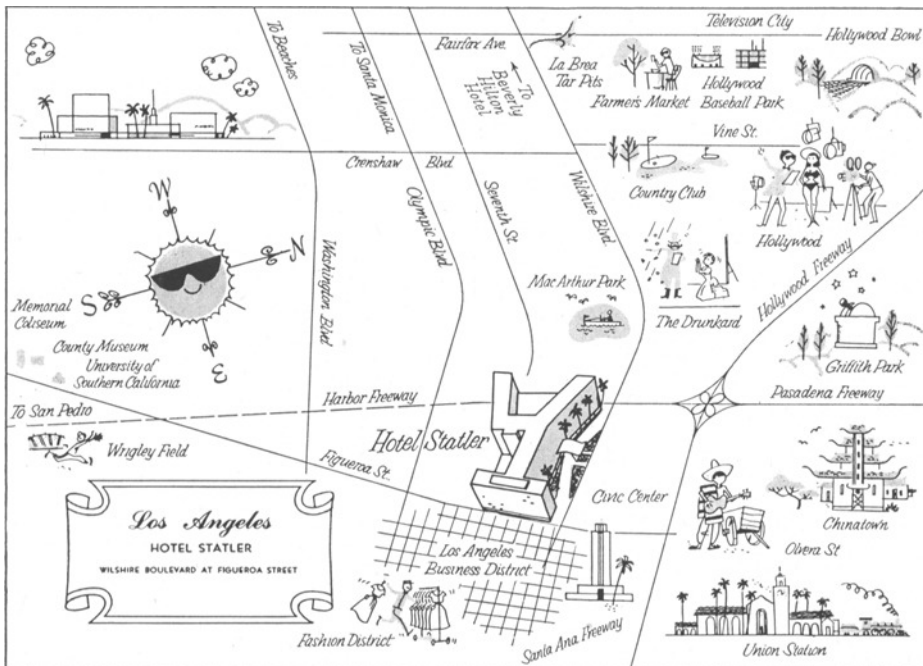


Scientific Program and Highlights of 1959 Aero Medical Association Meeting, Los Angeles, April 27-29

More than 250 noted aviation and space bioscientists from the United States and countries overseas will bring their latest observations, discoveries and predictions to the members of the Aero Medical Association and their guests at the society's thirtieth annual meeting at the Statler Hilton Hotel, Los Angeles, April 27, 28 and 29, 1959.

From the problems of the private flyer to the ecology of the space pilot, every scientific paper, panel discussion and symposium in this largest and most ambitious program of the Association is devoted to "man in flight," according to Brigadier General M. S. White, USAF, president, under whose direction the meeting has been planned. The Civil Aviation Medical Association, the Airline Medical Directors Association and the Space Medicine



MEETING HEADQUARTERS. The new Statler Hilton Hotel in Los Angeles is centrally located. It is convenient to Disneyland, Marineland, Alligator Farm, Chinatown, Griffith Park Zoo and Planetarium, Will Rogers State Park, World Jungle Compound, La Brea Tar Pits, the beaches and Hollywood.

AERO MEDICAL ASSOCIATION MEETING

Branch of the Aero Medical Association will hold concurrent annual sessions during the Los Angeles convention.



GENERAL FLICKINGER



GENERAL WHITE

Dr. Charles T. Barron, medical director of the California Division of Lockheed Aircraft Corporation, is the general chairman of the meeting. Working with a number of special committees, he has completed a scientific and social program designed to attract the largest attendance in the Association's long history. The meeting opens a few days after the close of the Air Force Association's spectacular "Congress of Flight" in Las Vegas, Nevada.

The scientific program committee, under the chairmanship of Brigadier General Don Flickinger, has selected for presentation a series of papers covering the biological aspects of flight in the categories of (1) clinical and forensic aeromedicine, (2) basic research applicable to aviation medicine, and (3) development, testing and operational applications. During nearly all of the three-day meeting, simultaneous scientific sessions will be conducted in three large assembly rooms of the hotel. Two panels of expert speakers will be devoted to civil avia-

tion medicine, another to aviation pathology and accident prevention, and sessions have been arranged on clinical medicine, acceleration, biomechanics, disorientation, human engineering, psychophysiology and weightlessness.

The fifth annual Louis H. Bauer Lecture, established in 1955 as a trib-



DR. BARRON



DR. HANS SELYE

ute to the founder of the Association, will be given by Dr. Hans Selye, the distinguished professor and director of the Institute of Experimental Medicine and Surgery at the University of Montreal. His subject is "Stress in Aviation Medicine." The lecture will be presented on the opening morning of the meeting. Later in the program Dr. Selye will serve as chairman of a symposium, "The Aeromedical Aspects of Stress," when a number of speakers will present the newest accomplishments in this field.

The scientific exhibits on view in Los Angeles will include the latest military personal and protective equipment, together with many recent developments from the aviation industry. Medical, surgical, pharmaceutical and aviation manufacturers will also present a record number of technical exhibits which will be of interest to all members and their guests.

AERO MEDICAL ASSOCIATION MEETING



WIVES' WING OFFICERS. The officers and members of the executive board of the Wives' Wing of the Aero Medical Association, were photographed recently in Washington, D. C., while completing plans for the forthcoming annual meeting of the ladies' auxiliary in Los Angeles, April 27-29. Front row, left to right: Mesdames Joseph W. Weaver, Charles H. Roadman, president, Norman L. Barr, second vice president, John K. Cullen, secretary, and Kenneth L. Stratton, first vice president; rear row: Mesdames Oran W. Chenault, Ludwig G. Lederer, past president, Joseph P. Pollard and Frank M. Townsend, treasurer.

The social program of the 1959 meeting includes the annual Fellows' Dinner, the Space Medicine luncheon and the traditional banquet at which the winners of the Association's achievement awards will be announced. The ladies in attendance will be entertained by an extensive program arranged by the members of the Wives' Wing under the direction of Mrs. Charles H. Roadman, Arlington, Virginia, president of the auxiliary. The luxurious Statler Hilton Hotel offers

1275 beautiful outside rooms, five restaurants, a swimming pool and a central location in Los Angeles. Under the Statler plan no room charge is made for children under 14 who register with their parents, but early reservations are suggested to insure accommodations desired. In writing to the hotel, be sure and state you are attending the meeting of the Aero Medical Association.

Subject to unforeseen changes, the annual scientific program follows:

Aero Medical Association

30th Annual Meeting

Statler Hilton Hotel, Los Angeles, California

April 27-29, 1959

Scientific Program

FIRST DAY, MONDAY, APRIL 27, 1959

Opening Ceremony—9:00 A.M.

ADDRESS—Brigadier General M. S. White, USAF (MC), President, Aero Medical Association

THE LOUIS H. BAUER LECTURE—Dr. Hans Selye, Faculty of Medicine, University of Montreal

STRESS IN AVIATION MEDICINE

Session I—Aviation Pathology and Accident Investigation—10:30 A.M.

Brigadier General Sam F. Seeley, MC, USA, (Ret), Chairman
Professor Associate,
Division of Medical Sciences, National Academy of Sciences,
National Research Council, Washington, D. C.

ACCIDENT INVESTIGATION AND AVIATION PATHOLOGY

Panel discussion by the Aviation Pathology Section, Armed Forces Institute of Pathology, Washington, D. C.

CARBON MONOXIDE DETERMINATION BY TISSUE ANALYSIS IN AIRCRAFT ACCIDENT FATALITIES

V. A. Stembridge, A. M. Dominguez, H. E. Christensen, T. L. Gleason, F. W. Lovell, Armed Forces Institute of Pathology, Washington, D. C., and Directorate of Flight Safety Research, Norton AFB, California

A SYSTEM OF POSITIVE IDENTIFICATION OF CASUALTIES IN HIGH PERFORMANCE AIRCRAFT

V. H. Marchbanks, USAF Hospital, Loring AFB, Maine

AIRCRAFT ACCIDENT FATALITIES—A CHALLENGE TO AVIATION MEDICINE

H. G. Moseley, Directorate of Flight Safety Research, Norton AFB, California

HUMAN ASPECTS OF THE MID-AIR COLLISION PREVENTION PROGRAM

A. F. Zeller, Directorate of Flight Safety Research, Norton AFB, California

DYNAMIC VISUAL ACUITY IN AN APPLIED SETTING

J. E. Goodson, USN School of Aviation Medicine, Pensacola, Fla., and *James W. Miller*, Kresge Eye Institute, Detroit, Michigan

**Session II—Development and Test of Personal Protective
Equipment—10:30 A.M.**

Captain Charles F. Gell, MC, USN, Chairman
Special Assistant for Bio-Sciences,
Office of Naval Research, Washington, D. C.

- MEDICAL PROBLEMS IN HIGH ALTITUDE SUIT TESTING
C. L. Wilson and M. B. Zinn, Aero Medical Laboratory, Wright-Patterson AFB, Ohio
- PROLONGED EXPOSURES IN NAVY FULL PRESSURE SUIT AT SPACE EQUIVALENT ALTITUDES
A. L. Hall and R. J. Martin, Naval Air Station, Norfolk, Virginia
- THE LIGHTWEIGHT FULL PRESSURE SUIT SYSTEM OF THE U. S. NAVY
J. V. Correale, Jr., E. L. Hays, and J. E. Leshko, Air Crew Equipment Laboratory,
Naval Air Material Center, Philadelphia, Pennsylvania
- LABORATORY AND FIELD STUDIES ON VENTILATING SYSTEMS IN THE APH-5 HELMET
P. R. Tiller and L. M. Libber, Air Crew Equipment Laboratory, Naval Air Material
Center, Philadelphia, Pennsylvania
- IMPACT PROTECTION CHARACTERISTICS OF FLIGHT HELMETS
J. W. Raeke, North American Aviation, Los Angeles, California
- PROBLEMS INVOLVED IN PROVIDING PROTECTION FOR AIRCREWMAN DURING ESCAPE
A. I. Beck and Bert Cooper, Republic Aviation Corp., New York, New York
- AUTOMATIC INFLATION OF PERSONAL FLOTATION GEAR PRIOR TO WATER ENTRY
R. L. McLaughlin, Douglas Aircraft Company, Santa Monica, California
- HUMAN EXPERIMENTS ON AIR TRANSPORT CRASH PROTECTION
J. J. Ryan, Mechanical Engineering Dept., University of Minnesota, Minneapolis,
Minn., and *J. P. Stapp*, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

Session III—The Inner Ear—10:30 A.M.

Captain Ashton Graybiel, MC, USN, Chairman
Coordinator of Research,
USN School of Aviation Medicine, Pensacola, Florida

- THRESHOLD OF AURAL PAIN TO HIGH INTENSITY SOUND
H. W. Ades, USN School of Aviation Medicine, Pensacola, Florida
- THE IMPORTANCE OF THE UTRICLE IN ORIENTATION
W. H. Johnson, Defense Research Medical Laboratory, Toronto, Canada
- FUNCTIONAL RELATIONSHIPS BETWEEN SEMICIRCULAR CANALS AND OTOLITH ORGANS
R. F. Gray, USN School of Aviation Medicine, Pensacola, Florida
- SUPPRESSION OF VESTIBULAR SEQUELAE FOLLOWING RAPID ROTATION
B. F. McCabe and M. Lawrence, University of Michigan Medical School, Ann Arbor,
Michigan
- THE EFFECTS OF REDUCED OXYGEN INTAKE ON AUDITORY SENSITIVITY:
- I. BONE CONDUCTED THRESHOLDS IN A NOISY ENVIRONMENT
S. J. Klein, Air Crew Equipment Laboratory, Naval Air Material Center, Phila-
delphia, Pennsylvania
- II. THRESHOLD SHIFTS IN A QUIET ENVIRONMENT
S. J. Klein, E. S. Mendelson and T. J. Gallagher, Air Crew Equipment Laboratory,
Naval Air Material Center, Philadelphia, Pennsylvania
- III. THRESHOLD SHIFTS WITH MASKING IN THE OPPOSITE EAR
S. J. Klein, B. H. Lowi and R. N. Freda, Air Crew Equipment Laboratory, Naval
Air Material Center, Philadelphia, Pennsylvania

SCIENTIFIC PROGRAM—APRIL 27, 1959

AFTERNOON SESSION

**Session I—Civil Aviation Medical Association—Panel
Discussion on the Medical Problems of Business
and Private Flying—2:00 P.M.**

Howard A. Dishong, M.D., President, Little Rock, Arkansas
G. B. McNeeley, M.D., Chairman, Bloomington, Illinois
Charles I. Barron, M.D., Co-Chairman, Medical Director,
Lockheed Aircraft Corp., Burbank, California

PREVENTIVE HEALTH PROGRAM FOR BUSINESS AND PRIVATE PILOTS
R. J. Vastine, Jr., Tyler Memorial Airport, Niles, Michigan

HELICOPTER PROBLEMS: NOISE, COCKPIT CONTAMINATION AND DISORIENTATION
C. A. Berry, Department of Flight Medicine, and *H. K. Eastwood*, Department of
Otolaryngology, USAF School of Aviation Medicine, Randolph AFB, Texas

PHYSIOLOGICAL STRESS OF PRIVATE FLYING
D. R. Collier, Jr., Lockheed Aircraft Corp., Burbank, California

AEROMEDICAL PROBLEMS ASSOCIATED WITH CROP DUSTING
J. H. Britton, Medical Division, Federal Aviation Agency, Washington, D. C.

HUMAN FACTORS IN ACCIDENTS OF SMALL AIRCRAFT
F. G. Andrews, Crash Investigation Division, Fort Rucker, Alabama

**Session II—Human Factors and Systems
Development—2:00 P.M.**

Brigadier General Don Flickinger, USAF (MC), Chairman
Assistant for Bioastronautics, Air Research and Development Command,
Andrews AFB, Washington, D. C.

AERO MEDICAL SUPPORT OF ADVANCED FIGHTER-INTERCEPTOR WEAPONS SYSTEMS
B. A. Strickland, Jr., *L. C. Kossuth*, *D. R. Stopher* and *H. D. Estes*, Air Defense
Command, Ent AFB, Colorado

HUMAN FACTORS SUPPORT OF WEAPON SYSTEM TESTING AT THE AIR FORCE FLIGHT
TEST CENTER
P. S. Shafer, Edwards AFB, California

AEROMEDICAL SUPPORT OF THE X-15 PROGRAM
B. Rowen, Edwards AFB, California

CENTRIFUGE SIMULATION OF THE X-15 RESEARCH AIRCRAFT
C. Clark, Aviation Medical Acceleration Laboratory, USN Air Development Center,
Johnsville, and *C. H. Woodling*, National Aeronautics and Space Administration,
Langley Research Center, Virginia

THE DEVELOPMENT OF A ZERO ALTITUDE ESCAPE SYSTEM FOR SUBSONIC AIRPLANES
E. W. Smith, North American Aviation, Columbus, Ohio

THE USE OF TASK ANALYSIS TECHNIQUES IN WEAPON SYSTEM DEVELOPMENT
E. L. Stech, North American Aviation, Columbus, Ohio

FINAL PHILOSOPHY AND DESIGN OF OXYGEN EQUIPMENT FOR JET TRANSPORTS
A. E. Miller, Scott Aviation Corp., Lancaster, New York

JANUARY, 1959

55

Session III—Physiology of Acceleration—2:00 P.M.

Edward J. Baldes, Ph.D., Chairman

Mayo Clinic, Rochester, Minnesota

RENAL PLASMA FLOW UNDER POSITIVE ACCELERATION

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

THE EFFECT OF TEMPERATURE ON TOLERANCE TO POSITIVE ACCELERATION

B. F. Burgess, Jr., Aviation Medical Acceleration Laboratory, USN Air Development Center, Johnsville, Pennsylvania

THE EFFECT OF PRESSURE ON SWEATING

H. M. Ferres, RAF Institute of Aviation Medicine, Farnborough, England

THE PASSIVE DYNAMIC MECHANICAL PROPERTIES OF THE HUMAN THORAX-ABDOMEN SYSTEM AND THE WHOLE BODY SYSTEM

R. R. Coermann, G. H. Ziegenruecker, A. L. Wittwer, H. E. Von Gierke, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

CHANGES IN PERIPHERAL VASCULAR RESISTANCE DURING RADIAL ACCELERATION

P. Howard, RAF Institute of Aviation Medicine, Farnborough, England

CARDIAC IRREGULARITIES DURING COMBINED HYPERVENTILATION AND G

H. P. Brent, G. J. Leitch, J. W. Scott and W. R. Franks, RCAF Institute of Aviation Medicine, Toronto, Canada

Symposium: Aeromedical Aspects of Stress—4:00 P.M.

Dr. Hans Selye, Chairman

Faculty of Medicine, University of Montreal

BIBLIOGRAPHIC CONTROL OF AVIATION AND SPACE MEDICAL LITERATURE

A. J. Jacobius, The Library of Congress, Washington, D. C.

A PRELIMINARY REPORT ON QUANTITATIVE ESTIMATION OF A URINARY METABOLITE OF EPINEPHRINE AND NOREPINEPHRINE AS POSSIBLE INDICATOR OF TOLERANCE TO GRAVITATIONAL STRESS

M. L. Berman, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

HORMONAL FACTORS IN THE RESISTANCE OF THE MANNAL TO ACCELERATION STRESS

B. D. Polis, Aviation Medical Acceleration Laboratory, USN Air Development Center, Johnsville, Pennsylvania

ABSTRACT OF BIOLOGIC ASPECTS OF AUDIOGENIC STRESS

A. M. Sackler, A. S. Weliman, M. Bradshaw and P. Jurtschuk, Jr., Laboratories for Therapeutic Research, Research Institute of the Brooklyn College of Pharmacy, Long Island University, Brooklyn, New York

PERFORMANCE AND HABITABILITY ASPECTS OF EXTENDED CONFINEMENT

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

STUDIES OF ISOLATION AND CONFINEMENT

G. E. Ruff, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

PHYSIOLOGICAL DATA AND OTHER FACTORS CONTRIBUTING TO STRESS

E. L. Beeding, Jr., Aero Medical Field Laboratory, Holloman AFB, New Mexico

SCIENTIFIC PROGRAM—APRIL 28, 1959

SECOND DAY, TUESDAY, APRIL 28, 1959

Morning Session—8:30 A.M.

Session I—Clinical Medicine—8:30 A.M.

W. R. Franks, M.D., Chairman

RCAF Institute of Aviation Medicine, Toronto, Canada

- MEDICAL DISQUALIFICATION FOR FLYING STATUS: COMPILATION OF SIGNIFICANT CONDITIONS, CALENDAR YEARS 1956 AND 1957
F. S. Spiegel, Office of the Surgeon General, Dept. of the Air Force, Washington, D. C.
- IMPORTANCE OF THE FAMILY HISTORY IN THE PRE-EMPLOYMENT SELECTION OF PILOTS
E. B. Waldmann and *J. H. Tillisch*, Mayo Clinic and Mayo Foundation, Rochester, Minnesota
- IS HE FIT TO FLY?—A REPORT ON THE "SPECIAL BOARD OF FLIGHT SURGEONS" AT THE NAVAL AVIATION MEDICAL CENTER
P. B. Phillips, USN School of Aviation Medicine, Pensacola, Florida
- FATAL DECOMPRESSION ILLNESS AT AN ALTITUDE OF 22,000 FEET
L. T. Odland, Office of the Surgeon, Fifth Air Force, Japan.
- MYOCARDIAL INFARCTION IN USAF FLYING PERSONNEL: A SURVEY OF 70,000 ELECTROCARDIOGRAMS
G. B. Smith, Jr., and *L. E. Lamb*, USAF School of Aviation Medicine, Randolph AFB, Texas
- AEROMEDICAL ASPECTS OF MIGRAINE
E. R. Taylor, USAF Hospital, Loring AFB, Maine
- PASSENGER PHLEBITIS—A COMPLICATION OF LONG DISTANCE AERIAL TRAVEL
M. J. Nareff, Office of the Surgeon, U. S. Air Forces in Europe, Wiesbaden, Germany
- AEROMEDICAL PROBLEM CASES
C. A. Berry and *A. H. King*, Dept. of Flight Medicine, USAF School of Aviation Medicine, Randolph AFB, Texas

Session II—Development of Improved Oxygen Systems—8:30 A.M.

Air Commodore William K. Stewart, RAF, Chairman

RAF Institute of Aviation Medicine, Farnborough, England

- PHYSIOLOGICAL PHENOMENA PERTINENT TO THE DESIGN OF OXYGEN BREATHING EQUIPMENT
A. Bloom, Sierra Engineering Co., Sierra Madre, California
- MODIFIED DILUTER-DEMAND BREATHING VALVE
O. W. Wilcox, Sierra Engineering Co., Sierra Madre, California
- THE HIGH ALTITUDE PROTECTION AFFORDED BY A PRESSURE BREATHING MASK WITH TRUNK AND LOWER LIMB COUNTERPRESSURE
J. Ernsting, *I. Green*, *R. E. Nagel* and *P. R. Wagner*, RAF Institute of Aviation Medicine, Farnborough, England
- SOME EFFECTS OF CABIN PRESSURE FAILURE IN HIGH ALTITUDE TRANSPORT AIRCRAFT
A. C. Bryan and *W. G. Leach*, RCAF Institute of Aviation Medicine, and *F. A. Sunahara*, Defence Research Medical Laboratories, Toronto, Canada
- A CONSENSUS OF DESIGN CRITERIA FOR OXYGEN MASK RETENTION DEVICES
W. D. Morton, Jr., Sierra Engineering Co., Sierra Madre, California
- EMERGENCY EGRESS OXYGEN REQUIREMENTS
R. L. Carter, North American Aviation, Columbus, Ohio
- SOLID CHEMICAL OXYGEN SOURCES
R. M. Bovard, Mine Safety Appliances Research Corp., Callery, Pennsylvania
- PROBLEMS AND PROGRESS IN OXYGEN SYSTEMS OF THE U. S. NAVY
D. A. Mancinelli, *E. L. Hays* and *F. A. Florio*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pennsylvania

Session III—Human Engineering—8:30 A.M.

Walter F. Grether, Ph.D., Chairman

Chief of Operations, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

TIME, SPACE, AND STEREOSCOPIC VISION—FLIGHT SAFETY CONSIDERATIONS OF TIME-LIMITED STEREOPSIS AT SUPERSONIC AIRSPEEDS

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

VISUAL FACTORS IN AIRCRAFT COLLISION AVOIDANCE

J. Lazo and *R. A. Bosee*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pennsylvania

ENHANCED CONTRAST OF AN INDEFINITELY-CONTOURED OBJECT BY MOVEMENT OR INTERMITTENT ILLUMINATION

G. T. diFrancia, Istituto Nazionale di Ottica, Florence, Italy

FACTORS RELEVANT TO THE DEVELOPMENT OF AIRCRAFT WARNING AND CAUTION SIGNAL SYSTEMS

J. van Laer and *E. H. Galanter*, University of Pennsylvania, and *S. J. Klein*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pennsylvania

HUMAN PSYCHOMOTOR PERFORMANCE UNDER VARIED TRANSVERSE ACCELERATIONS

R. C. Kaehler, University of Southern California School of Medicine, Los Angeles, California

PROJECTING MAN'S BRAIN INTO SPACE

A. M. Mayo, Douglas Aircraft Company, El Segundo, California

THE APPLICATION OF BASIC HUMAN ENGINEERING PRINCIPLES TO A COCKPIT DESIGN

G. A. Holcomb, North American Aviation, Columbus, Ohio

Symposium: Toxicological Health Hazards—10:45 A.M.

Colonel Harold V. Ellingson, USAF (MC), Chairman

Director of Education and Plans, USAF School of Aviation Medicine,
Randolph AFB, Texas

TOXICITY OF PROPELLANT FUELS AND OXIDIZERS

D. B. Bill and *K. H. Jacobson*, Directorate of Medical Research, USA Chemical Warfare Laboratories, Army Chemical Center, Maryland

TOXICITY OF DIBORANE IN HIGH CONCENTRATIONS

A. R. Stumpe, USAF School of Aviation Medicine, Randolph AFB, Texas

SYMPTOMATOLOGY AND TREATMENT OF BORON HYDRIDE INTOXICATION

A. A. Tamas, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

CLINICAL EXPERIENCE IN HANDLING OF EXOTIC FUELS

R. W. Cooper, High Energy Division, Olin Mathieson Chemical Corp., Niagara Falls, New York

SOME HEALTH HAZARDS ASSOCIATED WITH THE MANUFACTURE OF COMMERCIAL JET AIRCRAFT

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

AN INTRA-PLANT LABELING PROGRAM FOR HAZARDOUS MATERIALS

D. D. Douglas, Boeing Airplane Company, Seattle, Washington

SCIENTIFIC PROGRAM—APRIL 28, 1959

AFTERNOON SESSION—2:00 P.M.

**Session I—Civil Aviation Medical Association—Panel
Discussion on the Medical Problems of Commercial
and Transport Aviation (Part I)—2:00 P.M.**

Howard A. Dishongh, M.D., President, Little Rock, Arkansas
G. B. McNeely, M.D., Chairman, Bloomington, Illinois
Charles I. Barron, M.D., Co-Chairman, Medical Director,
Lockheed Aircraft Corp., Burbank, California

AEROMEDICAL AND PUBLIC HEALTH ASPECTS OF INTERNATIONAL AIRLINE OPERATIONS
*O. B. Schreuder, Pan American World Airways, N. Y. International Airport, Jamaica,
New York*

**CONSIDERATIONS OF PASSENGER COMFORT IN THE NEWER AIRCRAFT (NOISE, HUMIDITY,
VENTILATION, ETC.)**
*R. A. McFarland, Harvard-Guggenheim Center for Aviation Health and Safety,
Harvard School of Public Health, Boston, Massachusetts*

PASSENGER PSYCHOLOGY AND EMOTIONAL RESPONSES
*W. A. Trembly, Psychology Dept., University of Southern California, Los Angeles,
California*

EDUCATING THE PASSENGER FOR SAFETY AND COMFORT
*W. F. Ashe, Dept. of Preventive Medicine, Ohio State University Medical Center,
Columbus, Ohio*

A LOOK INTO THE FUTURE OF COMMERCIAL AVIATION
T. G. Hanks, Boeing Airplane Company, Seattle, Washington

**Session I—Hearing Losses and Clinical Audiometry
(Part II)—4:00 P.M.**

Horace O. Parrack, Ph.D., Chairman
USAF Technical Coordinator for Noise and Vibration,
Wright Air Development Center, Wright-Patterson AFB, Ohio

COMPARISON OF AIR FORCE NOISE FIELDS AND PROTECTION AVAILABLE
E. Guild, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

A COMPARATIVE STUDY OF AUDIOMETRIC TECHNIQUES FOR USE IN THE AIR FORCE
*A. E. Ryan, USAF School of Aviation Med., Randolph AFB, Texas, and R. G.
Hansen and H. O. Parrack, Wright Air Development Center, Wright-Patterson
AFB, Ohio*

**COMPARISON OF HEARING LOSS OF PERSONNEL EXPOSED AND NOT EXPOSED TO HIGH
INTENSITY SOUND**
S. K. Willis, Jr., and I. L. Hoffman, USAF Hospital, Westover AFB, Massachusetts

**OBJECTIVE DETERMINATION OF SOUND ATTENUATION BY EAR DEFENDERS IN INTENSE
SOUND FIELDS**
*E. S. Mendelson, A. Engel, and R. Lentz, Air Crew Equipment Laboratory, Naval
Air Material Center, Philadelphia, Pennsylvania*

**LABORATORY APPROXIMATION OF INDIVIDUAL TOLERANCE TO AIRCRAFT CARRIER DECK
NOISE**
*A. Engel and E. S. Mendelson, Air Crew Equipment Laboratory, Naval Air Material
Center, Philadelphia, Pennsylvania*

**Session II—Development of Systems for Physiological
Recording (Part I)—2:00 P.M.**

Otto Schmitt, Ph.D., Chairman

Professor of Zoology, Department of Physics, University of Minnesota,
Minneapolis, Minnesota

- THE USE OF SKIN RESISTANCE TO MONITOR STATES OF CONSCIOUSNESS
E. Z. Levy, Aero Medical Laboratory, Wright-Patterson AFB, Ohio
- AN IMPROVED TISSUE RESISTANCE MONITOR
W. E. Tolles and *W. J. Carbery*, Airborne Instruments Laboratory, Mineola, New
York
- AN INSTRUMENTATION PACKAGE FOR THE MEASUREMENT OF PHYSIOLOGICAL RESPONSE
T. Freedman and *W. V. Blockley*, North American Aviation, Los Angeles, California
- A SYSTEM FOR MONITORING THE ECG UNDER DYNAMIC CONDITIONS
W. J. Carbery and *W. E. Tolles*, Airborne Instruments Laboratory, Mineola, New
York, and *A. H. Freiman*, Sloan-Kettering Institute, Memorial Center, New York,
New York
- DEVELOPMENT OF A PHYSIOLOGICAL PRESSURE TRANSDUCER SYSTEM FOR RECORDING
UNDER SEVERE ACCELERATIVE OR DECELERATIVE FORCES
L. J. Rossbach, Allied Research Associates, Boston, Massachusetts

**Session II—Biophysical Aspects of Operating Environments
(Part II)—3:45 P.M.**

Frank Princi, M.D., Chairman

Assistant Director, Institute of Industrial Health, Kettering Laboratory,
University of Cincinnati, Cincinnati, Ohio

- OCCUPATIONAL HEALTH HAZARDS IN MISSILE OPERATIONS
G. M. Knauf, Air Force Missile Test Center, Patrick AFB, Florida
- SPECIAL HEALTH PROBLEMS AT CAPE CANAVERAL
L. P. LaRoche, Pan American World Airways, Patrick AFB, Florida
- MICROWAVE RADIATION HAZARDS
W. E. Morgan, Boeing Airplane Company, Seattle, Washington
- CALCULATIONS OF THE RADIOBIOLOGICAL RISK FACTORS INVOLVED IN FUTURE NUCLEAR
POWERED SPACE VEHICLES
E. B. Konecci, Douglas Aircraft Co., Tulsa, Oklahoma, and *R. Trapp*, Douglas Air-
craft Co., Santa Monica, California
- RADIATION DOSAGE IN FLIGHT THROUGH THE RADIATION BELT
H. J. Schaefer, USN School of Aviation Medicine, Pensacola, Florida

**Session III—Nutrition, Metabolism and Cold
(Part I)—2:00 P.M.**

Loren Carlson, Ph.D., Chairman

Professor of Physiology and Biophysics, University of Washington
School of Medicine, Seattle, Washington

- ESSENTIAL CHARACTERISTICS OF A "GLOBAL" SURVIVAL RATION
J. M. Quashnock and *C. Murray*, Arctic Aeromedical Laboratory, Ladd AFB, Alaska
- PROBLEMS IN SPACE FEEDING
H. C. Dyme, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

SCIENTIFIC PROGRAM—APRIL 29, 1959

THE POTENTIAL APPLICATION OF HIBERNATION IN SPACE TRAVEL

R. J. Hock, Arctic Aeromedical Laboratory, Ladd AFB, Alaska

THE EFFECT OF GLYCINE ADMINISTRATION IN A HUMAN RESPONSE TO A STANDARDIZED COLD STRESS

T. Adams and *E. J. Heberling*, Arctic Aeromedical Laboratory, Ladd AFB, Alaska

EFFECT OF PROLONGED COLD EXPOSURE ON THE BLOOD CHEMISTRY OF THE RAT

J. P. Hannon, Arctic Aeromedical Laboratory, Ladd AFB, Alaska

**Session III—Thermal Control and Respiration
(Part II)—3:45 P.M.**

C. J. Lambertson, Ph.D., Chairman

**Professor of Pharmacology, University of Pennsylvania School of Medicine,
Philadelphia, Pennsylvania**

HEAT LOAD AND CO₂ DURING SIMULATED SPACE FLIGHT

W. R. Hawkins, *G. T. Hauty* and *G. R. Steinkamp*, USAF School of Aviation Medicine, Randolph AFB, Texas

THE NEUTRALIZATION OF THE ACUTE EFFECTS OF HYPERCAPNIA BY A CO₂ BUFFER

G. G. Nahas and *E. C. Jordan*, Walter Reed Army Institute of Research, Washington, District of Columbia

CARDIOPULMONARY RESPONSES TO LETHAL CONCENTRATIONS OF CARBON MONOXIDE

K. R. Coburn, *E. T. Carter*, *J. F. Tomashefski* and *F. A. Hitchcock*, Ohio State University, Columbus, Ohio

EFFECT OF CONTINUOUS HUMAN EXPOSURE TO AN OXYGEN TENSION OF 418 MM. HG. FOR 168 HOURS

E. L. Michel, *R. W. Langevin* and *C. F. Gell*, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pennsylvania

THIRD DAY, WEDNESDAY, APRIL 29, 1959

Session I—Human Quality Control (Part I)—8:30 A.M.

Henry A. Imus, Ph.D., Chairman

**Head, Aviation Psychology Laboratory, USN School of Aviation Medicine,
Pensacola, Florida**

HUMAN QUALITY CONTROL IN NAVAL AIR TRAINING

J. R. Berkshire, *V. W. Lyon*, *W. F. O'Connor*, *W. W. Willingham*, and *L. M. Seale*, USN School of Aviation Medicine, Pensacola, Florida

FACTORIAL STRUCTURE AND VALIDITY OF NAVAL AVIATION SELECTOR VARIABLES

R. K. Ambler, *J. T. Bair* and *R. J. Wherry, Jr.*, USN School of Aviation Medicine, Pensacola, Florida

A TEST OF MOTIVATION TO FLY

J. T. Bair, USN School of Aviation Medicine, Pensacola, Florida

NON-TECHNICAL HUMAN FACTORS IN THE MIXED MISSILE-AIRCRAFT ORGANIZATION

C. Murray, Arctic Aeromedical Laboratory, Ladd AFB, Alaska

SOME OBSERVATIONS ON THE PERSONALITY STRUCTURE OF AIR FORCE PERSONNEL ENGAGED IN UNUSUAL MISSIONS

V. H. Thaler, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

A PRACTICAL APPROACH TO EMOTIONAL AND BEHAVIORAL CHANGES ANTICIPATED IN SPACE TRAVEL

J. L. Wheaton, USAF School of Aviation Medicine, Randolph AFB, Texas

Session I—Clinical Medicine (Part II)—11:00 A.M.

Andre Allard, M.D., Chairman

Medical Director, Sabena Belgian Airlines, Brussels, Belgium

THE FREQUENCY AND SIGNIFICANCE OF UNSUSPECTED PRE-EXISTING DISEASE IN MILITARY AIRCRAFT FATALITIES

R. R. Robie and V. A. Stembridge, Aviation Pathology Section, Armed Forces Institute of Pathology, Washington, D. C.

MEDIASTINAL EMPHYSEMA FOLLOWING RAPID DECOMPRESSION: A CASE REPORT

H. R. Bratt, USAF School of Aviation Medicine, Randolph AFB, Texas, and T. H. Mowry and R. N. Olson, Wright-Patterson AFB, Ohio

THE INCIDENCE OF HYPOGLYCEMIA IN FLIGHT

E. R. Taylor, USAF Tactical Hospital, Loring AFB, Maine

THE USE OF POLYGRAPHIC ANALYSIS OF THE "SYNCOPE REFLEX" IN PREDICTING PREDISPOSITION TO SYNCOPE

H. Gastaut, University of Marseilles Faculty of Medicine, France

THREE YEARS' OPERATIONAL EXPERIENCE WITH PHYSICAL DEFECTS IN ACTIVE FLYERS

R. K. Quinnell and J. H. Robbins, Office of the Surgeon, Fifteenth Air Force, March AFB, California

A SIMPLE MOUTH-TO-MASK RESUSCITATION DEVICE

H. W. Seeler, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

**Session II—Ecological Systems in Sealed Cabins
(Part I)—8:30 A.M.**

Melvin Calvin, Ph.D., Chairman

Professor of Chemistry, University of California, Berkeley, California

ENGINEERING OF THE SEALED CABIN ATMOSPHERE CONTROL SYSTEM

S. L. Jacobson, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

LIQUID AIR—PERSONNEL COOLING AND BREATHING SYSTEM

H. E. Agen, USA Quartermaster Research and Engineering Command, Natick, Massachusetts, and W. Dray, Bendix Aviation Corp., Baltimore, Maryland

DESIGN AND OPERATION OF PHOTOSYNTHETIC GAS EXCHANGERS FOR CLOSED ECOLOGICAL SYSTEMS

W. A. Kratz and J. D. Fulton, USAF School of Aviation Medicine, Randolph AFB, Texas

DESIGN AND OPERATION OF A GRAVITY INDEPENDENT PHOTOSYNTHETIC GAS EXCHANGER

R. D. Gafford, D. E. Richardson and A. Dafni, The Martin Company, Denver, Colorado

AN EXPERIMENTAL MODEL FOR THE MEASUREMENT OF MAN'S ECOLOGY IN SPACE

P. R. Tobias, North American Aviation, Downey, California

BIO-LOGISTICS OF SPACE TRAVEL

A. A. Taylor, Directorate of Life Sciences, Air Research and Development Command, Andrews AFB, Washington, D. C.

STUDIES OF PRIMATE TOLERANCE TO SOME COMPLEX ACCELERATIONS

N. P. Clarke, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

SCIENTIFIC PROGRAM—APRIL 29, 1959

Session II—Biomechanics (Part II)—10:45 A.M.

Colonel John P. Stapp, USAF, MC, Chairman
Chief, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

STANDARDIZATION OF THE ENDPOINT FOR CENTRIFUGE EXPERIMENTS DURING POSITIVE ACCELERATION

S. H. Steiner, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

A STUDY OF EARLY GREYOUT THRESHOLD AS AN INDICATOR OF HUMAN TOLERANCE TO POSITIVE RADIAL ACCELERATORY FORCE

J. J. Zarriello, M. E. Norsworthy and H. R. Bower, USN School of Aviation Medicine, Pensacola, Florida

EXPERIMENTAL STUDIES OF THE EFFECTS OF ACCELERATIVE STRESS ON VISUAL PERFORMANCE

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

X-RAY EXAMINATION OF THE HUMAN SUBJECT DURING TRANSVERSE ACCELERATIONS

E. J. Hershgold, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

HIGH G PROTECTION

R. F. Gray and M. G. Webb, Aviation Medical Acceleration Laboratory, USN Air Development Center, Johnsville, Pennsylvania

A SUGGESTED PROGRAM DESIGNED TO REDUCE THE NUMBER OF FATALITIES OCCURRING DURING EJECTIONS AND BAILOUTS

J. W. Kittinger, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

**Session III—Disorientation, Vertigo, and Motion Sickness
(Part I)—8:30 A.M.**

Walter H. Johnson, Ph.D., Chairman
Scientific Officer, Defence Research Medical Laboratories,
Defence Research Board, Toronto, Canada

DISORIENTATION: AN EVALUATION OF THE ETIOLOGICAL FACTORS

R. N. Kraus, USAF School of Aviation Medicine, Randolph AFB, Texas

SOME EFFECTS OF ANGULAR ACCELERATION ON POSTURAL MECHANISMS

A. J. Benson, RAF Institute of Aviation Medicine, Farnborough, England

MOTION SICKNESS IN A HELICOPTER SIMULATOR

J. W. Miller and J. E. Goodson, Kresge Eye Institute, Detroit, Michigan, and USN School of Aviation Medicine, Pensacola, Florida

DISORIENTATION IN UNITED STATES AIR FORCE HELICOPTER PILOTS

H. K. Eastwood and C. A. Berry, USAF School of Aviation Medicine, Randolph AFB, Texas

MOTION SICKNESS: A PSYCHOPHYSIOLOGIC GASTROINTESTINAL REACTION

R. F. Reinhardt, Menninger School of Psychiatry, Topeka, Kansas

CARDIOVASCULAR CHANGES WITH VESTIBULAR STIMULATION

W. J. R. Taylor, W. H. Johnson and E. A. Sellers, RCAF Institute of Aviation Medicine, and Defence Research Medical Laboratories, Toronto, Canada

BRAIN INJURY FROM HIGH-G PULLOUT?

P. B. Phillips and J. J. Zarriello, USN School of Aviation Medicine, Pensacola, Florida

ELECTROMICROSCOPICAL NERVE CELL CHANGES IN THE BRAIN OF SYRIAN HAMSTERS FOLLOWING ACUTE HYPOXIA

H. Hager, W. Hirschberger and W. Scholz, Department of Neuropathology of the Deutsche Forschungsanstalt für Psychiatrie, Max-Planck Institut, Munich, Germany

SCIENTIFIC PROGRAM—APRIL 29, 1959

Session III—Psychophysiology (Part II)—11:00 A.M.

John French, Ph.D., Chairman

**Professor of Anatomy, University of California at Los Angeles,
Los Angeles, California**

**SUBCORTICAL PHOTICALLY AND SOMESTHETICALLY EVOKED ELECTRIC ACTIVITY IN THE
HUMAN BRAIN DURING ATTENTION**

M. Jouvot, Departments of Neurology and Physiology, Medical School, University
of Lyons, France

AN EXPERIMENT IN PROLONGED VIGILANCE

R. J. Wherry, Jr., USN School of Aviation Medicine, Pensacola, Florida

THE EFFECT OF BOREDOM ON SUGGESTIBILITY

M. B. Jones and *J. E. Goodson*, USN School of Aviation Medicine, Pensacola, Florida

WORK PROFICIENCY IN A HERMETICALLY SEALED CABIN

S. J. Gerathewohl, USA Ballistic Missile Agency, Redstone Arsenal, Alabama, and
J. A. Ulich, Psychological Institute, University of Munich, Germany

AFTERNOON SESSION—2:00 P.M.

**Session I—Electroencephalography as a Screening, Selection,
and Evaluation Device for Aircrew Members—2:00 P.M.**

Lieutenant Colonel James P. Henry, USAF (MC), Chairman

**Chief, Biosciences Division, European Office, Air Research and
Development Command, Brussels, Belgium**

ROUTINE ELECTROENCEPHALOGRAPHY IN AVIATION MEDICINE

M. B. Dell and *A. Robert*, Service Medical de la Compagnie, Air France, Paris, France

**STATISTICAL ANALYSIS OF THE ELECTROENCEPHALOGRAM IN 500 YOUNG FRENCH MILITARY
RECRUITS**

H. Gastaut, *J. Bert*, *A. Roger* and *M. L. van Goethem*, University of Marseilles
Faculty of Medicine, Marseilles, France

**AIRBORNE EEG RECORDING AS A MEANS OF STUDYING AND SELECTING PILOTS AND CREWS
IN HIGH PERFORMANCE AIRCRAFT AND SPACE VEHICLES**

C. W. Sem-Jacobsen, EEG Lab. Gustad Sykehus, Vinderen, Oslo, Norway

ELECTROENCEPHALOGRAPHS OF 1000 NAVAL AVIATION CANDIDATES

T. J. Powell and *H. W. Ades*, USN School of Aviation Medicine, Pensacola, Florida

Session II—Development—2:00 P.M.

Alfred M. Mayo, Chairman

**Group Engineer, El Segundo Division, Douglas Aircraft Company,
El Segundo, California**

**HUMAN TOLERANCE TO FORCES IMPOSED UPON AN AIRMAN DURING SIMULTANEOUS SEAT
BOTTOMING, KNEE ELEVATING, AND LEG POSITIONING AND RESTRAINING IN THE A3J-1
ESCAPE SYSTEM**

R. L. Carter and *G. A. Holcomb*, North American Aviation, Columbus, Ohio

THE DEVELOPMENT OF A ZERO ALTITUDE ESCAPE SYSTEM FOR SUPERSONIC AIRPLANES

E. W. Smith, North American Aviation, Columbus, Ohio

SUPERSONIC EJECTION TESTS AT SMART

F. Moore, Jr., Aero Medical Laboratory, Wright-Patterson AFB, Ohio

SCIENTIFIC PROGRAM—APRIL 29, 1959

EXPERIMENTAL EVALUATION OF A MULTI-DIRECTIONAL ANTI-G DEVICE IN CATAPULT-SLED RUNS

H. J. von Beckh, Aeromedical Field Laboratory, Holloman AFB, New Mexico

THE NEED FOR RADICAL DEVELOPMENT OF RESTRAINING DEVICES FOR MANNED FLIGHT

A. T. Bernardini, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

Session III—Weightlessness—2:00 P.M.

Major Edwin R. Ballinger, USAF, MC, Chairman

**University of California, Los Alamos Scientific Laboratory,
Los Alamos, New Mexico**

THE BIOMECHANICS OF WEIGHTLESSNESS

H. T. E. Hertzberg, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

A DEVICE FOR SIMULATION OF REACTION CONTROL PROBLEMS IN ORBITAL MANEUVERS

J. G. Gaume, The Martin Company, Denver, Colorado

SPACE FLIGHT HAZARDS CAUSED BY WEIGHTLESSNESS

H. J. von Beckh, Aeromedical Field Laboratory, Holloman AFB, New Mexico

RESEARCH ON HUMAN PERFORMANCE DURING ZERO GRAVITY

E. L. Brown, Aero Medical Laboratory, Wright-Patterson AFB, Ohio

Symposium: Space Bioscience and Technology—3:45 P.M.

(PROGRAM TO BE ANNOUNCED)



AEROSPACE MEDICAL CENTER. The luxurious new Statler Hilton Hotel in Los Angeles will be the headquarters for all social and scientific activities of the 30th annual meeting of the Aero Medical Association, April 27-29, 1959.