

# Scientific Program and Highlights of 1957 Aero Medical Association Meeting in Denver, May 6, 7, and 8

With presentations scheduled by more than 175 scientists from the United States, Great Britain, Canada, Australia, and several European countries, the program of the twenty-eighth annual meeting of the Aero Medical Association promises the broadest survey of new developments in aviation medicine in the long history of the society. All sessions will be held in the Shirley Savoy Hotel, Denver, Colorado, May 6, 7 and 8, 1957, under the presidency of Dr. Jan H. Tillisch, Rochester, Minnesota.

The imposing scientific program, including a symposium on space travel and panels on the medical aspects of jet transport operations, has been arranged by a committee under the chairmanship of Dr. E. J. Baldes, Rochester, Minnesota. Section meetings will be held on air movement of respiratory patients, aviation physiology, acceleration and deceleration, airline and commercial aviation medicine, personal and safety equipment, anthropometry, space medicine, noise problems, and aviation pathology and psychology. A series of new aeromedical motion pictures will be shown on the first two evenings of the meeting. Extensive scientific and technical exhibits will depict current progress in aviation med-

icine and related specialties. The section meetings will be held concurrently in three spacious assembly rooms in the hotel.

The Louis H. Bauer Lecture, established in 1955 in honor of the founder and first president of the Association, will be pre-



DR. TILLISCH



DR. BALDES

sented on the opening morning following an address by Dr. Tillisch. The symposium on space travel, under the joint chairmanship of Colonel Paul A. Campbell, USAF (MC) and Dr. John P. Marbarger, includes such experts as Scott Crossfield, Dr. Heinz Haber, Dr. John P. Hagen, Commander George W. Hoover, USN, Alfred M. Mayo, Professor Walter Orr Roberts, Dr. Hubertus Strughold and Dr. Wernher von Braun. The panel on the medical problems of the jet and turbo-jet age, with Dr. Herbert F. Fenwick as moderator, has been planned by Dr. John A. Tamisiea, pioneer flight surgeon since the earliest days of airline operations. In another group discussion, the following prominent airline medical directors will present their views of the forthcoming era of passenger travel in jet aircraft: Drs. A. Buchanan-Barbour, Harold B. Dye, Howard K. Edwards, George J. Kidera, Ludwig G. Lederer and Kenneth L. Stratton. Dr. W.

## HOTEL ROOMS IN DENVER

Hotel reservations for the 1957 meeting should be requested of the Denver Convention and Visitors Bureau, 225 West Colfax Avenue, Denver 2, Colorado, mentioning the Aero Medical Association. Headquarters for all scientific and social events is the Shirley Savoy Hotel, but rooms are available at the Brown Palace and Cosmopolitan Hotels a block away. To obtain desired accommodations, early reservations are recommended.

R. Stovall, chief of the medical division of the Civil Aeronautics Administration, will conduct the regular annual CAA Forum for medical examiners.

Colonel Levi M. Browning, USAF (MC), Surgeon of the U. S. Air Force Academy, is general chairman of the 1957 meeting. The traditional fellows' dinner will be held on May 6. At the Association's annual festive banquet on May 8 the recipients of the Lyster, Longacre and Tuttle Awards, and the first winner of the Aero Medicine Medal, sponsored by Pfizer Laboratories, will be announced. Featured luncheons in-

clude the space medicine meeting on May 6 and the Association's yearly business meeting and election of officers on May 7.

Mrs. Ludwig G. Lederer, president of the Wives' Wing, has appointed several committees to plan a gala program of entertainment for the ladies in attendance. Wives of members who have not joined the ladies' auxiliary of the Association are invited to send an informal application to the secretary of the Wing, Box 5589, Washington 16, D. C.

The Association's 1957 scientific program, subject to unforeseen changes, follows:

## FIRST DAY, MONDAY, MAY 6, 1957

Shirley Savoy Hotel, Denver

### Opening Ceremony—9:00 A.M.

ADDRESS—Jan H. Tillisch, M.D., President, Aero Medical Association

THE LOUIS H. BAUER LECTURE—(Name of speaker to be announced)

### Section on Air Passenger Transportation—10:30 A.M.

#### AIR TRANSPORTATION OF RESPIRATORY PATIENTS

*H. T. Wilson*, San Bernardino, Calif.

#### THE OTOLARYNGOLOGIST'S APPROACH TO PASSENGER COMFORT IN AIR TRANSPORT

*B. V. Leamer*, University of California Medical School, Los Angeles, Calif.

#### DROWSINESS: A STUDY OF TWO POPULAR MOTION SICKNESS REMEDIES, BONAMINE AND MAREZINE

*L. G. Lederer*, Capital Airlines and George Washington University, Washington, D. C.

#### ASTHMA AND ALTITUDE

*S. W. Simon*, Veterans Administration Center, Dayton, Ohio

#### A PRACTICAL EVALUATION OF SUPPLEMENTARY OXYGEN MASKS

*A. E. Miller*, Scott Aviation Corporation, Lancaster, N. Y.

#### THE PRACTICAL APPLICATION OF PULMONARY FUNCTION STUDIES IN THORACIC SURGERY

*W. B. Condon*, Department of Thoracic Surgery, University of Colorado, Denver.

#### MERCY FLIGHTS IN THE PACIFIC NORTHWEST

*J. L. McMillan*, Medical Center, Vancouver, British Columbia.

### Section on Aviation Physiology—10:30 A.M.

#### HYPOXIC THRESHOLD AND ALTITUDE ACCLIMATIZATION

*J. L. Chapin*, Physiology Department, University of Colorado School of Medicine, Denver.

SCIENTIFIC PROGRAM, MAY 6, 1957

RECENT STUDIES IN ALTITUDE TOLERANCE

*B. Balke*, School of Aviation Medicine, Randolph AFB, Texas.

STUDIES OF BABIES BORN AT A HIGH ALTITUDE

*J. A. Lichty*, *R. C. Howard*, and *P. D. Bruns*, University of Colorado School of Medicine and Colorado State Department of Public Health, Denver.

DETERMINATION OF THE EFFECTIVE EXTERNAL DEAD AIR SPACE LIMITATIONS AT ALTITUDE

*E. L. Michel* and *H. R. Greider*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

EFFECT OF ALTITUDE ON MAXIMUM BREATHING CAPACITY

*E. T. Carter*, Departments of Physiology and Preventive Medicine, Ohio State University, Columbus.

GRADE IV CHAMBER REACTIONS OR NEUROCIRCULATORY COLLAPSE CASES OCCURRING IN THE USAF 1950-1955

*C. A. Berry* and *H. H. Wayne*, School of Aviation Medicine, Randolph AFB, Texas.

EFFECTS OF ALTITUDE AND OXYGEN UPON TASTE SENSITIVITY

*B. Finkelstein* and *J. P. Castelli*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

**Section on Acceleration—10:30 A.M.**

STANDARDIZATION OF HUMAN CENTRIFUGE TECHNIQUES

*S. D. Leverett* and *G. D. Zuidema*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

G-TOLERANCE IN PRIMATES. I. UNCONSCIOUSNESS END POINT

*G. H. Kydd* and *A. M. Stoll*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

MEASURES OF BEHAVIOR FOLLOWING REPEATED EXPOSURE TO NEGATIVE ACCELERATION FORCES

*R. M. Herrick*, *J. L. Myers*, and *R. E. Burke*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

ARTERIAL BLOOD PRESSURE RESPONSES TO POSITIVE G-FORCES IN MONKEYS

*R. W. Lawton*, *L. Greene*, *G. Kydd*, and *R. Crosbie*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa., and *L. Peterson*, Department of Physiology, University of Pennsylvania, School of Medicine, Philadelphia.

THE EFFECT OF HYPOXIA ON HUMAN TOLERANCE TO POSITIVE ACCELERATION

*B. F. Burgess, Jr.*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

CORRELATION BETWEEN THE POST-VALSALVA OVERSHOOT OF ARTERIAL PRESSURE AND G-TOLERANCE

*S. Bondurant*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

THE CONTROL OF MUSCLE BLOOD FLOW DURING EXPOSURE TO CENTRIFUGAL ACCELERATIONS

*Sqdn. Ldr. P. Howard*, RAF Institute of Aviation Medicine, Farnborough, Hants, England.

SCIENTIFIC PROGRAM, MAY 6, 1957

## **Civil Aviation Medicine Session—2:00 P.M.**

THE POTENTIALS OF AVIATION MEDICINE IN THE AIR FRAME MANUFACTURING INDUSTRY  
*C. I. Barron*, Lockheed Aircraft Corp., Burbank, Calif.

HEARING LOSS IN PERSONNEL ENGAGED IN WIND TUNNEL OPERATIONS  
*D. F. Rey*, Palo Alto, Calif.

WORK IN OXYGEN AND OXYGEN EQUIPMENT  
*A. E. Miller*, Scott Aviation Corp., Lancaster, N. Y.

PANEL: MEDICAL PROBLEMS OF THE JET AND TURBO-JET AGE

HERBERT F. FENWICK, M.D., Chicago, Moderator

*Brig. Gen. Cecil H. Childre*, USAF, Ardmore AFB, Okla.

*Oscar H. Comess, M.D.*, Chicago, Ill.

*T. G. Hanks, M.D.*, Boeing Airplane Co., Seattle, Wash.

*A. M. Johnston*, Chief Test Pilot, Boeing Airplane Co.

*McClain Johnston, M.D.*

*C. E. Murphy, M.D.*, United Air Lines, Chicago, Ill.

*Edwin E. Poos, M.D.*, Detroit, Mich.

*Capt. Ralph Sewell*, Chief Pilot, Capital Airlines

*Capt. R. L. Tuxberry*, Senior Pilot, United Air Lines and Secretary of ALPA

CIVIL AERONAUTICS ADMINISTRATION MEDICAL EXAMINERS' FORUM

W. R. STOVALL, M.D., Chief, CAA Medical Division, Chairman

## **Session on Aviation Physiology—2:00 P.M.**

POTASSIUM CHANGES IN DOGS DURING ACUTE DECOMPRESSION STRESS

*F. P. Ferguson*, Department of Physiology, University of Maryland School of Medicine, Baltimore.

SOME PHYSICAL FACTORS AFFECTING GASEOUS CAVITY FORMATION IN DECOMPRESSED ANIMALS

*H. R. Greider* and *L. J. Santa Maria*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

THE EFFECTS OF VARIOUS INTRALUMINAL GAS MIXTURES ON COLONIC MOTILITY AND FLATUS VOLUME

*F. R. Steggerda*, Department of Physiology, University of Illinois, Urbana, Ill.

COLLAPSE DURING RAPID DECOMPRESSION

*F. M. G. Holmstrom* and *H. F. Steinbock*, Headquarters U. S. Air Forces in Europe, Wiesbaden, Germany.

THE REGULATION OF HEMOGLOBIN CONCENTRATION

*D. B. Dill*, Chemical Warfare Laboratories, Army Chemical Center, Md.

THE FINE STRUCTURE OF TISSUE AS REVEALED ELECTRON-MICROSCOPICALLY AND THE INFLUENCE OF OXYGEN POISONING ON ALVEOLAR TISSUE

*S. Born* and *D. E. Beischer*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.

THE PHYSIOLOGICAL RESPONSES OF DOGS TO HIGH INTRAPULMONIC PRESSURE WHEN PROTECTED BY A PARTIAL PRESSURE SUIT

*F. Hitchcock* and *A. Fasola*, Laboratory of Aviation Physiology, Ohio State University, Columbus.

SCIENTIFIC PROGRAM, MAY 6, 1957

- THE BIOLOGIC RESPONSE TO OVERPRESSURE  
*D. R. Richmond, M. B. Wetherbe, R. V. Taborelli, T. L. Chiffelle, and C. S. White,*  
Lovelace Foundation, Albuquerque, N. M.
- HUMAN VARIATION TO CARDIOVASCULAR STRESS  
*T. F. McGuire and F. J. Leary,* Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- RECENT STUDIES IN PRESSURE BREATHING  
*S. S. Wilks and B. Balke,* Department of Physiology-Biophysics, School of Aviation  
Medicine, Randolph AFB, Texas.
- DEVELOPMENT OF A NEW HIGH ALTITUDE OXYGEN PRESSURE BREATHING MASK WITH  
MANUAL AND ALTITUDE CONTROLLED SUSPENSION ADJUSTMENT  
*H. W. Seeler,* Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- EFFECTS OF ACTIVITY ON METABOLIC RATES OF SUBJECTS WEARING THE FULL PRESSURE  
SUIT  
*P. R. Tiller and H. R. Greider,* Air Crew Equipment Laboratory, Naval Air Material  
Center, Philadelphia, Pa.

**Session on Acceleration-Deceleration—2:00 P.M.**

- THEORETICAL INVESTIGATION OF THE DYNAMIC RESPONSE OF THE HUMAN TORSO UNDER  
LARGE VERTICAL ACCELERATION  
*J. L. Hess and C. F. Lombard,* Protection, Inc., Los Angeles, Calif.
- HUMAN TOLERANCE TO ACCELERATIONS: A PRACTICAL TOOL FOR THE ENGINEER  
*J. F. Hegenwald and S. Oishi,* North American Aviation, Inc., Los Angeles, Calif.
- HUMAN VERTEBRAL COLUMN ALIGNMENT UNDER PHYSICAL LOADS  
*C. M. Whitlock,* Convair, San Diego, Calif.
- THE NEED FOR SUPPORT OF THE UPPER PART OF THE BODY  
*J. R. Poppen,* Northridge, Calif.
- CAN CHANGE OF POSITION IMPROVE EJECTION TOLERANCE?  
*C. F. Lombard,* Protection, Inc., Los Angeles, Calif.
- DEVELOPMENT STATUS OF SUPERSONIC EJECTION SEAT  
*R. R. Hepppe, and M. D. Cassidy,* Lockheed Aircraft Corporation, Burbank, Calif.
- PREVENTION OF VERTEBRAL FRACTURES IN AIRCRAFT CRASHES  
*A. B. Sorin,* Airborne Equipment Division, U. S. Navy Bureau of Aeronautics,  
Washington, D. C.
- PREVENTION OF BACK INJURIES RESULTING FROM CRASH LANDINGS OF HIGH ASPECT  
NOSE WHEEL AIRCRAFT  
*C. T. Koochembere,* Air Crew Equipment Laboratory, Naval Air Material Center,  
Philadelphia, Pa.
- EFFECTS OF MECHANICAL FORCE ON LIVING TISSUES. PART IV. PARAMETERS OF INJURIOUS  
AND LETHAL FORCE  
*J. P. Stapp,* Aero Medical Field Laboratory, Holloman AFB, N. M., and *G. F. Nichols,*  
Northrop Aircraft, Inc., Hawthorne, Calif.
- HUMAN TOLERANCE TO SAFETY BELT RESTRAINT  
*S. T. Lewis and J. P. Stapp,* Aero Medical Field Laboratory, Holloman AFB, N. M.
- EFFECT OF ACCELERATIONS ON CEREBELLAR POTENTIALS IN BIRDS AND ITS RELATION  
TO THE SENSE OF DIRECTION  
*T. Gualtierotti and B. Schreiber,* Laboratorio di Fisiologia dell'Universita, Milan, Italy.
- MICROCIRCULATORY EFFECTS OF ACCELERATION  
*P. L. Yudkofsky and R. M. Rapp,* Aero Medical Laboratory, Wright-Patterson AFB,  
Ohio.

**Aero Medical Motion Pictures—7:30 P.M.**

SCIENTIFIC PROGRAM, MAY 7, 1957

SECOND DAY, TUESDAY, MAY 7, 1957

### **Section on Aviation Pathology—8:30-10:00 A.M.**

#### ETIOLOGY OF POST-DECOMPRESSION SHOCK

*W. L. Rait*, School of Aviation Medicine, Royal Australian Air Force, Point Cook, Australia.

#### PATHOLOGY OF EXPLOSIVE DECOMPRESSION IN RATS FIXED AT ALTITUDE

*C. F. Gell* and *W. M. Hall*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa., and *F. K. Mostofi*, Armed Forces Institute of Pathology, Washington, D. C.

#### A PROGRESS REPORT ON AVIATION PATHOLOGY

*F. M. Townsend*, Armed Forces Institute of Pathology, Washington, D. C.

#### ANALYSIS OF 289 GROSS AUTOPSIES ON AIRCRAFT ACCIDENT FATALITIES

*V. A. Stenbridge*, Armed Forces Institute of Pathology, Washington, D. C. and *H. G. Moseley*, Aero Medical Safety Division, Directorate Flight Safety Research, Norton AFB, Calif.

#### UNUSUAL PULMONARY LESIONS IN FLYING PERSONNEL

*R. J. Solomon*, *E. P. Smith*, and *P. G. Keil*, Medical and Thoracic Surgery Services, U. S. Air Force Hospital, Lackland AFB, Texas.

#### INJURY PATTERNS SEEN IN AUTOMOBILE ACCIDENTS

*J. O. Moore*, Automotive Crash Injury Research, Cornell University Medical College, New York, N. Y.

### **Airline and Commercial Aviation Medicine—10:30 A.M.**

#### PANEL: THE FORTHCOMING AIR TRANSPORT

##### MISCELLANEOUS ASPECTS

*A. Buchanan-Barbour, M.D.*, British European Airways

##### PASSENGER PROBLEMS

*Harold B. Dye, M.D.*, Trans World Air Lines

##### HEALTH MAINTENANCE

*Howard K. Edwards, M.D.*, Eastern Air Lines

##### PILOT PROBLEMS

*George J. Kidera, M.D.*, United Air Lines

##### OXYGEN REQUIREMENTS AND OXYGEN EQUIPMENT

*Ludwig G. Lederer, M.D.*, Capital Airlines

##### THE NOISE PROBLEM

*Kenneth L. Stratton, M.D.*, American Airlines

SCIENTIFIC PROGRAM, MAY 7, 1957

### **Session on Personal and Safety Equipment—8:30 A.M.**

#### **HUMAN FACTORS IN WEAPON SYSTEM DEVELOPMENT**

*C. H. Roadman and C. L. Limburg*, Human Factors Division, Directorate of Research and Development, Department of the Air Force, Washington, D. C.

#### **SELECTION OF PERSONAL FLIGHT EQUIPMENT**

*L. T. Bonner*, Glenn L. Martin Company, Baltimore, Md.

#### **THE FATIGUE-RELIEVING PROPERTIES OF VARIOUS DEVELOPMENTAL AIRCRAFT SEAT CUSHIONS**

*T. D. Hanna and L. M. Libber*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

#### **NEW OPERATIONAL AIRBORNE PERSONAL EQUIPMENT**

*W. L. Jones*, Airborne Equipment Division, U. S. Navy Bureau of Aeronautics, Washington, D. C.

#### **THE PILOT'S COMPROMISE WITH HIS PERSONAL EQUIPMENT**

*M. J. Damato*, U. S. Naval Auxiliary Air Station, El Centro, Calif.

#### **A PHYSIOLOGICAL COMPARISON OF PERSONNEL WEARING VENTILATED AND NON-VENTILATED ANTI-EXPOSURE SUITS UNDER SIMULATED COCKPIT CONDITIONS**

*L. J. Santa Maria and P. R. Tiller*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

#### **AVIATION HUMAN ENGINEERING IS A SCIENTIFIC SPECIALTY**

*S. J. Klein and C. F. Gell*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

#### **SOME RECENT DEVELOPMENTS IN SAFETY EQUIPMENT**

*K. M. Barnes*, Hardman Tool and Engineering Co., Los Angeles, Calif.

#### **THE NEED FOR REARWARD-FACING SEATING IN OUR AIRLINES**

*H. E. Campbell*, Denver, Colo.

#### **SELECTION OF A SEALED CABIN ATMOSPHERE**

*D. G. Simons and D. P. Parks*, Aero Medical Field Laboratory, Holloman AFB, N. M.

#### **EXPERIMENTATION IN THE SPACE CABIN SIMULATOR**

*E. M. Roth and J. G. Gaume*, Department of Space Medicine, School of Aviation Medicine, Randolph AFB, Texas.

#### **DEVELOPMENT OF PRESSURIZED AIRCRAFT CABINS**

*J. J. Claro*, School of Aviation Medicine, Randolph AFB, Texas.

### **Session on Acceleration and Aviation Physiology—8:30 A.M.**

#### **THE EFFECT OF POSITIVE ACCELERATION ON VISUAL REACTION TIME**

*J. L. Brown and R. E. Burke*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

#### **TEMPERAMENT AND G-TOLERANCE**

*N. D. Warren*, University of Southern California, Los Angeles.

#### **A FLIGHT SIMULATOR INCORPORATING ACCELERATION FORCES**

*C. C. Collins, J. L. Brown and C. F. Fischer*, Aviation Medical Acceleration Laboratory and Aeronautical Computer Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

#### **SKIN RESISTANCE CHANGES DURING ACCELERATION**

*G. Johnson, S. I. Cohen, A. J. Silverman, and G. D. Zuidema*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

SCIENTIFIC PROGRAM, MAY 7, 1957

- PSYCHOLOGIC AND BIOELECTRIC ASSESSMENT OF G-SUIT PROTECTION  
*L. Vickery, A. J. Silverman, G. D. Zuidema, and S. I. Cohen*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- MULTIPLE PSYCHO-PHYSIOLOGIC MEASURES DURING GRADUAL ONSET ACCELERATION  
*J. A. Pettitt, S. I. Cohen, A. J. Silverman, and G. D. Zuidema*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- PSYCHOLOGIC FACTORS IN G-TOLERANCE  
*A. J. Silverman, S. I. Cohen, and C. Lazar*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- HORMONAL FACTORS IN THE RESISTANCE TO ACCELERATION STRESS  
*B. D. Polis, A. Zella, and J. D. Hardy*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.
- NEUROHORMONAL ASPECTS OF G-TOLERANCE  
*S. I. Cohen, A. J. Silverman, G. D. Zuidema, and A. Caton*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- OBSERVATION ON EXPOSURE TO ANTICHOLINESTERASE AGENTS  
*J. H. Holmes and M. Gaon*, Department of Medicine, University of Colorado Medical Center, and Rocky Mountain Arsenal, Denver.
- NEED FOR SIMPLIFIED METHODOLOGY FOR DETERMINATION OF EXPOSURE TO TOXIC CHEMICALS: CARBON MONOXIDE  
*G. Kitzes, J. Mayer, P. E. Sturrock, and N. B. Furlong*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- SEMI-AUTOMATIC BIOCHEMICAL ANALYSES  
*C. Clark and M. Chianta*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

**Session on Flight Safety and Stress—2:15 P.M.**

- THE FLIGHT SURGEON AND AVIATION SAFETY  
*C. E. Wilbur*, Office of the Chief of Naval Operations, Department of the Navy, Washington, D. C.
- PHYSICAL COMPETENCE OF MEN FROM TWENTY TO FORTY-FIVE YEARS OF AGE  
*U. C. Luft and E. H. Roorbach*, Lovelace Foundation, Albuquerque, N. M.
- REPORT OF A LARGE-SCALE FIELD TRIAL OF JET INJECTION IN IMMUNIZATION FOR INFLUENZA  
*E. A. Anderson, R. B. Lindberg and D. H. Hunter*, Naval Air Station, Norfolk, Va., and Walter Reed Army Institute of Research, Washington, D. C.
- HUMAN FACTORS IN MULTI-JET ACCIDENTS  
*A. F. Zeller*, Directorate of Flight Safety Research, Norton AFB, Calif.
- AIRCRAFT ACCIDENT INJURIES; A REVIEW OF OVER 2000 CASES  
*H. G. Moseley*, Directorate of Flight Safety Research, Norton AFB, Calif.
- PHYSIOLOGICAL FACTORS IN U. S. AIR FORCE AIRCRAFT ACCIDENTS  
*E. B. Konecci*, Directorate of Flight Safety Research, Norton AFB, Calif.
- COMPARISON OF EXPERIENCES AND REACTIONS OF AIR FORCE AND OTHER MILITARY POW'S OF CHINESE COMMUNISTS  
*L. J. West and I. E. Farber*, Oklahoma Medical Research Foundation, Oklahoma City, Okla.
- WHAT MAKES A FLYER ILL?  
*H. M. C. Luykx*, Office of the Surgeon General, Department of the Air Force, Washington, D. C.



SCIENTIFIC PROGRAM, MAY 7, 1957

THE "STRESS" CONCEPT APPLIED TO FLYING

*T. J. Domanski*, Department of Pathology, School of Aviation Medicine, Randolph AFB, Texas.

STRESSES AFFECTING THE PILOT DURING POST-STALL MANEUVERS OF HIGH PERFORMANCE AIRCRAFT

*C. O. Miller* and *J. D. Horgan*, Chance Vought Aircraft, Dallas, Texas

PSYCHOLOGICAL ANALYSIS OF UNINTENTIONAL WHEELS-UP LANDINGS

*F. P. Gatling*, Aero Medical Department, Naval Aviation Safety Center, Norfolk, Va.

VERTIGO AS A CAUSE OF PILOT ERROR IN JET AIRCRAFT

*B. Clark*, San Jose State College, San Jose, Calif., and *A. Graybiel*, U. S. Naval School of Aviation Medicine,, Pensacola, Fla.

BLOOD ACID-BASE AND SUGAR VARIATIONS IN JET PILOTS

*J. P. Ellis*, *R. T. Clark*, *J. G. Wells* and *C. H. Kratochvil*, Department of Physiology-Biophysics, School of Aviation Medicine, Randolph AFB, Texas.

LIPOPROTEINS AND CARDOIVASCULAR DISEASE IN THE PILOT-EXECUTIVE; A THREE-YEAR STUDY

*L. J. Milch*, *M. E. Groover*, *N. Weiner*, and *B. S. Schlessinger*, School of Aviation Medicine, Randolph AFB, Texas and the Flight Surgeon's Office, The Pentagon, Washington, D. C.

**Section on Aviation Medicine—2:15 P.M.**

THE CONTRIBUTIONS THE INDUSTRIAL HYGIENE ENGINEER CAN MAKE TO AVIATION MEDICINE

*A. F. Meyer*, Office of the Surgeon, Strategic Air Command, Offutt, AFB, Neb.

NUCLEAR SCIENCE AND AVIATION MEDICINE

*H. L. Adams* and *C. M. Whitlock*, Convair, San Diego, Calif.

LILJENCANTZ AND BOYNTON: A STUDY IN HEROISM

*Mae M. Link*, Ph.D., Office of the Surgeon General, Department of the Air Force, Washington, D. C.

CIVILIAN RESIDENCIES IN AVIATION MEDICINE

*W. F. Ashe*, Department of Preventive Medicine, Ohio State University, Columbus.

AVIATION MEDICINE IN THE ROYAL CANADIAN NAVY

*H. D. Oliver*, Consultant in Aviation Medicine, RCN Air Station, Shearwater, N. S.

AVIATION MEDICINE IN NAVAL ANTI-SUBMARINE WARFARE

*H. G. Wagner*, Naval Medical Research Institute, Bethesda, Md.

AEROMEDICAL PROBLEMS IN LOGISTIC AIR OPERATIONS IN SOUTH AMERICA

*H. B. Webb*, Headquarters, Caribbean Air Command, Albrook AFB, C. Z.

**Section on Ophthalmology—4:00 P.M.**

THE EFFECTS OF EXPOSURE TO ULTRAVIOLET LIGHT ON SUBSEQUENT DARK ADAPTATION

*W. J. White*, *M. Weinstein*, and *D. Morris*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

THE EFFECT OF INCREASED G ON THE RELATION BETWEEN ILLUMINATION AND DIAL READING

*M. B. Riley* and *W. J. White*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

THE INFLUENCE OF OCULAR REFRACTIVE STATE ON VISION IN SPACE

*C. McCulloch* and *N. C. Turnour*, RCAF Institute of Aviation Medicine, Toronto.

INVESTIGATIONS OF THE OPTIMAL CHARACTERISTICS OF VISUAL LIGHT INDICATOR SYSTEMS

*R. Noble* and *J. Lazo*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

SCIENTIFIC PROGRAM, MAY 7, 1957

ACQUIRED MYOPIA IN AIRLINE PILOTS

*S. Diamond*, Pacific-Alaska Division, Pan American World Airways, San Francisco.

THE EFFECTS OF HYPOXIA, HYPOGLYCEMIA AND AGING ON LIGHT SENSITIVITY

*R. A. McFarland*, Harvard School of Public Health, Boston, Mass.

**Session on Aviation Physiology—2:15 P.M.**

DEPRESSOR EFFECT OF MODERATE RESPIRATORY ACIDOSIS ON CARDIAC ACTIVITY IN THE DOG

*G. G. Nahas* and *H. M. Cavert*, Department of Physiology, University of Minnesota, Minneapolis.

EFFECTS ON CEREBRAL CIRCULATION AND CEREBRAL OXYGEN CONSUMPTION OF HYPOXIA, HYPOCAPNIA, AND COMBINED HYPOXIA AND HYPOCAPNIA

*C. J. Lambertsen*, *S. G. Owen*, *H. P. Chiodi*, *H. Wendel*, *J. E. Turner*, *P. G. Linaweaver*, and *R. Gelfand*, Laboratory of Pharmacology, University of Pennsylvania, Philadelphia.

EMISSION SPECTROSCOPY IN ANALYSIS OF RESPIRATORY GASES. IV. THE CALIBRATION CHARACTERISTICS OF OXYGEN EMISSION IN THE NEAR INFRARED

*C. S. White*, *L. C. Watkins, Jr.*, and *E. E. Fletcher*, Lovelace Foundation, Albuquerque, N. M.

A PHYSIOLOGICAL ASSESSMENT OF THE FLACK (40 mm.) TEST

*P. O. G. Butler*, *T. J. Powell*, RCAF Institute of Aviation Medicine, and *F. A. Sunahara*, Defence Research Medical Laboratories, Toronto, Canada.

EFFECT OF VALSALVA MANEUVER ON AORTIC BLOOD FLOW IN MAN

*E. H. Wood*, *W. P. Crowley, Jr.*, *N. C. Birkhead*, *I. J. Fox*, and *H. J. C. Swan*, Mayo Clinic and Mayo Foundation, Rochester, Minn.

EVALUATION OF GLYCINE AS AN ANTI-FROSTBITE AGENT

*W. R. Beavers* and *B. G. Covino*, Arctic Aeromedical Laboratory, Ladd AFB, Fairbanks, Alaska.

ANTIFIBRILLARY EFFECTS OF GLYCINE IN HYPOTHERMIA

*B. G. Covino* and *W. R. Beavers*, Arctic Aeromedical Laboratory, Ladd AFB, Fairbanks, Alaska.

IMMERSION IN COLD WATER AND BODY TISSUE INSULATION

*L. D. Carlson*, *A. C. L. Hsieh*, and *F. Fullington*, Department of Physiology and Biophysics, University of Washington School of Medicine, Seattle, Wash.

INFLUENCE OF COLD EXPOSURE ON THE DEVELOPMENT OF THERMAL BURNS IN RATS

*J. D. Hardy*, *L. Zitowitz*, and *D. I. Hill*, Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

THE EFFECTS OF MODERATE HEAT STRESS, ALTITUDE AND TIME ON THE DEHYDRATION RATE OF SUBJECTS WEARING THE VENTILATED FULL PRESSURE SUIT

*L. M. Libber*, *H. R. Greider* and *L. J. Santa Maria*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.

SOME VARIABLES AFFECTING PHYSIOLOGICAL RESPONSE TO THERMAL STRESS

*J. H. Veghte*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

PROTECTION OF AIRCREWS AGAINST THERMAL INJURY

*N. P. Clarke*, *G. D. Zuidema* and *J. R. Prine*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

**Aero Medical Motion Pictures—7:30 P.M.**

SCIENTIFIC PROGRAM, MAY 8, 1957

THIRD DAY, WEDNESDAY, MAY 8, 1957

**Session on Anthropometry, Sound, and Space Medicine—  
8:30 A.M.**

A METHOD OF CALCULATING THE CENTER OF GRAVITY OF THE HUMAN BODY FOR THE DEVELOPMENT OF STABILIZED ESCAPE SYSTEMS  
*F. D. Van Wart, and J. T. Barter, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.*

LINEAR DISTANCE CHANGES OVER BODY JOINTS  
*I. Emanuel and J. T. Barter, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.*

STEREOPHOTOGRAMMETRY AS AN ANTHROPOLOGICAL TOOL  
*H. T. E. Hertzberg, C. W. Dupertuis, and I. Emanuel, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.*

THE DISSIPATION OF VIBRATIONAL ENERGY IN THE HUMAN BODY  
*T. C. Helvey, Human Factors Section, The Glenn L. Martin Company, Baltimore, Md.*

A DESCRIPTION OF THE ACOUSTICAL PROPERTIES OF A NEW TYPE OF PORTABLE SOUND PROOF AUDIOMETRIC TESTING ROOM PRODUCED FOR THE ROYAL CANADIAN AIR FORCE BY THE CANADIAN JOHNS MANVILLE COMPANY  
*J. A. Sullivan, Chief Consultant in Otolaryngology, and W. E. Hodges, Consultant in Acoustical Otology, Canadian Forces Medical Council, Toronto*

NOISE PROTECTION AND MEASUREMENT  
*N. W. Hartz, Mine Safety Appliances Co., Pittsburgh, Pa.*

COSMIC RAY DOSAGE DURING THE GIANT SOLAR FLARE OF FEBRUARY 23, 1956  
*H. J. Schaefer, U. S. Naval School of Aviation Medicine, Pensacola, Fla.*

CONCEPT OF THE STRATO-LAB BALLOON SYSTEM FOR HIGH ALTITUDE RESEARCH  
*M. D. Ross, Office of Naval Research, and M. L. Lewis, Bureau of Aeronautics, Department of the Navy, Washington, D. C.*

AERO MEDICAL ASPECTS OF THE STRATO-LAB PROGRAM  
*N. L. Barr, Naval Medical Research Institute, Bethesda, Md., and Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C.*

A TECHNIQUE FOR INSTRUMENTING SUBGRAVITY FLIGHTS  
*G. J. D. Schack and D. G. Simons, Aero Medical Field Laboratory, Holloman AFB, N. M.*

AN APPROACH TO THE PHYSIOLOGICAL SIMULATION OF THE NULL-GRAVITY STATE  
*L. A. Knight, Department of Space Medicine, School of Aviation Medicine, Randolph AFB, Texas.*

EXPERIMENTS ON THE LABYRINTHINE POSTURE REFLEX (RIGHTING REFLEX) OF THE CAT DURING SHORT PERIODS OF WEIGHTLESSNESS  
*S. J. Gerathewohl and H. D. Stallings, School of Aviation Medicine, Randolph AFB, Texas.*

AVOIDANCE OF ACCELERATION FORCES IN THE ANIMAL BY IMMERSION IN WATER  
*R. Margaria and T. Gualtierotti, Laboratorio di Fisiologia dell'Universita, Milan, Italy.*

VISIBILITY OF THE MAN-MADE SATELLITE OF THE PLANET EARTH  
*I. Schmidt, Division of Optometry, Indiana University, Bloomington, Ind.*

**Session on Aviation Physiology, Electroencephalography,  
and Psychology—8:30 A.M.**

A NEW LOOK AT AVIATION PHYSIOLOGY  
*H. E. Savely and J. P. Henry, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.*

FEBRUARY, 1957

111

SCIENTIFIC PROGRAM, MAY 8, 1957

BIOELECTRIC MEASURES DURING FLIGHT

*J. Roth, S. I. Cohen, A. J. Silverman, and E. G. Correll*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.

SYNERGISM BETWEEN EFFECTS OF HYPERVENTILATION, HYPOGLYCEMIA AND POSITIVE ACCELERATION

*H. P. Brent, T. M. Carey, T. J. Powell, J. W. Scott, W. G. R. Taylor, and W. R. Franks*, RCAF Institute of Aviation Medicine, Toronto, Canada.

ELECTROPHYSIOLOGICAL ASPECTS OF PERSONALITY AND BEHAVIOR

*R. Cooper, H. W. Shipton, J. Shipton, V. J. Walter, and W. Grey Walter*, Burden Neurological Institute, Bristol, England.

RECORDING OF EMOTIONAL STRESS

*C. W. Sem-Jacobsen*, Gaustad Mental Hospital, Oslo, Norway.

VARIATIONS IN SPINAL REFLEXES IN SOME STRESS INDUCING CONDITIONS

*N. Spinelli, T. Gaultierotti and R. Margaria*, Laboratorio di Fisiologia dell'Universita, Milan, Italy.

ELECTROENCEPHALOGRAPHY AND SERVICE PERFORMANCE

*M. Lennox and F. Buchthal*, Institute of Neurophysiology, University of Copenhagen, and Institute of Air Medicine, Military Hospital, Copenhagen, Denmark.

RELATIONSHIP BETWEEN ELECTROENCEPHALOGRAPHIC AND PSYCHOLOGICAL FINDINGS IN 300 CANDIDATES FOR AERONAUTIC PILOTS

*H. Gastaut, P. Laboureur, P. Navarranne and C. Jest*, Faculte de Medecine, Marseille, France.

TRAINING NAIVE PILOTS ON AN INSTRUMENT PANEL HOMOGENOUS WITH RESPECT TO THE PRINCIPLE OF THE MOVING PART

*R. C. Houston*, Aviation Psychology Laboratory, University of Illinois, Urbana.

CORRELATES OF MANIFEST ANXIETY IN BEGINNING PILOT TRAINEES

*S. B. Sells, D. K. Trites, and H. S. Parish, Jr.*, School of Aviation Medicine, Randolph AFB, Texas.

A STUDY OF MANIFEST ANXIETY AS RELATED TO PILOT TRAINING

*H. S. Parish, Jr.*, School of Aviation Medicine, Randolph AFB, Texas.

SKILL COMPOSITION AS A FUNCTION OF REMEDIAL PRACTICE ON TASK COMPONENTS AND THEIR COMBINATIONS

*R. M. Chambers*, Operator Laboratory, Air Force Personnel and Training Research Center, Lackland AFB, Texas.

FURTHER ATTEMPTS AT CODING AIRCRAFT ACCIDENTS INTO PSYCHOLOGICAL CATEGORIES

*W. B. Webb*, Aviation Psychology Laboratory, U. S. Naval School of Aviation Medicine, Pensacola, Fla.

**Session on Flight Training and Flight Safety—8:30 A.M.**

TO FLY, OR NOT TO FLY: THE DECISION AND THE FACTORS WHICH AFFECT IT

*R. B. Voas*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.

A COMPARISON OF STATIC AND DYNAMIC TRAINERS IN THE LEARNING OF FLIGHT PROCEDURES

*D. J. Dougherty and Douglass R. Nicklas*, Aviation Psychology Laboratory, University of Illinois, Urbana.

JET TRANSITIONAL TRAINING

*C. P. Hungate*, U. S. Naval Air Station, Olathe, Kans.

SUBJECTIVE FLIGHT GRADES: AN ATTEMPT TO MAXIMIZE THEIR VALIDITY

*L. M. Seale*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.

RELATION OF PREFERENCE TO PERFORMANCE IN NAVAL AIR ADVANCED TRAINING

*H. P. Kelley*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.

SCIENTIFIC PROGRAM, MAY 8, 1957

- AIRSICKNESS IN EARLY FLIGHT TRAINING, MOTION OR EMOTION?  
*P. B. Phillips*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.
- DEVELOPMENT OF AN OPTIMUM ALTIMETER PRESENTATION  
*E. M. Beldam* and *R. G. Fletcher*, RCAF Institute of Aviation Medicine, Toronto.
- EVALUATION OF A "MOVING AIRPLANE" ATTITUDE INDICATOR  
*E. E. Miller*, and *J. A. Creelman*, U. S. Naval School of Aviation Medicine, Pensacola, Fla.
- THE CHOICE OF SUBJECTS IN DIAL LEGIBILITY EXPERIMENTS  
*J. Gaito*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa.
- NAVY TEST PILOTS AND TEST FLYING  
*F. H. Austin, Jr.*, Naval Air Test Center, Patuxent River, Md.
- FLIGHT SAFETY THROUGH PROPER NUTRITION  
*J. A. Moore*, Naval Air Station Dispensary, Cecil Field, Fla.
- PREVENTIVE ASPECTS OF FLIGHT FEEDING  
*A. A. Taylor*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio.
- THE RELATIONSHIP BETWEEN MEAL TIMES AND LANDING ACCIDENTS  
*J. R. Smiley*, RCAF Institute of Aviation Medicine, Toronto, Canada.
- LANDINGS VS. HOURS AS INDICES OF HAZARD EXPOSURE  
*D. K. Trites* and *A. L. Kubala*, School of Aviation Medicine, Randolph AFB, Texas.

**Space Travel: A Symposium—2:00 P.M.**

- Chairman: COLONEL PAUL A. CAMPBELL, USAF (MC)
- HOW DOES THE PROPULSION ENGINEER VIEW MANNED EXTRA-ATMOSPHERIC FLIGHT?  
*Dr. Wernher von Braun*, Redstone Arsenal, Alabama.
- WHAT ARE THE ASTRONOMER'S VIEWS?  
*Prof. Walter Orr Roberts*, High Altitude Observatory, University of Colorado.
- THE ASTROPHYSICIST'S VIEWS  
*Dr. Heinz Haber*, University of California, Los Angeles.
- HOW DOES THE TEST PILOT VIEW THE PROBLEM?  
*Scott Crossfield*, North American Aviation, Los Angeles.
- WHAT INSTRUMENTATION WILL BE REQUIRED AND WHAT ARE THE PROBLEMS?  
*George W. Hoover*, Commander, USN, Office of Naval Research, Washington, D. C.
- WHAT ARE THE SURVIVAL ASPECTS?  
*Alfred M. Mayo*, Douglas Aircraft Co., El Segundo, Calif.
- SPACE TRAVEL IMPLICATIONS OF THE VANGARD PROJECT  
*Dr. John P. Hagen*, Naval Research Laboratory, Washington, D. C.
- WHAT ARE THE POSSIBILITIES OF AN INHABITABLE EXTRA-TERRESTRIAL ENVIRONMENT REACHABLE FROM THE EARTH?  
*Dr. Hubertus Strughold*, School of Aviation Medicine, Randolph Air Force Base, Texas.