

AEROSPACE PHYSIOLOGY REPORT

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The History of the Aerospace Physiology Society---Part II

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The Society's Emblem

Some months following the creation of the Aerospace Physiology Section, members of the Board of Directors were asked about the creation of a distinctive insignia or lapel pin; ideas for its design were solicited. The candidate designs were evaluated and discussed by members of the Board until a final symbol was chosen. The pO₂ design, representing the partial pressure of oxygen, was selected as the emblem or lapel pin. It was considered unique and appropriate as the essential element common to all animal physiological functions. The President of the Section, who was the pin's designer, pursued sponsors for production of several hundred of these unique pO₂ pins that would be used as a lapel pin, tie tack or fashioned into a ring or charm. Through the efforts of Bob McLaughlin and M. R. "Jim" Kaletta, President of Scott Aviation, the pO₂ pin was produced in sterling silver. The pO₂ pins were presented with a membership card to all members attending the following general meeting in New Orleans, LA in 1978. The generous grant from Scott Aviation made sufficient sterling silver pO₂ pins available for distribution to all members of the Aerospace Physiology Section for several years. The advent of certification in aerospace physiology again raised the question of recognition and identification. Thus, the pO₂ pin turned to gold for those certified in aerospace physiology beginning in 1978 and remains today as a badge of achievement with an accompanying handsome and distinctive wall certificate.

Aerospace Physiology Certification

There are more than 120 Board Certified Aerospace Physiologists that are representative of the general membership of the Society in education, background, areas of interest, employment and, to some degree, goals. This represents about 2/3 of the Society membership. They include the leaders in Aerospace Physiology, both present and past. Certification has become a significant step in the intellectual growth, development and career patterns for professional and peer recognition.

The broad and specific knowledge in aerospace physiology is the common thread within the group as they function in a variety of civil, military and academic areas that include life support, flight operations, hyperbaric medicine, the human factor spectrum of interests, and the space program. These varied activities, backgrounds and specialties are primarily seen in the Society's members from the United States, but includes some international members.

The subject of peer recognition in aerospace physiology was initially explored in the late 1960s by Maj. Richard B. Trumbo with Dr. Smith W. Ames of the Air Force Surgeon General's office and Commander Kenneth Coburn, USN of the Bureau of Medicine, U.S. Navy. As AsPS President in 1974, Maj. Richard Trumbo, worked with CDR Don Reid and Dr. Sidney Leverett, President-Elect, to introduce the certification concept to the Society and, in turn, AsMA Council. Conceptual discussions and interactions with the AsMA Education and Training Committee and Council proceeded into 1975. Capt. Frank Austin, USN, supported by Dr. Douglas Busby, championed the Board Certification efforts from its inception, seeing the potential value to the Society and Association. After considerable deliberation, Dr. Sidney D. Leverett, Jr., President of the Aerospace Physiologist Section in 1975 formed a committee for the preparation of the necessary materials to be presented to the parent organization. Dr. Leverett enlisted the significant assistance of Lt. Col. Richard D. Sinclair to chair the committee for development of a comprehensive examination and mechanism for certification of aerospace physiologists. The committee included Lt. Col. Richard D. Sinclair, Maj. Richard B. Trumbo, CDR Donald Reid and Lt. Col. Donald C. Choisser.

Board certification was intended for persons who had an abiding interest and demonstrated productivity in aerospace physiology. Eligibility requirements included a Baccalaureate in physiology, or a closely related science, with significant formal training in physiology. Normally, one would be considered ready for examination with five years of professional experience in aerospace physiology.

By the spring of 1976, the committee had drafted the components of the Aerospace Physiology Certification Program, including eligibility, grading procedures, award specifics and the value of certification to the Aerospace Medical Association programs, such as Fellowship and the potential for increased membership. AsMA Council approved the program in May 1976. Dr. Leverett, President of the Aerospace Physiologist Section, presented the President's Award for that year to Lt. Col. Richard D. Sinclair in recognition of his work in developing the certification program.

An essential part of the certification program was the establishment of the Aerospace Physiology Certification Board. The first chairman of the Board was Lt. Col. Bruce E. Bassett. They also included the 10 Past Presidents of the Aerospace Physiologist Section. The Board administered the first examination in 1977 and six examinees were Board Certified. The first Aerospace Physiologists to be Board Certified are listed in Table I. Additionally, the previous Aerospace Physiologist Section Presidents who assisted in the development of the Aerospace Physiology Certification Program were awarded honorary certifications that year as shown in Table II.

The AsMA Council oversees the activities of the Aerospace Physiology Certification Board through representation on the Board by a Council Member. The representative acts in an advisory capacity to the Board and reports the results of the Board's activities as well as the names of persons who pass the examination to the Council each year. Past Council Advisors to the Aerospace Physiology Certification Board have included Douglas E. Busby, M.D., Royce Moser, M.D., Rufus M. DeHart, M.D., Richard D. Heimbach, M.D. and Col. Jeffrey Sventek.

Certified Aerospace Physiologists represent a diversity of academic backgrounds. The fundamental goal of certification is to confirm and recognize the certificate holders' general knowledge of aerospace physiology and their ability to support military, space and civilian flight operations at the highest level of expertise. Over time the certification examination has evolved to reflect parallel changes in aerospace physiology. A great deal is owed to Dick Trumbo, Sid Leverett, Richard Sinclair and Bruce Bassett for initiating and developing the Aerospace Physiology Certification Program through previously uncharted waters. This work has successfully served Aerospace Physiologists for many years.

It is helpful to look at the philosophical background that is involved with certification. Successful applicants are approved by the Executive Council of the Aerospace Medical Association (AsMA), acting upon the recommendations of the Aerospace Physiology Certification Board. The Certification Board consists of nine members plus a chairperson and a representative from the AsMA Council. Activities of the Board were published in the December 1985 issue of *Aviation, Space and Environmental Medicine*.

Throughout the years of certification, meaningful revision activities for the examination have been managed by Arthur H. Smith, Donald C. Choisser, Emerson L. Besch, Kent E. Magnusson and James T. Webb. In 2002, a major examination rewrite took place by Lt. Col. Tim Byrne, Chair, Aerospace Physiology Examination Committee. The examination was revised, updated and integrated with new software. The overall test structure and ethical policies were examined during the period of revision and rewriting. Ideas were presented to the past Chairs of the Examination Committee, the RAND Institute (who construct medical and legal board exams), and the United States Air Force Academy's Educational Excellence office. What developed was an improved professional exam that could withstand outside scrutiny.

The Aerospace Physiology Certification Board administers the 250 objective-type question certification examinations at the Annual Scientific Meeting of the AsMA. The 5-hour examination covers various areas relevant to aerospace physiology in the general flight environment including: physiology, acceleration physiology, decompression physiology, impact, hypoxia, vibration and noise, operational aspects, space physiology, spatial orientation and the various aspects of human factors, etc. The examination is given in English and a calculator may

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be used. The examination is fair and challenging. The target audience is aerospace physiologists with five year's experience who have studied the reference materials.

Each year the Chair of the Aerospace Physiology Board Certification Examination Committee assembles a new examination. Other members of the Examination Committee provide input. A certain percentage of the questions remain on subsequent exams to ensure continuity from year to year. These questions have answer choices rearranged along with a mix of items in each topical area. The annual exams are updated and contain new information related to the field of Aerospace Physiology by including items related to articles in the recent journal issues of the Aviation, Space, and Environmental Medicine.

In the future, the areas considered for questions will undoubtedly add more contemporary problems to the classic areas of today and the past. The overall development, implementation and continued success of the Aerospace Physiology Certification Program is a testimony to the sustained dedication of the many talented members of the Aerospace Physiology Society and their advisors on the AsMA Council.

TABLE I. FIRST AEROSPACE PHYSIOLOGISTS BOARD CERTIFIED BY EXAMINATION (1977).

1. Donald C. Choisser, Col., USAF, BSC
2. Mary F. Foley, Col., USAF (Ret)
3. Billy Joe Pfoff, Maj., USAF, BSC
4. Robert M. Shaffstall, Capt., USAF, BSC
5. Paul J. Sheffield, Maj., USAF, BSC
6. Arthur H. Smith, Ph.D.

TABLE II. HONORARY CERTIFICATION OF THE PAST PRESIDENTS OF AEROSPACE PHYSIOLOGY SOCIETY WHO CONTRIBUTED TO THE PREPARATION AND GRADING OF THE FIRST EXAMINATION (1977).

1. Smith W. Ames, PhD
2. Richard W. Bancroft, PhD
3. Bruce E. Bassett, Lt. Col., USAF, BSC
4. Edwin P. Hiatt, PhD
5. Mary F. Keener, CAPT, USN (Ret)
6. Sidney D. Leverett, PhD
7. Charles F. Lombard, PhD
8. Martin Passaglia, CAPT, MSC, USN
9. Donald H. Reid, CDR, MSC, USN
10. Richard B. Trumbo, Lt. Col., USAF, BSC

Society Presidents

Each year a new group of officers are elected to the Aerospace Physiologist Society. The Society has been fortunate; some say blessed, to have many talented, industrious officers who have served with distinction in their various positions.

A brief bio sketch of the first three presidents is memorable and appropriate; not just for the formative years, but also as an indication of the quality of the individuals who have managed the Society.

Charles F. "Red" Lombard, PhD, a physiologist/pharmacologist, began as a Cum Laude in physics. As the first president of the Aerospace Physiologist Society in 1966, he was a remarkable researcher in several industries and universities for 40 years, including University of Southern California, Protection, Inc., and Northrop Space Laboratories. He did original pioneering research and development in



FIRST CERTIFICATION--Undergoing examination May 8, 1978, for certification in the specialty of aerospace physiology are, left to right front--Paul J. Sheffield and Mary F. Foley; rear--Robert M. Shaffstall and Donald C. Choisser.

TABLE III. AEROSPACE PHYSIOLOGY SOCIETY PAST PRESIDENTS.

1966-67 -- Charles F. Lombard	1985-86 -- Emerson L. Besch--For Jimmy D. Adams due to illness
1967-68 -- Mary F. Keener	1986-87 -- Billy J. Pfoff
1968-69 -- Smith W. Ames	1987-88 -- Douglas W. Call
1969-70 -- Thomas H. Allen	1988-89 -- Wilbur T. Workman
1970-71 -- Richard W. Bancroft	1989-90 -- W. Carter Alexander
1971-72 -- Edwin P. Hiatt	1990-91 -- Kenneth N. Ackles
1972-73 -- Bruce E. Bassett	1991-92 -- William J. Cairney
1973-74 -- Donald H. Reid	1992-93 -- Roberta L. Russell
1974-75 -- Richard B. Trumbo	1993-94 -- James T. Webb
1975-76 -- Sidney D. Leverett, Jr.	1994-95 -- Ronald D. Reed
1976-77 -- Martin Passaglia, Jr.	1995-96 -- Curtis G. Armstrong
1977-78 -- Donald C. Choisser	1996-97 -- Kent E. Magnusson
1978-79 -- Paul J. Sheffield	1997-98 -- Jeffrey C. Sventek
1979-80 -- John A. Vaughn	1998-99 -- Britton L. Marlowe
1980-81 -- Paul A. Furr	1999-00 -- Susan E. Richardson
1981-82 -- Mary F. Foley	2000-01 -- Donald A. Diessel
1982-83 -- Russell R. Burton	2001-02 -- Robert A. Matthews
1983-84 -- Roger W. Page, Jr.	2002-03 -- Vincent W. Musashe
1984-85 -- Emerson L. Besch	

acceleration, altitude and crash protection, including energy absorbing materials (vs. sling suspension) for aircrew "crash" helmets. His work led to the development and marketing of the "Lombard helmet" and its successors worn in the 1960s and thereafter by many jet fighter and test pilots. This work significantly benefited the USAF, USN, and civilian fliers and evolved into much of the present day headgear. Although remembered by many senior fliers and astronauts for the Lombard helmet, his somewhat unrewarded contributions to oxygen equipment, restrain research with Dr. John Paul Stapp, auto seat belts, football helmets, accident investigation, are only a few of his firsts. For those who knew him and worked with him, he will be remembered as a quiet, gentle, methodical man who did truly outstanding work.

Capt. Mary F. Keener, MSC, entered the Navy in October 1942 after receiving a BA degree from the University of Alabama for her work in zoology. She attended the first midshipman school for women at Smith College, Northampton, MA. Commissioned an Ensign in January 1943, she was assigned to the office of the Chief of Naval Operations, Department of the Navy, Washington, DC. In 1944, she was ordered to the Naval School of Aviation Medicine (later the Naval Aerospace Medical Institute), Pensacola, FL, for training as an aviation physiologist. Her career included the Naval Medical Research Institute in Bethesda, MD and various Naval air stations. She spent most of her career in teaching naval aviators and air crewmen how to meet the emergencies they may encounter in flight. She was widely known among Navy, Marine Corps and Air Force personnel, as she had probably trained more aviation personnel in oxygen equipment, and with low-pressure chambers than any other aviation physiologist in the armed forces. At the time of her AsPS presidency, Capt. Keener was head of the Aviation Physiology Training Branch, and head of the Aviation Physiology System's Requirement Section in the Bureau of Medicine and Surgery Department of the Navy, Washington, DC. In those spe-

See AsPS HISTORY, p. 96.



FIRST PRESIDENTS--The first three presidents of the Aerospace Physiology Society are, left to right, Dr. Smith W. Ames, CAPT Mary F. Keener, USN, and Dr. Charles F. Lombard.



PASSING THE GAVEL--At the 2003 meeting in San Antonio, outgoing president, Vince Musashe passed the gavel to incoming president Donna Murdoch.

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 alities, she planned, directed and coordinated the Aviation Physiology Program for Naval aviation personnel. Capt. Keener was the first woman officer to obtain the rank of Captain in the USN Medical Service Corps, the first Chief of Naval Aviation Physiology Programs and the first female President of the AsPS.

Dr. Smith W. Ames received his BA and MA in Physiology from the University of Maine. He was directly commissioned as a Second Lieutenant in the US Army Air Corps in 1942 and was assigned as an aviation physiologist to the Santa Ana Army Air Base Physiological Training Unit. He subsequently served as Chief of the Mobile (railroad) Physiological Training Unit stationed at Goodman Field, KY. Later moving to Freeman Field, Seymour, IN and then to McDill Air Force Base, Tampa, FL. He left the service when World War II ended in 1945 and combined teaching Life Sciences with part-time research work at the University of Southern California Medical School, Department of Physiology. He later devoted full-time to research work on the human centrifuge, which was operated under an Office of Naval Research contract. While at the University of Southern California, he completed the work for a PhD degree in Aviation Physiology. In April 1951, he was recalled to active duty by the US Air Force and was assigned as Chief of the Survival Training and Equipment Branch Office of Flight Safety Research at Norton AFB, San Bernadino, CA. From February 1954, Dr. Ames was employed by the USAF Surgeon General as Senior Aviation Physiologist to manage the USAF Physiological Training Program. His many innovations include establishing an aerospace physiology unit in Panama to train US and our South and Central American allies. Also, in the early 1960s, he established Personal Equipment Mobile Training Teams (PEMTT) that provided cutting-edge life support equipment training and problem solving for the continental United States and selected overseas bases. Dr. Ames was instrumental in guiding several generations of Air Force aerospace physiologists for almost 20 years and in the formative steps of the Aerospace Physiologist Section in 1965-1967. As with other Society presidents, his long service, achievements and dedication to productivity for the Aerospace Physiologist Society will be remembered as monumental by many of the senior members of the Society.

The Presidents of the Aerospace Physiology Society are listed at **Table III**.

The Final Chapter of the History of Aerospace Physiology Society will appear next month, in the February issue.

Aerospace Physiology Award Nominations Due April 2, 2004

The members of the Aerospace Medical Association and the Aerospace Physiology Society are encouraged to recognize those valuable individuals who are performing extraordinary work within the Aerospace Physiology Community. The time has come to start planning for this year's Aerospace Physiology Society Awards, to be presented at the Aerospace Medicine Association's 75th Annual Scientific Meeting, held in Anchorage, Alaska.

The AsPS presents three awards at its annual luncheon. These awards are presented for outstanding achievement in all areas of aerospace physiology-operational support, training, research, and leadership. Recipients receive a certificate, wall plaque, and an honorarium. The following are brief descriptions of each award:

The Paul Bert Award, recognizes outstanding research contributions in aerospace physiology. This award was established in 1969, and was originally given for achievement in operational physiology. It is named in honor of the famous French physiologist, Paul Bert, the "Father of Pressure Physiology." Research contributions may vary from basic science to research in highly applied areas of aerospace physiology. The award is sponsored by NTI, Brooks City-Base, TX. Last year's recipient was James T. Webb, Ph.D.

The Wiley Post Award recognizes outstanding contributions in the areas of direct operational physiology and/or aeromedical training and education. In 1972, the Wiley Post Award replaced the Paul Bert Award for Operational Physiology. It is named in honor of the pioneer aviator Wiley Post, representing all who have benefited from the efforts of operational aerospace physiologists. The Wiley Post is presented for exceptional service and achievement in operational physiology, including education and physiological support of Dept. of Defense, FAA, NASA, allied or civilian aircrew. The Gentex Corporation, Carbondale, PA, sponsors the award. Last year's recipient was Sean P. Lando LT, MSC, USNR.

The Fred A. Hitchcock Award recognizes career contributions of senior aerospace physiologists for excellence in either operational aerospace physiology or aerospace physiology research. The award was established in 1972, and is named in honor of Fred A. Hitchcock Ph.D., co-translator of Paul Bert's classic work, "Barometric Pressure". The award is sponsored by International Atmo. Last year's recipient was Kent Magnusson, COL, BSC, USAF.

The standard format for award submissions shall be the same as the Aerospace Medical Association Awards, to include a citation to be read at the time of presentation (80 words or less) and a list of significant accomplishments in bullet format (maximum of 300 words). Please include the time interval over which the nominee's contributions were made. A current one-page biography, CV, or resume should also be included.

Society and Association members are strongly encouraged to nominate and recognize the outstanding contributions by professionals within the aviation scientific community.

Award nominations are due no later than 2

April 2004. Nomination package and Bio/CV must be in Microsoft Word. Please send nominations to:

c/o Commander, Naval Air Systems Command (PMA-202)
 Attn: (CDR Wheaton, AsPS Awards)
 47123 Buse Rd, Suite 347
 Patuxent River, MD 20670-1906
 Phone: (301)342-8445

Aerospace Physiology Certification

The Aerospace Physiology Certification Board of the Aerospace Medical Association will administer the certification examination at the 75th Annual Scientific Meeting in Anchorage, AK on Sunday, May 2, 2004.

Individuals interested in certification should refer to the November 2003 issue (p. 1218) for more information.

Application must be made prior to March 1, 2004, to assure consideration for the 2004 examination. Applications received after that date cannot be guaranteed consideration for the 2004 exam. Any late applications not considered for 2004, will automatically be held in abeyance for consideration for the 2005 exam.

To obtain an application form and complete information about certification requirements, submit a short biography describing your relevant background in aerospace physiology, and request for information to the Chair of the Admissions Committee:

CDR David Service, MSC, USN
 4881 East Alder Drive
 San Diego, CA 92116
 ServiceDB@miramar.usmc.mil

SPACE MEDICINE BRANCH YOUNG INVESTIGATOR AWARD

The Space Medicine Branch's Young Investigator Award is presented to a young investigator who is the primary author of an outstanding presentation in the area of Aerospace Medicine presented at the current Annual Scientific Meeting of the Aerospace Medical Association. In addition to being the primary author, the work must be original and the young investigator must be presenting at the Annual Scientific Meeting for the first time. The Award is intended to encourage young investigators new to the field of Aerospace Medicine.

The applicant must submit a draft manuscript if their presentation to the chair of the Young Investigator Award sub-Committee. To be considered for the 2004 award, manuscripts must be submitted by March 15, 2004 to:

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 Young Investigator Award Chair
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