. Dowd and R. L. Cramer, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Aerospace Medicine—Electrocardiography—April 26, 4:00 P.M.

Chairman: L. G. LEDERER

Co-Chairman: R. L. MEILING

The Response of Normotensive Patients with Coronary Artery Disease to the Diuretic Methylothiazide

L. R. Krasno and G. J. Kidera, United Air Lines, San Francisco International Airport, San Francisco, California, and Chicago, Illinois

The Initial Eighteen Months' Experience With Airline Pilots Electrocardiograms

J. H. Britton, H. G. Whitehead, Jr., T. F. O'Connor and J. H. Ardam, Bureau of Aviation Medicine, Federal Aviation Agency, Washington, D. C.

Postural Heart Block

G. W. Manning and G. A. Sears, Cardiovascular Unit, Victoria Hospital, London, England

Right Bundle Branch Block and Ventricular Hypertrophy Patterns

G. W. Manning and G. A. Sears, Cardiovascular Unit, Victoria Hospital, London, England

Left Bundle Branch Block

R. T. Tyndall and L. G. Lederer, American Airlines, Inc., Medical Department, Los Angeles, California

Aerospace Medicine—Telemetry, II—April 26, 4:00 P.M.

Chairman: A. P. GAGGE

Co-Chairman: D. G. M. NELSON

In-Flight Bio-Instrumentation in a Near-Space Operational Environment

G. F. Kelly and C. G. Phipps, U. S. Naval Missile Center, Point Mugu, California

The Remote Monitoring of Physiological Data From Personnel In Flight

R. D. Squires, J. J. Gordon, R. E. Jensen and W. Sipple, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

SCIENTIFIC PROGRAM

Miniaturized Physiological Telemetry Systems

W. C. Sipple, R. D. Squires, R. E. Jensen and J. J. Gordon, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Multi-Channel Personnel Telemetry System Using Pulse Position Modulation

A. R. Marko, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Human Physiological Data Telemetry System

D. W. Douglas, H. R. Seal and D. G. Simons, Spacelabs, Inc., Van Nuys, California, and School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Angular Acceleration, II—April 26, 4:00 P.M.

Chairman: J. D. CONSTANTINO

Co-Chairman: R. H. BLOUNT

Observations of Canal Sickness and Adaptation in Chimpanzees and Squirrel Monkeys in a "Slow Rotation Room"

J. C. Meek, A. Graybiel, D. E. Beischer and A. J. Riopelle, U. S. Naval School of Aviation Medicine, Pensacola, Florida and Yerkes Laboratories of Primate Biology, Orange Park, Florida

Coriolis Acceleration Effects Associated with Movement of Humans by a Powered Gimbal System on a Human Centrifuge

R. F. Gray, R. J. Crosbie, R. A. Hall, J. A. Weaver and C. C. Clark, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Estimate of the Horizontal or Vertical With Head Upright, on the Side, and Inverted Under Static Conditions and During Exposure to Centripetal Force

A. Graybiel and B. Clark, U. S. Naval School of Aviation Medicine, Pensacola, Florida

A Comparison of Susceptibility to Symptoms in the Slow Rotating Room (Canal Sickness) and Motion Sickness in Flight Personnel

R. S. Kennedy and A. Graybiel, U. S. Naval School of Aviation Medicine, Pensacola, Florida

Some New Neurophysiological Studies on Motion Sickness and Its Therapy

R. L. Cramer, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Thursday, April 27, 1961

Morning Sessions

Aviation Medicine—General Problems—April 27, 8:30 A.M.

Chairman: W. R. STOVALL

Co-Chairman: O. SCHREUDER

Weight Control—A New Air Force Program

D. H. Beyer, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Aerospace and the Myth of Hypoglycemia

J. R. Pfommer, USAF Hospital Wiesbaden, Wiesbaden, Germany

Neurocirculatory Collapse Associated with Reduced Barometric Pressure

M. E. Herring, S. J. Rudolph and D. A. Pavala, 832nd Tactical Hospital, Cannon Air Force Base, New Mexico

SCIENTIFIC PROGRAM

Four Year Summary of an Executive Physical Program

S. P. Chunn, United States Air Force, Headquarters AMC, Wright-Patterson Air Force Base, Ohio

Experience with Air Transportation of Patients with Cranio-Cerebral Injuries

D. E. Langdon, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

The Use of Over-Compression in the Treatment of Decompression Sickness

V. M. Downey, Office of the Surgeon, Hq. TAC, Langley Air Force Base, Virginia

Aerospace Medicine—Electroencephalography, I—

April 27; 8:30 A.M.

Chairman: J. W. TICE

Co-Chairman: T. G. HANKS

An Automatic Processing of EEG Activity

J. L. Riehl, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Black-Out and Unconsciousness Revealed by Airborne Testing of Fighter Pilots

C. W. Sem-Jacobsen, EEG Laboratory, Gaustad Sykehus, Oslo, Norway

Neurophysiological Mechanisms of Oneiric Activity

M. Jouvet and D. Mounier, Department of Physiology, School of Medicine, Lyons, France

Factors of Habituation Revealed by Fluctuations of Averaged Evoked Potentials

A. Remond, Laboratory of Applied Neurophysiology, Hospital de la Salpêtrière, Paris, France

Aerospace Equipment and Equipment Tests, I—

April 27, 8:30 A.M.

Chairman: L. C. NEWMAN

Co-Chairman: G. B. GREEN

Chemical Control of Waste Food Putrefaction Within a Space Capsule

N. G. Roth and R. B. Wheaton, Whirlpool Corporation, Saint Joseph, Michigan

Metabolic Waste Management in Aerospace Vehicles

J. D. Zeff and R. A. Bambenek, American Machine and Foundry Company, Niles, Illinois

Space Age Utilization of Recycled Metabolic Wastes

R. A. Bosee, P. R. Tiller, L. J. SantaMaria and N. M. Burns, Air Crew Equipment Laboratory, U. S. Naval Air Material Center, Philadelphia, Pennsylvania

Recovery of Potable Water in Manned Aerospace Vehicles

J. D. Zeff and R. A. Bambenek, American Machine and Foundry Company, Niles, Illinois

Development of a Water Recycling Device with Special Reference to Space Application

J. J. Konikoff and L. W. Reynolds, General Electric Company, Philadelphia, Pennsylvania

Aerospace Medicine—General Problems—April 27, 10:40 A.M.

Chairman: J. H. TILLISCH

Co-Chairman: K. M. SLOTBOOM

The Effects of Dietary Protein Level and Starvation on the Mucosal Surface of the Small Intestine

R. W. Price, General Electric Company, Philadelphia, Pennsylvania

Toxic Hazards Resulting From Long Term Exposures to Combinations of Potential Space Cabin Contaminants

W. H. Lassen, Aerojet-General Corporation, Azusa, California

SCIENTIFIC PROGRAM

Viability Data Acquisition System for Testing Biosatellite Capsules

E. S. Gordon and S. Hori, Armour Research Foundation, Chicago, Illinois

An Assessment of a Real Isolation Experience and Its Implications For Manned Space Flights

G. W. Bernard, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Aeromedical Support of the X-15 Program

B. Rowen, Air Force Flight Test Center, Edwards Air Force Base, California

Radiation Effects on a Manned Space Vehicle Control Loop

O. H. Minney, Cucamonga, California

Aerospace Medicine—Electroencephalography, II—

April 27, 10:40 A.M.

Chairman: G. BENNETT

Co-Chairman: C. A. BERRY

Changes in the Human Electroencephalograph, (EEG), during Exposure to a Simulated Altitude of 27,000 Feet

J. J. Gordon, R. E. Jensen, R. D. Squires and W. Sipple, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

The Electroencephalograph During Positive Acceleration

J. P. Meehan and T. J. McNey, School of Medicine, University of Southern California, Los Angeles, California

EEG in Relation to Pilot Incidents and Accidents

H. W. Ades, D. C. McNutt and S. N. Morrill, U. S. Naval School of Aviation Medicine, Pensacola, Florida

School of Aviation Medicine Physiological Studies in High Performance Aircraft

J. A. Roman, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas

Changes in the Human Electroencephalograph (EEG) During Positive Acceleration

R. E. Jensen, J. J. Gordon, R. D. Squires and W. Sipple, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Aerospace Equipment and Equipment Tests, II—

April 27, 10:40 A.M.

Chairman: H. A. SMEDAL

Co-Chairman: C. I. BARRON

Bioengineering of Advanced Life-Support Systems

R. A. Bambenek and J. D. Zeff, American Machine and Foundry Company, Niles, Illinois

The Passive Closed Respiratory System for Life Support in Aerospace Flight

D. A. Keating and K. Weiswurm, Aerospace Medical Division, Wright-Patterson Air Force Base, Ohio

Evaluation of Two Communication Models in the Selection of Verbal Units of From One to Five Bit Ensemble

D. C. Raskin, J. J. Dreher and W. E. Evans, Lockheed Aircraft Corporation, Burbank, California

Medical and Environmental Problems of Aerial Applicators

C. E. Billings, Jr., Department of Preventive Medicine, Ohio State University, Columbus, Ohio

Thermal Protection Capacity of Aviator's Textiles

A. M. Stoll, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pennsylvania

Automatic Precision Scale for Measuring Subject Weight in an Environmental Test Chamber

J. Ferro and B. Johnson, American Machine and Foundry Company, Niles, Illinois

Improved System for Liquid-Gaseous Phase Partition in Space Vehicle Environmental Control

J. H. Berrian, Bio-Environmental Division, U. S. Naval Missile Center, Point Mugu, California