

AEROSPACE MEDICAL ASSOCIATION

36th Annual Meeting, April 26-29, 1965

NEW YORK HILTON HOTEL, NEW YORK, N. Y.

On Monday, April 26th, President Theodore C. Bedwell, Jr., will convene the largest Annual Scientific Meeting in the thirty-six year history of the Aerospace Medical Association. More than 2500 of the world's foremost specialists in aerospace and aviation medicine and the allied sciences will attend the many sessions scheduled on the following four-day program.

More than 200 carefully selected scientific papers will be presented by internationally known aerospace physicians, life scientists and specialists, having an intense interest in improving the safety and health of the world's rapidly growing flying population—civil, military and aeronautics.

These outstanding papers will assure a diversity of subjects

sufficiently broad in scope and interest that all who attend will find a session in each period of significant interest.

Unusual highlights of the scientific sessions will be four closed-circuit color TV programs on "The Doctor's Role in Air Traffic Control"; "Progress Report on Project Gemini"; "Pilot Physical Examinations"; and "Cardiovascular Problems in Aerospace Medicine."

Four special sessions have been arranged, with outstanding speakers, on subjects of rapidly increasing importance: "Medical Aspects of Supersonic Transport Operations" and "Circadian Rhythms in Aerospace Operations", and two sessions co-sponsored with the Flying Physicians on "Civil Aviation Medicine."

Opening Ceremony

APRIL 26, 1965

Monday 8:45 a.m. East Ballroom

8:45 a.m. INVOCATION

The Reverend Frederick M. Morris, D.D.
Rector, St. Thomas Church, New York City

WELCOMING ADDRESS

Theodore C. Bedwell, Jr.
Major General, U.S. Air Force, MC
President, Aerospace Medical Association

9:00 a.m.

THE LOUIS H. BAUER LECTURE

"The Impact of Research and Development on
Science and Engineering"



DR. H. GUYFORD STEVER

Professor of Aeronautics and Astronautics
Massachusetts Institute of Technology
President of the Carnegie Institute of Technology
(Effective February 1965)

Scientific Sessions

APRIL 26, 1965

Monday 10:30 a.m. Sutton Ballroom

ENVIRONMENTAL PHYSIOLOGY I —RESPIRATION

Chairman: Henry C. Hunley, Jr., Captain, MC, USN, Pensacola,
Florida

Co-Chairman: James P. Henry, Colonel, USAF, MC, Brooks
AFB, Texas

10:30 a.m. HYPERVENTILATION APNEA

Kenneth M. Moser, P. Gregg Rhodes, and L.
Kwaan

Georgetown Clinical Research Institute, FAA,
and Georgetown University Hospital, Wash-
ington, D. C.

10:45 a.m. RESPIRATORY WATER LOSS

E. C. Wortz
The Garrett Corporation, Los Angeles, Calif.

11:00 a.m. POLAROGRAPHIC MEASUREMENT OF
BLOOD OXYGEN TENSION: SOURCES
OF ERROR

P. Gregg Rhodes and Kenneth M. Moser
Georgetown Clinical Research Institute, FAA,
Washington, D. C.

11:15 a.m. SOME RESPIRATORY CHANGES ASSO-
CIATED WITH MILITARY FLIGHT EQUIP-
MENT

Frank J. Formeller and K. N. Tinklepaugh
Life Sciences Dept., U. S. Naval Missile
Center, Point Mugu, California

11:30 a.m. THE EFFECT OF HYPOXIC HYPOXIA ON
NYSTAGMUS INDUCED BY ANGULAR
ACCELERATION

P. D. Newberry, W. H. Johnson, and J. R.
Smiley
RCAF Institute of Aviation Medicine, To-
ronto, Canada

11:45 a.m. EFFECT OF EXERCISE ON OXYGEN
CONSUMPTION AT DECREASED PRES-
SURE

D. G. Quigley, W. G. Robertson, and G. L.
McRae
USAF School of Aerospace Medicine, Brooks
AFB, Texas

APRIL 26, 1965

Monday 10:30 a.m. Murray Hill Suite

CLINICAL AVIATION MEDICINE I

Chairman: J. Harold Brown, M.D., Seattle, Washington
Co-Chairman: Robert A. Patterson, Colonel, USAF, MC, Washington, D. C.

- 10:30 a.m. **AIRSICKNESS IN STUDENT AVIATORS**
G. J. Tucker, D. J. Hand, A. L. Godby and R. F. Reinhardt
Naval School of Aviation Medicine and Naval Auxiliary Air Station, Saufly Field, Pensacola, Florida
- 10:45 a.m. **THE "BREAK-OFF" PHENOMENON: A PRECIPITANT OF ACUTE ANXIETY IN JET FLYING**
John A. Sours
Department of Psychiatry, Columbia-Presbyterian Medical Center, New York, New York
- 11:00 a.m. **THE FAIL-SAFE APPROACH TO HUMAN FACTOR PROBLEMS**
Raymond M. Tamura
Honolulu, Hawaii
- 11:15 a.m. **FEAR OF FLYING AND THE COUNTER-PHOBIC PERSONALITY**
Alan L. Morgenstern
USAF School of Aerospace Medicine, Brooks AFB, Texas
- 11:30 a.m. **AN INVESTIGATION ON THE SUBJECTIVE EFFECTS OF TIME CHANGES ON FLYING STAFF IN CIVIL AVIATION**
J. Laverne, E. LaFontaine, and R. LaPlane
Service Medical d'Air France, Paris, France
- 11:45 a.m. **A TREADMILL EXERCISE TEST IN THE AEROMEDICAL EVALUATION ON FLYING PERSONNEL**
Robert L. Johnson
USAF School of Aerospace Medicine, Brooks AFB, Texas

APRIL 26, 1965

Monday 10:30 a.m. Regent Room

IMPACT

Chairman: Edward J. Baldes, Ph.D., Washington, D. C.
Co-Chairman: John P. Stapp, Colonel, USAF, MC, Washington, D. C.

- 10:30 a.m. **FEASIBILITY STUDY: LATERAL IMPACT WITH MINIMAL RESTRAINT**
Jerry D. Rothstein and William K. Brown
Aeromedical Research Laboratory, Holloman AFB, New Mexico
- 10:45 a.m. **INVESTIGATIONS IN HUMAN TOLERANCE TO LATERAL IMPACT**
Albert V. Zaborowski, Jerry D. Rothstein and William K. Brown
Aeromedical Research Laboratory, Holloman AFB, New Mexico
- 11:00 a.m. **HUMAN RESPONSE TO PREDICTED APOLLO LAND IMPACTS IN SELECTED BODY ORIENTATIONS**
William K. Brown, Jerry D. Rothstein, and P. Foster
Aeromedical Research Laboratory, Holloman AFB, New Mexico

11:15 a.m. **HUMAN TOLERANCE LIMITS IN WATER IMPACT**

Richard G. Snyder
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma

11:30 a.m. **IMPACT PROTECTION BY THE AIRSTOP RESTRAINT SYSTEM**

Carl Blechschmidt, Carl Clark and Fay Gordon
Life Sciences Research, Martin Company, Baltimore, Maryland

11:45 a.m. **EXPERIENCE AS A FACTOR IN EXPERIMENTAL IMPACT**

Peter Foster
Aeromedical Research Laboratory, Holloman AFB, New Mexico

APRIL 26, 1965

Monday 2:00 p.m. Sutton Ballroom

THE DOCTOR'S ROLE IN THE FEDERAL AVIATION AGENCY AIR TRAFFIC CONTROL SYSTEM

CLOSED CIRCUIT COLOR TELEVISION

MODERATOR M. S. White, M.D., Federal Air Surgeon, Office of Aviation Medicine, FAA, Washington, D. C.

PANEL Peter V. Siegel, M.D., Chief, Aeromedical Certification Division, Office of Aviation Medicine, FAA, Oklahoma City, Oklahoma
Frank K. Raymond, M.D., Chief, Aeromedical Standards Division, Office of Aviation Medicine, FAA, Washington, D. C.
Arthur E. Wentz, M.D., Director, Georgetown Clinical Research Institute, FAA, Washington, D. C.
Lawrence Marinelli, M.D., FAA Regional Flight Surgeon, Eastern Region, New York, New York

The television program will depict the medical aspects associated with the movement of air traffic in the United States. Air Traffic Controllers and their associated workload will be shown in real time by closed circuit television. The support of the Office of Aviation Medicine will be indicated through practical demonstrations in a typical setting. The panel will discuss with the audience some of the day-to-day problems associated with the Office of Aviation Medicine program in the Federal Aviation Agency. *All TV programs are sponsored by Smith Kline & French Laboratories with cooperation of the Federal Aviation Agency.

APRIL 26, 1965

Monday 2:00 p.m. Murray Hill Suite

LIFE SUPPORT I

Chairman: James N. Waggoner, M.D., Los Angeles, California
Co-Chairman: Charles F. Gell, M.D., Dallas, Texas

- 2:00 p.m. **THE STUDY OF THE EXPLOSIVE EFFECTS OF SIMULATED MICROMETEOROID PENETRATIONS INTO A SEALED GAS-CONTAINING ANIMAL CAPSULE**
C. F. Gell and Ray McKinney
Ling-Temco-Vought, Astronautics Division, Dallas, Texas

2:15 p.m. **MONITORING THE BIOEFFLUENTS OF MAN TO ESTABLISH SPACE VEHICLE ENVIRONMENTAL CONTROL REQUIREMENTS**

R. A. Dora, E. Vigh, and T. B. Weber
Space Engineering Dept., Beckman Instruments, Inc., Fullerton, California

2:30 p.m. **A BIOENGINEERING APPROACH FOR DEFINING THE FUNCTIONAL REQUIREMENTS FOR TRACE CONTAMINANT CONTROL IN SPACE STATIONS**

T. B. Weber and Charles Spezia
Space Engineering Dept., Beckman Instruments, Inc., Fullerton, California

2:45 p.m. **ANALYTICAL GAS DESORPTION APPARATUS**

W. H. Toliver, Sr., R. E. Bennett, and C. G. Roach
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

3:00 p.m. **DISPERSION OF RESPIRED GAS IN MANNED SPACE ENCLOSURES**

D. A. Keating, K. Weiswurm, G. W. Filson, C. M. Meyer, and I. H. Lantz
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

APRIL 26, 1965

Monday 2:00 p.m. **Regent Room**

ENVIRONMENTAL PHYSIOLOGY II

Chairman: Air Marshall Sir Richard Nelson, Ministry of Defence, London, England

Co-Chairman: Vincent M. Downey, M.D., Menlo Park, California

2:00 p.m. **LUNG CHANGE RESULTING FROM PROLONGED EXPOSURE TO 100% OXYGEN AT PRESSURES BELOW ATMOSPHERIC**

George H. Kydd
Aviation Medical Acceleration Laboratory, Johnsville, Pennsylvania

2:15 p.m. **THE INFLUENCE OF ALVEOLAR NITROGEN CONCENTRATION AND ENVIRONMENTAL PRESSURE UPON THE RATE OF GAS ABSORPTION FROM NON-VENTILATED LUNG**

J. Ernsting
RAF Institute of Aviation Medicine, Farnborough, England

2:30 p.m. **EFFECTS OF GAS EMBOLISM UPON THE PULMONARY CIRCULATION**

P. Howard, D. H. Glaister, and W. K. Stewart
RAF Institute of Aviation Medicine, Farnborough, England

2:45 p.m. **RESPIRATORY RESPONSES TO GASEOUS EMBOLISM**

D. I. Fryer
RAF Institute of Aviation Medicine, Farnborough, England

3:00 p.m. **BENDS IN OXYGEN-NITROGEN MIXTURES DURING EXERCISE AT DECREASED PRESSURES**

T. H. Allen, K. G. Ikells, and E. A. Degner
USAF School of Aerospace Medicine, Brooks AFB, Texas

APRIL 26, 1965

Monday 3:45 p.m. **Murray Hill Suite**

LIFE SUPPORT II

Chairman: Stanley C. White, Lt. Colonel, USAF, MC, San Antonio, Texas

Co-Chairman: Alfred M. Mayo, Dallas, Texas

3:45 p.m. **THE DYNAMIC PERFORMANCE OF AIRCREW BREATHING EQUIPMENT**

G. R. Allen and G. F. Rowlands
Human Engineering Division, Farnborough, England

4:00 p.m. **DEVELOPMENT OF AUTOMATIC CONTROLS FOR A TWO GAS ATMOSPHERIC SUPPLY SYSTEM**

J. K. Jackson
Missile and Space Systems Division, Douglas Aircraft Company, Inc., Santa Monica, Calif.

4:15 p.m. **APPLICATION OF WATER ELECTROLYSIS TO THE RECOVERY OF OXYGEN IN LONG DURATION SPACE MISSIONS**

C. S. Coe
AiResearch Manufacturing Company, Garrett Corporation, Los Angeles, California

4:30 p.m. **MICROCONTACTOR UTILIZING HIGH-DENSITY METALLIC SUPEROXIDES**

T. V. Bolles, H. Wallman, and D. Rosen
General Dynamics/Electric Boat, Groton, Connecticut

4:45 p.m. **SUPEROXIDE ATMOSPHERE CONTROL SYSTEM FOR MANNED SPACE ASSEMBLIES**

J. W. Mausteller, M. J. McGoff, D. A. Keating, and K. Weiswurm
MSA Research Corporation, Callery, Pennsylvania, and Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

APRIL 26, 1965

Monday 3:45 p.m. **Regent Room**

SAFETY AND SURVIVAL I

Chairman: Fratis L. Duff, Brig. General, USAF, MC, Langley AFB, Virginia

Co-Chairman: Joseph M. Blumberg, Brig. General, MC, USA, Washington, D. C.

3:45 p.m. **AIR TRAINING COMMAND EJECTION EXPERIENCE, 1 JANUARY 1962 to 31 DECEMBER 1964**

Robert A. Farmer, Alonzo M. Donnell, and John P. McCann
Air Training Command, Randolph AFB, Texas

4:00 p.m. **COMPRESSION FRACTURES OF THE SPINE DURING USAF EJECTIONS**

Richard M. Chubb, William R. Detrick, and Robert H. Shannon
Life Sciences Division, OTIG, Norton AFB, California

4:15 p.m. **VERTEBRAL FRACTURE IN JET AIRCRAFT ACCIDENTS; A STATISTICAL ANALYSIS FOR THE PERIOD 1959 THROUGH 1963 IN THE U.S. NAVY**

Channing L. Ewing
U. S. Naval School of Aviation Medicine, Pensacola, Florida

4:30 p.m. THE EFFECT OF AGE ON VERTEBRAL
BREAKING STRENGTH AND STIFFNESS
Ernest L. Stech
Frost Engineering Development Corporation,
Englewood, Colorado

4:45 p.m. HELICOPTER ROTOR BLADE INJURIES
Frank W. Kiel
Armed Forces Institute of Pathology, Wash-
ington, D. C.

APRIL 27, 1965

Tuesday 8:30 a.m. Sutton Ballroom

ENVIRONMENTAL PHYSIOLOGY III —TEMPERATURE

Chairman: Robert E. Robards, Colonel, USAF, MC, Wash-
ington, D. C.

Co-Chairman: A. Pharo Gagge, Ph.D., New Haven, Connecti-
cut

8:30 a.m. A REVIEW OF CURRENT CONCEPTS
AND PRACTICES APPLICABLE TO THE
CONTROL OF HEAT LOSS DURING WA-
TER IMMERSION
E. L. Beckman, E. Reeves, and Ralph Goldman
Naval Medical Research Institute, Bethesda,
Maryland

8:45 a.m. PLASMA FREE FATTY ACID CHANGES
IN MAN DURING ACUTE COLD EX-
POSURE AND NICOTINIC ACID INGES-
TION
Peter G. Hanson, Robert E. Johnson, and
George Engel
Human Environmental Laboratory, Univer-
sity of Illinois, Urbana, Illinois

9:00 a.m. A NOVEL APPROACH TO THE MEAS-
UREMENT OF MAN'S HEAT EXCHANGE
WITH A COMPLEX RADIANT ENVIRON-
MENT
A. P. Gagge, J. A. J. Stolwijk, and J. D. Hardy
John B. Pierce Foundation Laboratory, Yale
University School of Medicine, New Haven,
Connecticut

9:15 a.m. EFFECTS OF BRIEF THERMAL TRANSI-
ENT TO 205°C (400°F) ON THE CLOT-
TING MECHANISM IN HUMAN SUB-
JECTS
R. H. Murray
Indiana University Cardiopulmonary Labora-
tory, Aerospace Medical Research Labora-
tories, Wright-Patterson AFB, Ohio

9:30 a.m. PREDICTION OF NEAREST SAFE DIS-
TANCES FOR THERMAL RADIATION OF
NUCLEAR WEAPONS
W. C. Kaufman and James C. Pittman, Jr.
Aerospace Medical Research Laboratories,
Wright-Patterson AFB, Ohio

9:45 a.m. HEAT EXCHANGE DURING EXERCISE
IN A HELIUM-OXYGEN ATMOSPHERE
W. L. Epperson, D. G. Quigley, W. G. Robert-
son, V. S. Behar, and B. E. Welch
USAF School of Aerospace Medicine, Brooks
AFB, Texas

APRIL 27, 1965

Tuesday 8:30 a.m.

Murray Hill Suite

LIFE SUPPORT III— PROTECTIVE GARMENTS

Chairman: Roland A. Bosee, Captain, MSC, USN, Washington,
D. C.

Co-Chairman: Rufus R. Hessberg, Colonel, USAF, MC, Hous-
ton, Texas

8:30 a.m. SOVIET HIGH ALTITUDE PRESSURE SUIT
DEVELOPMENT, 1934-1955
Charles L. Wilson
Air Force Systems Command, Andrews AFB,
Washington, D. C.

8:45 a.m. EFFICACY OF AIR COOLING SYSTEMS
IN PRESSURE SUITS IN HOT ENVIRON-
MENTS
James H. Vegte
Aerospace Medical Research Laboratories,
Wright-Patterson AFB, Ohio

9:00 a.m. SOME PERFORMANCE ASPECTS OF
WATER CONDITIONED SUITS
D. R. Burton and L. Collier
Royal Aircraft Establishment, Farnborough,
England

9:15 a.m. AN EVALUATION OF THE FOAMED
NEOPRENE "DIVERS' WETSUIT" AS A
SURVIVAL GARMENT FOR HELICOPTER
AIRCREW
E. Reeves, M. P. Stephens, and E. L. Beckman
Naval Medical Research Institute, Bethesda,
Maryland

9:30 a.m. MODIFIED AND VENTILATED DIVERS'
WET SUIT AS A POTENTIAL SUBSTITUTE
FOR THE U.S. NAVY ANTI-EXPOSURE
ASSEMBLIES AS USED IN THE S-2 AIR-
CRAFT
Walter L. Goldenrath, Nathan Barrett, and
Ronald L. Hansen
Medical Department, Naval Air Station, San
Diego, California

9:45 a.m. DESIGN REQUIREMENTS FOR LIFE SUP-
PORT HELMETS
Roland A. Bosee
Bureau of Naval Weapons and Bureau of
Medicine and Surgery, Department of the
Navy, Washington, D. C.

APRIL 27, 1965

Tuesday 8:30 a.m.

Regent Room

ACCELERATION I

Chairman: James D. Hardy, Ph.D., New Haven, Connecticut

Co-Chairman: Andres I. Karstens, Colonel, USAF, MC, Los
Angeles, California

8:30 a.m. EFFECTS OF REPEATED, LOW-INTEN-
SITY, LONG DURATION, POSITIVE AC-
CELERATIONS (+G_z) IN DOGS
R. H. Murray, James Prine, and Richard P.
Menninger
Indiana University Cardiopulmonary Labora-
tory and Toxicology Branch, Aerospace Med-
ical Research Laboratories, Wright-Patterson
AFB, Ohio

8:45 a.m. **CARDIOVASCULAR RESPONSE TO ACCELERATION (+ G_x) IN UNANESTHETIZED NORMAL AND IN CARDIAC DENERVATED DOGS**
H. L. Stone and Eugene Dong, Jr.
USAF School of Aerospace Medicine, Brooks AFB, Texas

9:00 a.m. **PLEURAL PRESSURES IN DOGS DURING TRANSVERSE ACCELERATION**
W. Rutishauser, N. Banchemo, A. G. Tsakiris, R. E. Sturm and E. H. Wood
Mayo Clinic and Mayo Graduate School of Medicine, Rochester, Minnesota

9:15 a.m. **THE EFFECT OF FORWARD, BACKWARD, RIGHT LATERAL AND LEFT LATERAL ACCELERATION ON BLOOD OXYGEN SATURATION IN DOGS**
N. Banchemo, W. Rutishauser, A. G. Tsakiris, R. E. Sturm, and E. H. Wood
Mayo Clinic and Mayo Graduate School of Medicine, Rochester, Minnesota

9:30 a.m. **CINERADIOGRAPHIC OBSERVATIONS OF HUMAN SUBJECTS DURING TRANSVERSE ACCELERATIONS OF +5 AND +10 G_x**
Harold Sandler
Naval Aeromedical Acceleration Laboratory, Johnsville, Pennsylvania

9:45 a.m. **THE DISTRIBUTION OF PULMONARY BLOOD FLOW DURING POSITIVE ACCELERATION**
A. C. Bryan and W. D. Macnamara
RCAF Institute of Aviation Medicine, Toronto, Canada

APRIL 27, 1965

Tuesday 8:30 a.m. **Beekman Room**

BEHAVIORAL SCIENCES I

Chairman: Richard H. Kastner, M.D., Ph.D., Bladensburg, Maryland

Co-Chairman: Richard Trumbull, Ph.D., Washington, D. C.

8:30 a.m. **THE VALIDITY OF A BRIEF VESTIBULAR DISORIENTATION TEST IN SCREENING PILOT TRAINEES**
Rosalie K. Ambler and Fred E. Guedry, Jr.
Naval School of Aviation Medicine, Pensacola, Florida

8:45 a.m. **PSYCHOLOGICAL AND PSYCHIATRIC PROBLEMS IN COMMERCIAL AVIATION**
C. L. Blanc, E. LaFontaine, and R. LaPlane
Service Medical d'Air France, Paris, France

9:00 a.m. **THE LIMITATIONS AND RELIABILITY OF THE HUMAN OPERATOR OF CONTROL SYSTEMS TO PROCESS INFORMATION**
J. Szafran
The Lovelace Foundation, Albuquerque, New Mexico

9:15 a.m. **TRAINING THE VESTIBULE FOR AEROSPACE OPERATIONS: I., USING CORIOLIS ACCELERATION TO ASSESS ROTATION**
Kent K. Gillingham
USAF School of Aerospace Medicine, Brooks AFB, Texas

9:30 a.m. **UPPER THERMAL TOLERANCE LIMITS FOR UNIMPAIRED MENTAL PERFORMANCE**
John F. Wing
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

9:45 a.m. **EFFECTS OF ADRENALIN OR INSULIN ON THE PERFORMANCE OF RESTING AND WORKING SUBJECTS**
Clayton R. Coler, William A. McLaurin, and Donald R. Young
NASA Ames Research Center, Moffett Field, California

APRIL 27, 1965

Tuesday 10:30 a.m. **Beekman Room**

ENVIRONMENTAL PHYSIOLOGY IV —HYPOGRAVIC SIMULATION

Chairman: Frederick J. Frese, Colonel, USAF, MC, Washington, D. C.

Co-Chairman: Richard W. Lawton, M.D., Hatboro, Pennsylvania

10:30 a.m. **FREE FATTY ACID RESPONSE TO TILTING FOLLOWING IMMERSION**
Michael McCally and Jack Goldman
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

10:45 a.m. **RENAL HEMODYNAMICS: THE EFFECT OF GRAVITY ON SODIUM AND WATER EXCRETION**
William M. Stahl
University of Vermont College of Medicine, Burlington, Vermont

11:00 a.m. **HEMODYNAMIC EFFECTS OF WATER IMMERSION**
J. A. Bowers, W. B. Hood, Jr., R. H. Murray, C. W. Urschel, and J. K. Goldman
Aerospace Medical Research Laboratories and Indiana University Cardiopulmonary Laboratory, AMRL, Wright-Patterson AFB, Ohio

11:15 a.m. **THE INFLUENCE OF ACTIVITY AND INACTIVITY ON ORTHOSTATIC TOLERANCE AND PLASMA VOLUME DURING WATER IMMERSION FOR SIX HOURS WITH BALANCED PRESSURE BREATHING**
D. E. Torphy
USAF School of Aerospace Medicine, Brooks AFB, Texas

11:30 a.m. **A FACTORIAL STUDY OF IMMERSION DIURESIS AND ITS INHIBITION BY POSITIVE PRESSURE**
Noel C. Hunt, III
USAF School of Aerospace Medicine, Brooks AFB, Texas

11:45 a.m. **POSSIBLE PHYSIOLOGICAL EFFECTS OF LONG-TERM WEIGHTLESSNESS ON MAN**
Vincent M. Downey and Clarence C. Cain
Lockheed Missiles and Space Company, Sunnyvale, California

APRIL 27, 1965

Tuesday 10:30 a.m. Murray Hill Suite

INSTRUMENTATION AND TECHNIQUES I

Chairman: Charles A. Berry, M.D., Houston, Texas

Co-Chairman: J. C. Wickett, Group Captain, RCAF, Ottawa, Canada

10:30 a.m. **TECHNIQUES OF HUMAN RESEARCH FOR THE SPACE ENVIRONMENT**

D. Amorelli, J. T. Celentano, and B. G. Peters
Space and Information Systems Div., North American Aviation, Inc., Downey, California

10:45 a.m. **A METHOD OF RECORDING BODY TEMPERATURE FOR PROLONGED TIME**

Michael A. B. Vianello and Donald I. Tepas
MPG Research Laboratory, Honeywell, Inc., St. Paul, Minnesota

11:00 a.m. **A VIRTUALLY CONTINUOUS MEASUREMENT OF HUMAN SYSTOLIC AND DIASTOLIC BLOOD PRESSURE TRANSIENTS WITHOUT DIRECT ARTERIAL PUNCTURE**

Michael T. Lategola, Charles Barnard, and Hiley Harrison
Civil Aeromedical Research Institute, Oklahoma City, Oklahoma

11:15 a.m. **OBJECTIVE DETERMINATIONS OF BONE CALCIUM LEVELS**

J. M. Dick
Missile and Space Systems Div., Douglas Aircraft Company, Inc., Santa Monica, California

11:30 a.m. **A METHOD FOR DETERMINATION OF CALCIUM IN SERUM, PAROTID FLUID, AND URINE IN THE WEIGHTLESS STATE**

Bruce A. Butcher, Joseph F. Eastis, and Dale A. Clark
USAF School of Aerospace Medicine, Brooks AFB, Texas

11:45 a.m. **A SIMPLE METHOD FOR DETERMINING BODY SPECIFIC GRAVITY**

M. Passaglia, E. Reeves, and E. L. Beckman
Naval Medical Research Institute, Bethesda, Maryland

APRIL 27, 1965

Tuesday 10:30 a.m. Regent Room

VIBRATION I

Chairman: Joseph P. Pollard, Captain, MC, USN, Washington, D. C.

Co-Chairman: Joseph M. Quashnock, Colonel, USAF, MC, Wright-Patterson AFB, Ohio

10:30 a.m. **PRELIMINARY EVALUATION OF PEAK VS RMS ACCELERATION IN LOW FREQUENCY VIBRATION EXPOSURES**

N. P. Clarke, P. J. Martin, J. W. Brinkley, J. H. Henzel, H. C. Wooding, and H. E. von Gierke
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

10:45 a.m. **PHYSIOLOGICAL EFFECTS OF VIBRATION IN ANIMALS AND MAN**

J. G. Clark, W. B. Hood, Jr., R. H. Murray, C. W. Urschel, and J. A. Bowers
Aerospace Medical Research Laboratories and Indiana University Cardiopulmonary Laboratory, AMRL, Wright-Patterson AFB, Ohio

11:00 a.m. **THE EFFECT OF ANTERIOR INTERCOSTAL NERVE BLOCK ON THORACIC PAIN ASSOCIATED WITH G_z VIBRATIONS**

John H. Henzel, Neville P. Clarke, and George C. Mohr
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

11:15 a.m. **EFFECTS OF LOW FREQUENCY AND INFRASONIC NOISE ON MAN**

G. C. Mohr, J. N. Cole, E. Guild, and H. E. von Gierke
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

11:30 a.m. **PERFORMANCE AND PHYSIOLOGICAL EFFECTS OF SIX-HOUR EXPOSURE TO HELICOPTER NOISE AND VIBRATION**

Robert D. Dean, Carl L. McGlothen, and James L. Monroe
Aero-Space Division, The Boeing Co., Seattle, Washington

11:45 a.m. **HUMAN TOLERANCE OF RANDOM AND SINUSOIDAL ACCELERATIVE STRESS**

Fred Pradko
U. S. Army Tank-Automotive Center, Warren, Michigan

APRIL 27, 1965

Tuesday 10:30 a.m. Sutton Ballroom

MEDICAL ASPECTS OF SUPERSONIC TRANSPORT OPERATIONS

Chairman: Charles I. Barron, M.D., Burbank, California

Co-Chairman: Kenneth G. Bergin, M.D., Cranford, England

(Topics and speakers to be announced in February issue)

APRIL 27, 1965

Tuesday 2:00 p.m. Murray Hill Suite

ENVIRONMENTAL PHYSIOLOGY V —RADIATION

Chairman: Hermann J. Schaefer, Ph.D., Pensacola, Florida

Co-Chairman: Karl H. Houghton, M.D., Santa Monica, California

2:00 p.m. **PERMISSIBLE CONTAMINATION LEVELS IN MANNED SPACECRAFT**

E. N. Carlsen and T. B. Weber
Beckman Instruments, Inc., Fullerton, California

2:15 p.m. **COMPARATIVE STUDIES ON 1285 AND 2800 MEGACYCLES/SEC., PULSED MICROWAVES**

Sol. M. Michaelson, R. A. E. Thomson, and Joe W. Howland
University of Rochester School of Medicine and Dentistry, Rochester, N. Y., and Griffiss AFB, Rome, N. Y.

2:30 p.m. **RADAR HAZARDS EVALUATION—CONCEPTS AND CRITERIA**

Joe W. Howland and Sol. M. Michaelson
University of Rochester School of Medicine
and Dentistry, Rochester, N. Y., and Griffiss
AFB, Rome, N. Y.

2:45 p.m. **USAF WHOLE BODY GAMMA SPECTROMETRY**

Alvin M. Burner, Robert G. Thomas, and Richard E. Benson
Radiological Health Laboratory, Wright-Patterson AFB, Ohio

3:00 p.m. **SOME OBSERVATIONS ON DOGS FOLLOWING LOWER BODY EXPOSURE TO 1 MEV X-RAYS**

Laurence T. Odlund and Sol. M. Michaelson
Air Force Logistics Command, Wright-Patterson AFB, Ohio, and University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

APRIL 27, 1965

Tuesday 2:00 p.m. Regent Room

OPERATIONAL AVIATION MEDICINE

Chairman: Raymond A. Yerg, Colonel, USAF, MC, Patrick AFB, Florida

Co-Chairman: Joseph W. Weaver, Captain, MC, USN, Washington, D. C.

2:00 p.m. **SELF-REPORTED STRESS-RELATED SYMPTOMS AMONG AIR TRAFFIC CONTROL SPECIALISTS (ATCS) AND NON-ATCS PERSONNEL**

John D. Dougherty, David K. Trites, and J. Robert Dille
Office of Aviation Medicine, FAA, Oklahoma City, Oklahoma

2:15 p.m. **REVERSAL OF DECABORANE—MEDIATED NOREPINEPHRINE DEPLETION BY METHYLENE BLUE**

James H. Merritt and John A. Merritt
USAF School of Aerospace Medicine, Brooks AFB, Texas

2:30 p.m. **AEROMEDICAL FACTORS OF TITAN II ICBM SUPPORT—A SUMMARY OF TWO YEARS OF OPERATIONAL EXPERIENCE**

Charles H. Sawyer, Emory J. Sobiesk, and Burton Jay
803rd Medical Group, Davis-Monthan AFB, Arizona, Johns Hopkins School of Hygiene, Baltimore, Maryland, and Danville, Pennsylvania

2:45 p.m. **BETWEEN TWO GENERATIONS**

Harold A. Myers
Eighth Air Force, Westover AFB, Massachusetts

3:00 p.m. **ASPECTS OF ORAL HYGIENE AND EMERGENCY DENTAL CARE FOR LONG TERM SPACE FLIGHT—STOMATOLOGIC EVALUATION—USAF-NASA NUTRITION STUDY**

Jack L. Hartley
USAF School of Aerospace Medicine, Brooks AFB, Texas

**FLIGHT NURSE SECTION
AEROSPACE MEDICAL ASSOCIATION**

APRIL 27, 1965

**Tuesday 2:00 p.m. Nassau Suite
CLINICAL ASPECTS OF AEROSPACE MEDICINE**

PANEL CHAIRMAN

Alice L. Montgomery, Colonel, USAF, NC
Wilford Hall USAF Hospital, Lackland AFB, Texas

MODERATOR Janice A. Albert, Lt. Colonel, USAF, NC
Field Extension, Office of Surgeon General, Randolph AFB, Texas

PANEL AND AREAS OF PRESENTATION

INTRODUCTION

Janice A. Albert, Lt. Colonel, USAF, NC

THE PHYSICIAN'S ROLE IN AEROSPACE MEDICINE

James W. Humphreys, Jr., Brig. General, USAF, MC
Wilford Hall USAF Hospital, Lackland AFB, Texas

NURSING PROBLEMS IN AEROSPACE MEDICINE

Ellen M. Respini, Lt. Colonel, USAF, NC
USAF School of Aerospace Medicine, Brooks AFB, Texas

NUTRITION IN SPACE

Mary K. Fesenmyer, Major, USAF, NC
Wilford Hall USAF Hospital, Lackland AFB, Texas

QUESTION AND ANSWER PERIOD

SUMMARY—THE MODERATOR

APRIL 27, 1965

Tuesday 2:00 p.m. Sutton Ballroom

**PROGRESS REPORT ON
PROJECT GEMINI**

CLOSED CIRCUIT COLOR TELEVISION

MODERATOR Charles A. Berry, M.D., Chief, Center
Medical Programs, NASA Manned
Space Flight Center, Houston, Texas

DEMONSTRATORS (To be announced.)

Progress during the past year in readying the bio-medical support for Project Gemini will be presented. The program will include research and development progress to provide the medical support, operational medical planning and support, and the planned medical experiments program. Flight hardware will be demonstrated.

APRIL 27, 1965

Tuesday 3:45 p.m. Beekman Room

VISUAL PHYSIOLOGY

Chairman: Henry G. Wagner, Captain, MC, USN, Philadelphia, Pennsylvania

Co-Chairman: Victor A. Byrnes, M.D., St. Petersburg, Florida

3:45 p.m. PERIPHERAL VISUAL FIELD LOSS AT ALTITUDE AND RECOVERY RATES WITH DESCENT

W. L. Smith and J. J. Tully
Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C.

4:00 p.m. THE EFFECT OF ANTHOCYAN GLUCOSIDES ON THE NIGHT VISION CAPABILITIES OF AIRCREW

A. Mercier, E. LaFontaine, J. Robion, and G. Perdriel
Service Medical d'Air France, Paris, France

4:15 p.m. THE INFLUENCE OF EYE LID MOVEMENT UPON ELECTRO-OCULOGRAPHIC RECORDING OF VERTICAL EYE MOVEMENTS

W. Barry and G. Melvill Jones
Aviation Medical Research Unit, McGill University, Montreal, Canada

4:30 p.m. PILOCARPINE EFFECTS ON VISUAL PERFORMANCE OF PILOTS

Richard Feinberg
Federal Aviation Agency, Washington, D. C.

APRIL 27, 1965

Tuesday 3:45 p.m. Murray Hill Suite

ENVIRONMENTAL PHYSIOLOGY VI—
RADIATION AND MAGNETIC FIELDS

Chairman: Dietrich E. Beischer, Ph.D., Pensacola, Florida

Co-Chairman: Alvin F. Meyer, Colonel, USAF, MSC, Washington, D. C.

3:45 p.m. TISSUE DOSAGES FROM ALPHA PARTICLES AND HEAVY NUCLEI IN SOLAR PARTICLE BEAMS IN SPACE

Hermann J. Schaefer
Naval School of Aviation Medicine, Pensacola, Florida

4:00 p.m. X-RADIATION EFFECTS ON VIBRATION TOLERANCE OF RATS

Leland L. Short, Bernard D. Newsom, and James F. Brady
General Dynamics/Astronautics, San Diego, California

4:15 p.m. ENZYME-ISOENZYME MEASURE OF RADIATION EXPOSURE

E. J. Hawrylewicz and W. H. Blair
Life Sciences Research Division, Illinois Institute of Technology-Research Institute, Chicago, Illinois

4:30 p.m. EXPOSURE OF MAN TO LOW INTENSITY MAGNETIC FIELDS

Dietrich E. Beischer, Earl F. Miller, and James C. Knepton, Jr.
Naval School of Aviation Medicine, Pensacola, Florida

4:45 p.m. RESPONSE OF TISSUE CULTURE CELLS TO LOW-MAGNETIC FIELDS

A. E. Greene and M. H. Halpern
South Jersey Medical Research Foundation, Camden, New Jersey, and The Franklin Institute, Philadelphia, Pennsylvania

APRIL 27, 1965

Tuesday 3:45 p.m. Regent Room

VIBRATION II

Chairman: Benjamin A. Strickland, Jr., Brig. General, USAF, MC, Andrews AFB, Washington, D. C.

Co-Chairman: Edward L. Beckman, Captain, MC, USN, Bethesda, Maryland

3:45 p.m. EFFECTS OF HYPOHYDRATION ON WORK PERFORMANCE, PSYCHOMOTOR PERFORMANCE, AND TOLERANCE TO G_z IN MAN

John E. Greenleaf and Milton Matter, Jr.
NASA Ames Research Center, California

4:00 p.m. EFFECTS OF VIBRATION ON THE ENDOCRINE SYSTEM OF MALE AND FEMALE RATS

Arthur W. Sackler and Stanley Weltman
Research Institute of the Brooklyn College of Pharmacy, Long Island University, New York

4:15 p.m. THE EFFECT OF POSITIVE PRESSURE BREATHING ON THE VIBRATION TOLERANCE OF THE MOUSE

J. F. Brady, B. D. Newsom, and R. C. Armstrong
General Dynamics/Astronautics, San Diego, California

4:30 p.m. MECHANICAL RESPONSES OF INTERNAL ORGANS OF ANIMALS EXPOSED TO SINUSOIDAL VIBRATION

J. B. Boorstin, J. R. Hayes, and D. E. Goldman
Naval Medical Research Institute, Bethesda, Maryland

4:45 p.m. THE INFLUENCE OF VIBRATIONS ON CHROMOSOMES

James C. Knepton
Naval School of Aviation Medicine, Pensacola, Florida

APRIL 27, 1965

Tuesday 3:45 p.m. Sutton Ballroom

CIRCADIAN RHYTHMS IN
AEROSPACE OPERATIONS

Chairman: Hubertus Strughold, M.D., Brooks AFB, Texas

Co-Chairman: Robert LaPlane, M.D., Paris, France

3:45 p.m. COLIN PITTENDRIGH, Ph.D. (Title to be furnished)

4:25 p.m. PHASE SHIFTS OF THE HUMAN CIRCADIAN SYSTEM AND PERFORMANCE DEFICIT DURING PERIODS OF TRANSITION

G. T. Hauty and T. Adams
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma

4:45 p.m. EFFECTS OF ISOLATION IN A CONSTANT ENVIRONMENT ON PERIODICITY OF PHYSIOLOGICAL FUNCTIONS AND PERFORMANCE

K. E. Schaefer, D. R. Clegg, C. R. Carey, J. H. Dougherty, Jr., and B. B. Weybrew
US Naval Medical Research Laboratory, New London, Connecticut

5:10 p.m. DISCUSSION:

Professor Juergen Aschoff
Max Planck Institut Fur Verhaltensphysiologie, Erling-Andechs, W. Germany

APRIL 28, 1965

Wednesday 8:30 a.m. Sutton Ballroom

LIFE SUPPORT IV

Chairman: Walton L. Jones, Captain, MC, USN, Washington, D. C.

Co-Chairman: Romney H. Lowry, M.D., Washington, D. C.

8:30 a.m. OBSERVATIONS ON RATS EXPOSED TO A SPACE CABIN ATMOSPHERE FOR TWO WEEKS
Philip Felig
Aerospace Medical Research Laboratories,
Wright-Patterson AFB, Ohio

8:45 a.m. RESPIRATORY STUDIES IN A HELIUM-OXYGEN ATMOSPHERE
W. G. Robertson, H. J. Zeft, V. S. Behar, and
B. E. Welch
USAF School of Aerospace Medicine, Brooks
AFB, Texas

9:00 a.m. GROWTH RESPONSES OF VASCULAR PLANTS UNDER EXOTIC ATMOSPHERES
S. S. Wilks
USAF School of Aerospace Medicine, Brooks
AFB, Texas

9:15 a.m. THE EFFECTS, REAL AND RELATIVE, OF A SPACE TYPE DIET ON THE AEROBIC AND ANAEROBIC MICROFLORA OF HUMAN FECES
P. E. Riely, L. S. Gall, and G. A. Albright
Space Environment and Life Science Laboratory, Republic Aviation Corporation, Farmington, Long Island, New York

9:30 a.m. STUDIES OF OXYGEN TOXICITY IN THE CENTRAL NERVOUS SYSTEM
L. G. Zirkle, C. E. Mengel, B. D. Horton, and
E. J. Duffy
Department of Medicine, Duke University,
Durham, North Carolina

9:45 a.m. FURTHER STUDIES OF THE MECHANISM OF IN VIVO RBC DAMAGE BY OXYGEN
C. E. Mengel, L. G. Zirkle, B. W. O'Malley,
and B. D. Horton
Department of Medicine, Duke University,
Durham, North Carolina

APRIL 28, 1965

Wednesday 8:30 a.m. Murray Hill Suite

INSTRUMENTATION AND TECHNIQUES II

Chairman: Eugene B. Konecci, Ph.D., Washington, D. C.

Co-Chairman: Spurgeon Neel, Colonel, MC, USA, Washington, D. C.

8:30 a.m. RESPIRATION AND HEART RATE PATTERN VALUES COMPUTED FROM IN-FLIGHT DATA
David G. Simons, Neal E. Lof, and Paul Carkin
USAF School of Aerospace Medicine, Brooks
AFB, Texas

8:45 a.m. SOME PHYSIOLOGICAL OBSERVATIONS AND MONITORING TECHNIQUES ASSOCIATED WITH AUTO RACING
Rita M. Rapp, Lawrence F. Dietlein, and John
C. Nuttall

Space Medicine Branch, NASA-Manned
Spacecraft Center, Houston, Texas

9:00 a.m. CORRELATION OF ELECTROCARDIOGRAPH AND RESPIRATION WAVE FORM BY AREA ANALYSIS ON A DIGITAL COMPUTER

V. R. Scott and M. E. Fitzwater
Western Development Laboratories, Philco
Corporation, Palo Alto, California

9:15 a.m. DETERMINATION OF INFLIGHT BIO-CHEMICAL RESPONSES UTILIZING THE PAROTID FLUID COLLECTION TECHNIQUE

B. W. Warren, R. W. Ware, I. L. Shannon,
and S. D. Leverett, Jr.
USAF School of Aerospace Medicine, Brooks
AFB, Texas

9:30 a.m. MONITORING BRAIN RESPONSE TO STRESS BY EVOKED RESPONSES

John A. Freeman
USAF School of Aerospace Medicine, Brooks
AFB, Texas

APRIL 28, 1965

Wednesday 8:30 a.m. Regent Room

ACCELERATION II

Chairman: Stuart Bondurant, M.D., Indianapolis, Indiana

Co-Chairman: Donald G. Nelson, Air Commodore, RCAF, Ottawa, Canada

8:30 a.m. CONSEQUENCE OF ACCELERATION GRADIENT FOR TOLERANCE TO POSITIVE ACCELERATION (+ G_z)

J. W. Nyberg, R. H. Grimes, and W. J. White
Missile and Space Systems Division, Douglas
Aircraft Company, Inc., Santa Monica, Calif.

8:45 a.m. HUMAN TOLERANCE TO G_z 100% GRADIENT SPIN

T. E. Piemme, A. S. Hyde, M. McCally, and
G. Potor
Aerospace Medical Research Laboratories,
Wright-Patterson AFB, Ohio

9:00 a.m. THE EFFECT OF ACCELERATION AND HYPOHYDRATION UPON THE PERIPHERAL BLOOD LEUKOCYTE DISTRIBUTION IN MAN

Charles C. Conley, Patricia A. Cook, and John
E. Greenleaf
NASA Ames Research Center, California

9:15 a.m. CARDIOVASCULAR EFFECTS OF ROTATION IN THE Z AXIS

Charles W. Urschel and William B. Hood, Jr.
Aerospace Medical Research Laboratories,
Wright-Patterson AFB, Ohio

9:30 a.m. THE EFFECTS OF TRANSIENT WEIGHTLESSNESS ON BRIGHTNESS DISCRIMINATION

W. J. White
Missile and Space Systems Division, Douglas
Aircraft Company, Inc., Santa Monica,
California

9:45 a.m. PHYSICAL CONDITIONING VERSUS + G_z TOLERANCE

Kenneth R. Cooper and Sidney D. Leverett,
Jr.
USAF School of Aerospace Medicine,
Brooks, AFB, Texas

APRIL 28, 1965

Wednesday 8:30 a.m.

Beekman Room

BEHAVIORAL SCIENCES II

Chairman: Ralph L. Christy, Captain, MC, USN, Washington, D. C.

Co-Chairman: Walter F. Grether, Ph.D., Wright-Patterson AFB, Ohio

8:30 a.m. **A MODEL FOR THE STUDY OF PSYCHOLOGICAL STRESS**
Robert J. Wherry Jr.
US Naval School of Aviation Medicine,
Pensacola, Florida

8:45 a.m. **THE USE OF TWO QUALITATIVE INDICES AS PREDICTORS OF SUCCESS IN FLIGHT TRAINING**
Paul R. Jeanneret and Charles W. Hutchins, Jr., US Naval School of Aviation Medicine,
Pensacola, Florida.

9:00 a.m. **EFFECTS OF MEPROBAMATE AND HYPOXIA ON PSYCHOMOTOR PERFORMANCE**
Tulio R. Figarola, Charles E. Billings, and Lester B. Roberts
Department of Preventive Medicine, The Ohio State University, Columbus, Ohio

9:15 a.m. **A COMPARISON OF DRUG-INDUCED PERFORMANCE DECREMENTS IN AIRCRAFT AND INSTRUMENT FLIGHT TRAINER**
John F. Zieglschmid, Charles E. Billings, and Jack J. Eggsbuehler
Department of Preventive Medicine, The Ohio State University, Columbus, Ohio

9:30 a.m. **A MEASURE OF SUSCEPTIBILITY TO PSYCHOLOGICAL STRESS**
Patrick M. Curran and Robert J. Wherry Jr.
US Naval School of Aviation Medicine, Pensacola, Florida

9:45 a.m. **HUMAN PERFORMANCE UNDER PROLONGED WORK STRESS**
William A. McLaurin and Clayton R. Coler
NASA Ames Research Center, Moffett Field, California

APRIL 28, 1965

Wednesday 10:30 a.m.

Sutton Ballroom

CARDIOVASCULAR PROBLEMS IN AEROSPACE MEDICINE

CLOSED CIRCUIT COLOR TELEVISION

MODERATOR Lawrence E. Lamb, M.D., Chief, Clinical Sciences Division, USAF School of Aerospace Medicine, Brooks AFB, Texas

DEMONSTRATOR Robert L. Johnson, Lt. Colonel, USAF, MC, Clinical Sciences Division, USAF School of Aerospace Medicine, Brooks, AFB, Texas

Advanced aerospace medical evaluation techniques will be presented. The demonstrations will include a subject instrumented for monitoring during stress testing, ergometer techniques, tilt table procedures, and illustrations of aeromedical monitoring of problem cases in aircraft.

APRIL 28, 1965

Wednesday 10:30 a.m.

Murray Hill Suite

INSTRUMENTATION AND TECHNIQUES III

Chairman: Stanley R. Mohler, M.D., Oklahoma City, Oklahoma

Co-Chairman: David G. Simons, Lt. Colonel, USAF, MC, Brooks AFB, Texas

10:30 a.m. **FISH ELECTROCARDIOGRAMS AS A TOOL IN DECELERATION RESEARCH**
D. W. Bates, R. M. Bullock, J. M. Shelton, and A. V. Zoborowski
9410th Air Reserve Squadron, Vancouver Barracks, Washington, and Aeromedical Research Laboratory, Holloman AFB, New Mexico

10:45 a.m. **A NEW MINIATURIZED SEVEN-CHANNEL PERSONAL TELEMETRY SYSTEM**
Adolf R. Marko
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

11:00 a.m. **REPEATED OR CONTINUAL MEASUREMENT OF CARDIAC OUTPUT BY A NEW THERMODILUTION METHOD APPLICABLE TO TELEMETRY DURING SPACE FLIGHT**
Hassan H. Khalil
Naval School of Aviation Medicine, Pensacola, Florida

11:15 a.m. **A TELEMETRY SYSTEM FOR THE ACQUISITION OF CIRCADIAN RHYTHM DATA**
C. M. Winget and T. B. Fryer
NASA Ames Research Center, Moffett Field, California

11:30 a.m. **PHYSIOLOGICAL DATA ACQUISITION WITHOUT ATTACHED SENSORS**
W. A. Schafer
General Dynamics/Astronautics, San Diego, California

11:45 a.m. **EXPERIMENTS WITH THE BIOELECTRIC POTENTIALS**
J. J. Konikoff
General Electric Company, King of Prussia, Pennsylvania

APRIL 28, 1965

Wednesday 10:30 a.m.

Regent Room

ACCELERATION III—VESTIBULAR

Chairman: Ashton Graybiel, Captain, MC, USN, Pensacola, Florida

Co-Chairman: Harold V. Ellingson, Colonel, USAF, MC, Brooks AFB, Texas

10:30 a.m. **THE EFFECT OF WEIGHTLESSNESS UPON THE NORMAL NYSTAGMIC REACTION**
Margaret M. Jackson and C. W. Sears
Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

10:45 a.m. **DYNAMIC COUNTERROLLING OF THE EYE IN NORMAL AND LABYRINTHINE DEFECTIVE SUBJECTS**
Robert S. Kellogg, Ashton Graybiel, and Earl F. Miller, II
Aerospace Medical Research Laboratories,

Wright-Patterson AFB, Ohio, and Naval School of Aviation Medicine, Pensacola, Florida

APRIL 28, 1965

Wednesday 2:00 p.m.

Sutton Ballroom

11:00 a.m. **OTOLITH ACTIVITY AS A FUNCTION OF GRAVITATIONAL ACCELERATION FROM ZERO TO ONE G**

Earl F. Miller II, Ashton Graybiel, and Robert S. Kellogg

Naval School of Aviation Medicine, Pensacola, Florida, and Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio

11:15 a.m. **OPTOKINETIC AND VESTIBULAR INFLUENCES UPON THE CONTROL OF COMPENSATORY EYE MOVEMENT DURING HEAD ROTATION IN VARIOUS PLANES**

G. Melvill Jones

Aviation Medical Research Unit, McGill University, Montreal, Canada

11:30 a.m. **INTERACTION OF LINEAR AND ANGULAR ACCELERATIONS ON VESTIBULAR RECEPTORS**

A. J. Benson and M. A. Bodin

RAF Institute of Aviation Medicine, Farnborough, England

11:45 a.m. **A THEORETICAL MAN-MACHINE INTERACTION WHICH MIGHT LEAD TO LOSS OF AIRCRAFT CONTROL**

J. F. Martin and G. Melvill Jones

Unica Research Company and DRB Aviation Medical Research Unit, McGill University, Montreal, Canada

APRIL 28, 1965

Wednesday 2:00 p.m.

Regent Room

LIFE SUPPORT V

Chairman: Jack Bollerud, Colonel, USAF, MC, Washington, D. C.

Co-Chairman: Don Flickinger, M.D., Washington, D. C.

2:00 p.m. **DRINKING WATER SUPPLIES FOR PROJECT GEMINI SPACE FLIGHTS**

W. W. Kemmerer

NASA Manned Spacecraft Center, Houston, Texas

2:15 p.m. **QUALITY STANDARDS FOR DRINKING WATER IN SPACE TRAVEL**

Robert C. Kroner and Herbert E. Stokinger

Division of Water Supply and Pollution Control, U.S. Public Health Service, Cincinnati, Ohio

2:30 p.m. **BACTERIOLOGIC POTABILITY OF CONDENSATE WATER FROM HEAT EXCHANGERS OF PRESSURE SUITS**

J. E. Moyer and C. H. Ward

USAF School of Aerospace Medicine, Brooks AFB, Texas

2:45 p.m. **WATER HANDLING IN THE ABSENCE OF GRAVITY**

Martin Macklin

TRW Equipment Laboratories, Cleveland, Ohio

3:00 p.m. **WASTE MANAGEMENT SYSTEM FOR AEROSPACE STATIONS**

H. Wallman, J. L. Dodson, and D. Rosen

General Dynamics/Electric Boat, Groton, Connecticut

PREVENTIVE MEDICAL TECHNIQUES AS APPLIED TO PILOT PHYSICAL EXAMINATIONS

CLOSED CIRCUIT COLOR TELEVISION

MODERATOR

George A. Kidera, M.D., Medical Director, United Air Lines, Chicago, Illinois

PANEL

A. A. Hoffman, Brig. General, USAF, MC, Andrews AFB, Washington, D. C.

John E. Smith, M.D., Director, Cardiovascular Services, United Air Lines, Washington, D. C.

G. Earle Wight, M.D., Medical Director, Canadian Pacific Air Lines, Montreal, Canada

DEMONSTRATORS

Emerson L. Day, M.D., F.A.C.P., Director, Strang Clinic, New York, N. Y.

Henry M. Selby, M.D., New York, N. Y.

In this presentation live subjects will be used to demonstrate the techniques of proctoscopy, the aerosol sputum analysis test for early detection of lung malignancy, and contrast colon radiography. The last thirty minutes of the program will be actual clinical case presentations with panel and audience participation.

APRIL 28, 1965

Wednesday 2:00 p.m.

Murray Hill Suite

SAFETY AND SURVIVAL II

Chairman: Richard L. Bohannon, Major General, USAF, MC, Washington, D. C.

Co-Chairman: Richard E. Luehrs, Captain, MC, USN, Norfolk, Virginia

2:00 p.m. **AIR FORCE AIRCRAFT DISASTER ACCIDENTS**

Anchard F. Zeller

Life Sciences Division, Office of the Inspector General, Norton AFB, California

2:15 p.m. **INJURIES DUE TO EXPLOSION, DECOMPRESSION, AND IMPACT OF A BOEING 707**

J. Robert Dille and A. Howard Hasbrook

Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma

2:30 p.m. **THE BIOCHEMICAL POST-MORTEM AS AN EMERGENCY IN ACCIDENT INVESTIGATION**

W. R. Franks

RCAF Institute of Aviation Medicine, and University of Toronto, Canada

2:45 p.m. **DESIGN AND TESTS OF AN INFLATED "AIR LITTER" FOR TRANSPORT OF THE INJURED**

Carl Clark, Carl Blechschmidt, and Fay Gordon

Life Sciences Research, Martin Company, Baltimore, Maryland

APRIL 28, 1965

Wednesday 3:45 p.m.

Sutton Ballroom

ENVIRONMENTAL PHYSIOLOGY VII— HYPOGRAVIC SIMULATION

Chairman: Clifford P. Phoebus, Captain, MC, USN, Norfolk, Virginia

Co-Chairman: William M. Helvey, M.D., Sunnyvale, California

3:45 p.m. **EFFECTS OF INTRAVASCULAR INSTRUMENTATION ON ORTHOSTATIC TOLERANCE**
Paul M. Stevens and Robert L. Johnson
USAF School of Aerospace Medicine, Brooks AFB, Texas

4:00 p.m. **COMPARATIVE EFFECTS OF LOWER BODY NEGATIVE PRESSURE AND ORTHOSTASIS ON PERIPHERAL VASCULAR REFLEXES**
Charles A. Gilbert, Paul M. Stevens, and Robert L. Johnson
USAF School of Aerospace Medicine, Brooks AFB, Texas

4:15 p.m. **THE EFFECT OF LOWER BODY NEGATIVE PRESSURE DURING PROLONGED BED REST ON CIRCULATORY FUNCTIONS IN MAN**
P. B. Miller, P. M. Stevens, R. L. Johnson, and L. E. Lamb
USAF School of Aerospace Medicine, Brooks AFB, Texas

4:30 p.m. **NEUTRAL BUOYANCY AS A MEANS OF SIMULATING 0-G EFFECTS ON HUMAN PERFORMANCE**
John W. Chaffee, Albert F. Emanuel, and James E. Mabry
Aero-Space Division, The Boeing Company, Seattle, Washington

4:45 p.m. **ZERO-BUOYANCY: SIMULATION OF WEIGHTLESSNESS TO EVALUATE THE PSYCHO-PHYSIOLOGICAL AND ANTHROPOMETRIC PARAMETERS THAT AFFECT SPACE STATION DESIGN**
Carl R. Adams and George K. Bulk
Research and Development, Douglas Aircraft Co., Inc., Santa Monica, California

APRIL 28, 1965

Wednesday 3:45 p.m.

Murray Hill Suite

CLINICAL AVIATION MEDICINE II

Chairman: Charles C. Gullett, M.D., Kansas City, Missouri

Co-Chairman: George B. McNeely, M.D., Bloomington, Illinois

3:45 p.m. **THE EVALUATION OF VISUAL FUNCTION IN TERMS OF SIMPLE OBJECTIVE EYE TESTS**
Emanuel Krinsky
Brooklyn, New York

4:00 p.m. **A NEW APPROACH TO DYSBARISM: SUCCESSFUL THERAPY WITHOUT RE-COMPRESSION**
A. T. K. Cockett and R. M. Nakamura
Harbor General Hospital, Torrance, California, and UCLA School of Medicine, Los Angeles, California

4:15 p.m. **GLAUCOMA IN FLYING PERSONNEL**
William B. Clark, Jed L. Howard, and James F. Culver
USAF School of Aerospace Medicine, Brooks AFB, Texas

4:30 p.m. **THE EFFECT OF TEMPORARY HEARING LOSS ON USAF BAND MEMBER**
Paul R. Hanson
821st Medical Group, Ellsworth AFB, South Dakota

4:45 p.m. **A PRELIMINARY REPORT OF A WIDE RANGE VECTORCARDIOGRAM**
George F. Humbert Jr., and Clifford C. Phipps
U.S. Naval Missile Center, Point Mugu, California

APRIL 28, 1965

Wednesday 3:45 p.m.

Regent Room

ACCELERATION IV—VESTIBULAR EFFECTS

Chairman: Carl C. Clark, Ph.D., Baltimore, Maryland

Co-Chairman: Langdon C. Newman, RADM, MC, USN, Washington, D. C.

3:45 p.m. **VESTIBULAR STUDIES OF FIGURE SKATERS**
William E. Collins
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma

4:00 p.m. **SYMPTOMATOLOGY UNDER STORM CONDITIONS IN THE NORTH ATLANTIC IN CONTROL SUBJECTS AND IN PERSONS WITH BILATERAL LABYRINTHINE DEFECTS**
R. S. Kennedy, R. C. McDonough, F. D. Beckwith, and A. Graybiel
Naval School of Aviation Medicine, Pensacola, Florida

4:15 p.m. **EFFECT OF HEAD MOVEMENTS IN VARIOUS PLANES ON PERFORMANCE DURING ROTATION**
B. D. Newsom, J. F. Brady, and J. M. Lagerwerff
Aerospace Medicine, General Dynamics/Astronautics, San Diego, California

4:30 p.m. **COMPARATIVE EFFECTS OF PROLONGED ROTATION AT 10 RPM IN THE CORIOLIS ACCELERATION PLATFORM ON THE POSTURAL EQUILIBRIUM FUNCTIONING OF VESTIBULAR NORMAL AND VESTIBULAR DEFECTIVE HUMAN SUBJECTS**
Alfred R. Fregly and Robert S. Kennedy
Naval School of Aviation Medicine, Pensacola, Florida

4:45 p.m. **ADAPTATION TO PROLONGED EXPOSURES IN THE REVOLVING SPACE STATION SIMULATOR**
J. F. Brady, B. D. Newsom, W. A. Shafer, R. S. French, and J. L. Piatt
Aerospace Medicine, General Dynamics/Astronautics, San Diego, California

APRIL 29, 1965

Thursday 8:30 a.m.

Sutton Ballroom

CLINICAL AVIATION MEDICINE III

Joint Session of the Flying Physicians and
Aerospace Medical Associations

Chairman: John R. Finlay, M.D., Greenwich, Connecticut

Co-Chairman: Neal E. Baxter, M.D., Bloomington, Indiana

- 8:30 a.m. **RESPONSE TO CARBOHYDRATE LOADING AS A CRITERION IN COMMERCIAL PILOT SELECTION**
C. F. Catlett and G. J. Kidera
United Air Lines Medical Department, Chicago, Illinois
- 8:45 a.m. **THE COMPULSIVE FLYER**
Roger F. Reinhardt
Naval School of Aviation Medicine, Pensacola, Florida
- 9:00 a.m. **FIRST DEGREE A-V BLOCK—ANATOMY AND PHYSIOLOGY AS ILLUSTRATED BY A 20-YEAR FOLLOW-UP**
Alan R. Bures
USAF School of Aerospace Medicine, Brooks AFB, Texas
- 9:15 a.m. **ALCOHOL EFFECTS AT GROUND AND ALTITUDE: IMMEDIATE AND DELAYED EFFECTS UPON A SERIAL SELF PACED COORDINATION AND LOGIC TASK**
William F. O'Connor and Robert Rosenstein
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma
- 9:30 a.m. **IN-FLIGHT RESPONSE TO A NEW NON-GYROSCOPIC ANTIVERTIGO BLIND FLIGHT INSTRUMENT**
Stanley R. Mohler and A. Howard Hasbrook
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma

APRIL 29, 1965

Thursday 8:30 a.m.

Nassau Suite

BEHAVIORAL SCIENCES III

Chairman: Ross A. McFarland, Ph.D., Boston, Massachusetts

Co-Chairman: Don E. Flinn, Colonel, USAF, MC, Washington, D. C.

- 8:30 a.m. **TASK INTERRUPTION AND PERFORMANCE DECREMENT FOLLOWING RAPID DECOMPRESSION**
George E. Pendergrass and William F. O'Connor
Civil Aeromedical Research Institute, FAA, Oklahoma City, Oklahoma
- 8:45 a.m. **THE ANALYSIS OF QUALITATIVE DATA IN THE BIOLOGICAL SCIENCES**
Norman E. Lane
Naval School of Aviation Medicine, Pensacola, Florida
- 9:00 a.m. **THE RELATIONSHIP BETWEEN PAST HISTORY OF MOTION SICKNESS AND ATTRITION FROM FLIGHT TRAINING**

Charles W. Hutchins Jr., and Robert S. Kennedy
Naval School of Aviation Medicine, Pensacola, Florida

- 9:15 a.m. **COMPARATIVE PHYSICAL PERFORMANCE OF NAVAL AVIATOR TRAINEES FROM VARIOUS PROCUREMENT SOURCES**
James R. Berkshire
Naval School of Aviation Medicine, Pensacola, Florida
- 9:30 a.m. **VOLUNTARY WITHDRAWAL FROM PRIMARY FLIGHT TRAINING AS A FUNCTION OF THE INDIVIDUAL FLIGHT INSTRUCTOR**
Richard S. Pomarolli and Rosalie Ambler
Naval School of Aviation Medicine, Pensacola, Florida
- 9:45 a.m. **PROBLEMS IN AIR TRAFFIC MANAGEMENT: VII. JOB AND TRAINING PERFORMANCE OF AIR TRAFFIC CONTROL SPECIALISTS — MEASUREMENT, STRUCTURE, AND PREDICTION**
David K. Trites, Clinton E. Miller, and Bart B. Cobb
Office of Aviation Medicine, FAA, and Biostatistical Unit, University of Oklahoma Medical Center, Oklahoma City, Oklahoma

APRIL 29, 1965

Thursday 10:30 a.m.

Sutton Ballroom

CLINICAL AVIATION MEDICINE IV

Joint Sessions of the Flying Physicians and
Aerospace Medical Associations

Chairman: Dan L. Urschel, M.D., Mentone, Indiana

Co-Chairman: Arthur E. Wentz, M.D., Washington, D. C.

- 10:30 a.m. **METEOROLOGIC FACTORS IN THE FALL-OUT OF POLLENS AND MOLDS**
Herman A. Heise
Milwaukee, Wisconsin
- 10:45 a.m. **DISTANT VISUAL ACUITY AND CIVIL AEROMEDICAL STANDARDS**
Robert L. Wick, Jr.
The Garrett Corporation, Los Angeles, California
- 11:00 a.m. **THE RELATIONSHIP BETWEEN BODY LIPIDS AND PHYSICAL CONDITIONING**
Stanley R. Shane
USAF School of Aerospace Medicine, Brooks AFB, Texas
- 11:15 a.m. **EFFECTS OF TWENTY YEARS OF FLYING UPON THE HEARING OF NAVAL AVIATORS**
Vernon C. Bragg
Naval School of Aviation Medicine, Pensacola, Florida
- 11:30 a.m. **PULMONARY MECHANICS AT ALTITUDE IN NORMAL SUBJECTS AND OBSTRUCTIVE LUNG DISEASE PATIENTS**
Silvio Finkelstein, Frederick H. Shillito, and Joseph F. Tomashefski
Department of Preventive Medicine, The Ohio State University, Columbus, Ohio