President's Page

Richard T. Jennings, M.D., M.S.

I have had a life-long interest in the space program and have always considered the space program important for survival of human life. This president's page is too short to develop this concept fully, but John Young's quotation on the subject covers my view. He said, "Knowing what we know now, we are being irresponsible in our failure to make the scientific and technical progress we will need for protecting our newly discovered severely threatened and probably endangered species-us. NASA is not about the 'adventure of human space exploration,' we are in the deadly serious business of saving the species. All human exploration's bottom line is about preserving the species over the long haul." My view of space exploration derives from the concept that we have an imperative to explore, protect this planet and its biological diversity, and spread human life to the nearby galaxy.

Recently, I have been involved in certain aspects of commercial spaceflight, and I am encouraged by the recent positive developments. During a presentation in Orlando, I noted that commercial spaceflight companies are a little like the settlers that in 1889 made the land runs in Oklahoma Territory. Settlers made the run in multiple conveyances including horseback, buckboards, Conestoga wagons, and by foot. Some made it, and others eventually fell by the wayside. However, by 1907 enough were successful that a territory became a state. While some commercial companies (and some flights) will fail, the important aspect is that very soon Earth's suborbital space, and eventually low-Earth orbit, will be settled by private companies and individuals. Even though commercial spaceflight will not surpass the exploration or orbital programs of the Russian Space Agency, NASA, International Partners, or even the Chinese program, the new access to space for average citizens will be a boon to aerospace medicine practitioners who currently care for astronauts and cosmonauts and plan the medical support for exploration-class missions.

The cost of commercial spaceflight, even suborbital flights, is considerable, and the median age of these individuals will be 10-15 years older than that of career astronauts. One often gives up youth and health to create wealth. The age extremes are even more remarkable. Since many will be older when the prevalence of disease is higher, unhindered by the need to serve as crew, and have no astronaut career interests, space medicine practitioners should have access to study various medical conditions in analogue and flight-related environments. Based on the current predicted acceleration and contingency profiles for suborbital flights, many passengers will need preflight familiarization exposures in altitude chambers and centrifuges in preparation for flight or to safely evaluate medical conditions before flight. Up to now, the majority of data that have been accumulated at high sustained acceleration, microgravity, or with altered atmospheric parameters have been obtained in young, healthy, and predominately male subjects. Due to the large number of individuals that industry analysis show will make suborbital flights, practitioners can easily create databases to develop medical standards, waiver guidelines, treatment countermeasures, and in-flight medical surveillance for those wishing to fly. While at first the decision-making process will be conservative, it is these data that can eventually lead to less restrictive medical selection criteria.

More importantly, the data learned from these studies can provide mission-critical data for providing preventive and treatment care options for physicians and engineers planning exploration-class missions. We have been extremely successful in avoiding mission termination or severe illness during spaceflight through the careful medical selection of astronauts, provision of periodic screening, and delivery of preventive health services. However, for long-duration exploration-class missions, space medicine providers need diagnostic and treatment options for a variety of serious medical conditions that may arise in flight. There is certainly anecdotal information from the first 45 years of spaceflight, but these data are limited and distribution restricted secondary to privacy considerations.

Commercial spaceflight will provide access to space for thousands of the general public during the next decade. Hopefully, many nurses, physicians, and scientists in AsMA will be able to join this "land run" to space. For those of us who remain behind, it provides an opportunity to study how humans with certain diseases and conditions adapt to the stresses of spaceflight. In the end, this knowledge will be invaluable for mission planning and the provision of health care for crews that explore our nearby galaxy. Our journal, *Aviation, Space, and Environmental Medicine*, should provide an important means to disseminate this knowledge. We also hope to make commercial spaceflight a prominent topic at the next annual scientific meeting in New Orleans and subsequent meetings. Hope you can attend this year.

Executive Director's Column

Rayman

Its Time Has Come!

During the past 5 to 10 years, there have been a number of articles in the literature describing medical illnesses that have occurred among passengers during flight aboard commercial aircraft. The data reported vary somewhat from author to author, but this is understandable because none had access to comprehensive information. In any event, probably all would agree that in-flight illness does occur, but in general, it is uncommon. And it is rarer still for serious in-flight illness to occur. Nevertheless, a cavalier attitude toward in-flight medical illness is certainly not advisable. We must be mindful that these medical events will occur and most likely in greater numbers as larger aircraft are manufactured and more individuals take to the air for business or recreational purposes.

Information regarding in-flight illness is compartmentalized among individual airlines and ground medical consultants. Although this is better than no information at all, still, it is not comprehensive. I believe the time has come for establishing a system for the collection of this information with a central repository where the airlines can report in-flight medical events anonymously. With such a central repository, any airline could retrieve these valuable data. It might be asked, why are these data needed? They are needed to assist the airlines in determining the contents of onboard emergency medical kits (EMKS) and the requirements for in-flight medical care. At the present time, each airline is more or less on its own, and designs its medical care capability based upon best judgment. With the central repository, we would have an evidence-based methodology.

This idea is not new--it has been discussed by those in airline medical departments and within your Association for a number of years. There is no doubt that establishing such a central repository will be very difficult. First, a single, international agency must be prepared to take on this responsibility. Second, the airlines must be willing to provide this information, which would require filling out some kind of standardized form. With the onerous chores already imposed upon cockpit and cabin crew, this might not be welcomed.

In any event, I believe the concept of a central repository must be explored and an attempt must be made to establish a system that is not a burden to the airlines that provides useful, retrievable information.

An in-flight medical event repository - its time has come.

New Journal Feature

On occasion I have come across excellent articles in other journals that are of aerospace medicine interest. These articles often go unnoticed by most of us because of the large number of journals being published. In order to alert our members of such articles, I have formed a committee, the members of which collectively read about 15 major journals. Each member will send me a reference of any article that would be of interest to us. These references will then be published in *Aviation, Space, and Environmental Medicine* for your information. Committee members include: Michael Bagshaw, Charles Chesanow, Jack Hastings, Doug Ivan, Tom Nesthus, Russell Rayman, and Jan Stepanek.

Here is our first listing:

1. Petty GW, Khanderia BK, Meissner I, et al. Population-based study of the relationship between patent foramen ovale and cerebrovascular ischemic events. Mayo Clin Proc 2006; 81(5):602-8.

2. Rona RJ, Hooper R, Greenberg N, et al. Medical downgrading, self-perception of health, and psychological symptoms in the British Armed Forces. Occup Environ Med 2006; 63(4):250-4.

3. Prise KM. New advances in radiation biology. Occup Med 2006; 56(3):156-61.

If others would like to volunteer, please contact me at rrayman@asma.org or (703) 739-2240, x 103.

AsMA Future Meetings

May 13-17, 2007
Sheraton and Marriott Hotels
New Orleans

May 11-15, 2008
Sheraton and Hilton Hotels
Boston, MA

MEETINGS CALENDAR 2006-2007

October 5-8, 2006, Ottawa, Canada. Civil Aviation Medical Association Annual Scientific Meeting. Info: Jim Harris, CAMA, P.O. Box 23864, Oklahoma city, OK 73123-2864; (405) 840-0199; JimLHarris@aol.com.

October 5-7, 2006, La Jolla, CA. The Frontiers of Clinical Investigation: Bench to Bedside. For more information, please visit: http://www.nature.com/nm/meetings/cii/index.html

October 10, 2006, Arlington, VA. Pandemic Influenza: Principles and Techniques for Communicating Effectively in High Stress and High Concern Situations Workshop at the Sheraton National Hotel. For more information, contact Pamela Greenstein at 703-807-2758 or at pgreenstein@marketaccess.org or visit www.homelanddefensejournal.com/hdl/conf_fluworkshop.htm

October 11-14, 2006, Chicago, IL. 2006 Biomedical Engineering Society Annual Fall Meeting. Info: BMES, (301) 459-1999 ; info@bmes.org, http://www.bmes.org.

October 11-12, 2006, Arlington, VA. Preparing for Pandemic Influenza. For more information, contact Pamela at 703-807-2758 or at pgreenstein@marketaccess.org or visit www.homelanddefensejournal.com/hdl/conf_influenza.htm

October 15-16, 2006, San Francisco, CA. 4th Annual Meeting of the Society for Human Performance in Extreme Environments. Info: Jason Kring, (386)323-8045; jason.kring@erau.edu, http://hpee.org/.

October 16-20, 2006, San Francisco, CA. Human Factors and Ergonomics Society 50th Annual Meeting. Info: info@hfes.org; http://www.hfes.org/web/HFESMeetings/06annualmeeting.html

October 16-20, 2006, Moscow, Russia. 5th International Scientific and Practical Congress. For more info, please call Mr. Valentin Vlasov at 095-953-5842, or Mrs. Dina Valeeva or Mrs. Natalia Mitrokhina at phone/fax 095-239-9851; or e-mail medic@mak.ru, attn: Mr. Vlasov V.D. or e-mail infan.ltd@relcom.ru, attn: Mr. Gabbasov I.Z.; or by fax at 095-953-3508.

October 19-21, 2006, Kauai, Hawaii. US/Japan Panel on Diving Physiology, Diving Technology, and Aerospace Medicine biennial meeting. Abstracts are to be submitted to Don Chandler at donchandler@uhms.org or submitted online at http://www.uhms.org/Meetings/US_JAPAN/UJNR_06.ASP.

October 23-25, 2006, Reno, NV. SAFE Association 44th Annual Symposium. For more info: Ms. Jeani Benton, (541) 895-3012; safe@peak.org; www.safeassociation.org.

November 2-3, 2006, London, UK. Aviation Health: Tackling the Issues, Full details can be found at www.quaynote.com or contact Alison Singhal via e-mail or phone +44 (0) 20 8374 6474

November 8-11.2006, Huatulco, Oaxaca, México. XXIII International Meeting of Aerospace Medicine, sponsored by the Mexican Association on Aviation Medicine,A,C. General Theme: Advances in Clinical Aerospace Medicine. For additional information,please contact: www.amma.org.mx or lamezcua@att.net.mx

November 9-12, 2006, Eilat, Israel. Air Travel and Health. This symposium will deal with flight physiology and a wide array of health issues in air travelers. For more info, visit www.palexconventions.co.il/ath2006.

April 22-26, 2007, Dayton, OH. International Symposium on Aviation Psychology: "Airspace as a Cognitive System." For more info, visit www.wright.edu/isap.

This Month in Aerospace Medicine History-- October 2006

By Walter Dalitsch III, M.D., M.P.H.

Seventy-five Years Ago

Physical condition waivers and accident rates (Medical Director Aeronautics Branch, Department of Commerce, Washington, D.C.): "[Thirty-four point five] percent of all student pilots are perfectly normal physically so far as physical records, perform and obtain a higher grade of license within a year and with those which we arbitrarily defined as minor physical defects the percentage dropped from 35 to 30.3…

"During 1927, 9.3 percent of all our physical normal pilots cracked up but 34 percent of the physical defectives cracked up here on similar figures…

"[A]s I understand it, 15 per cent of all Army flyers carry waivers… Seven percent of our transport pilots are carrying waivers. Some of the difference may be explained there to the extent our men, our pilots are not getting quite the thorough examination that the Army flight surgeons are giving their men, but it nevertheless illustrates we have still maintained a very marked difference between our private pilot class and those flying for pleasure, and our transport class, as evidenced by the fact only 7 percent of the limited commercial and transport pilots have physical defects, and 16 per cent or 15 per cent of the private pilots.

"Well, I divided all of these accidents up according to the pilot grade. Now while I will admit there are a number of private pilots in the United States who have a world of experience and who hold a private grade merely because they have no occasion whatsoever to commercialize on their licenses, nevertheless, as a general rule, if you take all the private pilots and group them together - and there will be thousands of them - they will be inferior technically. If you take the limited commercial, which represents the private class between 50 and 200 hours, they will be a little higher, and you take the transport grade 200 hours and over, and they will be the best technically that we have.

"What I did was to compute our record of all accidents that had taken place with private pilots, and I found that the physically defective private pilots cracked up 33 1/3 per cent oftener than the physically normal. I further divided up private accidents into those which had been fatal and those which had been non-fatal and I found that the fatal accident rate in the physically defective pilots was 66 2/3 percent greater than in the physically normal - indicating that not only can you get in trouble but you can get bumped off.

"The limited commercials, the non-fatal accident rate was a third higher than in the physically normal, and the fatal accident rate was I think 50 percent greater.

"In the transport pilots - and here is the only deviation from the scheme I thought would work out - the physically defective rate was 50 percent greater than in the physically normal, but so far as fatal accidents was concerned there was no difference. Of course I think this, those who follow air line work a good deal probably understand a man can acquire, in spite of a defect, a certain amount of experience and maybe he will crack up rather frequently but he won't kill himself and that is the only favorable, or rather is the less favorable situation in connection with this whole report" (1).

Fifty Years Ago

Importance of weight in pushing the envelope (Douglas Aircraft Company, El Segundo, CA): "New problems are being generated by man's increasingly active encroachment toward the fringes of space. None of these new problems or resulting new information requirements, however, indicate that there will be any lessening of the need to apply primary effort toward achieving an optimum man-machine combination for maximum overall efficiency.

"An effective approach toward better overall efficiency must increasingly make use of the best available aeromedical, scientific and engineering data in order that the necessary working compromises can be achieved. Some of these data, already available, indicate that problems peculiar to flight in space will radically change much of the equipment and crew spaces. Flight speed and altitude records are currently being shattered with increasing regularity. It is no coincidence that both speed and altitude records are falling together, since the increasing drag and heat problems of the lower atmosphere are both attenuated by flight at higher altitudes.

"In order to engineer aircraft with performance characteristics necessary for continued progress in higher altitude flight, added emphasis must be placed on the control of weight. Because of the necessity of carrying a much larger percentage of the aircraft weight in fuel, at least until the advent of suitably developed 'atomic power plants,' the percentage of useful weight of the craft will be reduced and the value of removing each excess pound of weight will continue to increase. In many present military aircraft, the useful load is approximately one-tenth of the total weight of the aircraft; consequently, if performance is to be maintained, each pound of added weight must be supported by an additional ten pounds of fuel, engine, structure and equipment. To look at it differently, an increase in the weight of equipment or pay load equal to 10 per cent of the total weight of certain aircraft doubles the weight of the aircraft if performance is held constant. For extremely high altitude flight, the percentage of useful load will be much less than 10 per cent and the cost value of weight will accordingly be greatly magnified" (4).

Psychosis in aircrew (US Air Force School of Aviation Medicine, Randolph Air Force Base, TX): "This study was undertaken to seek any unusual manifestations of psychosis in the flier. A series of seventy-seven cases revealed a somewhat higher incidence of non-schizophrenic psychosis when it was compared with a recent series of neuropsychiatric patients taken from a cross section of the U. S. Navy. The difference, however, can be attributed to the older average age of the fliers.

"The thirty to forty age group of mature fliers contributed an appreciable number of patients to this series. Although in general the patients showed a moderate degree of predisposition, according to Air Force criteria, their records of past performance did not justify any sweeping categorizing of the group as selection failures.

"Medical personnel, especially the flight surgeon, performed well in identifying these patients and placing them under medical supervision. Illustrative cases are presented to point out that there is a pre-psychotic borderland which creates great management difficulty. The earliest manifestations of psychosis in these patients have been cited to guide the flight surgeon and increase his sensitivity to this problem.

"The psychotic flier is a definite suicidal risk. Present Air Force medical standards regard a history of psychosis as disqualifying for further flying assignments. This is well founded, particularly when one appreciates the difficulties involved in early diagnosis of an initial illness or a subsequent relapse" (5).

The cost of airline food: "Domestic airlines today are spending more money to feed their passengers than they spent not many years ago to fly them. Airline catering has become a specialized trade. In compliance with good sanitation standards, galley equipment is designed to facilitate cleaning - corners are rounded, seams are tight, and parts are removable. Although the primary aim of sanitation is to prevent the spread of communicable disease, an immediate benefit in air travel is that protection of the pilots' health enhances safety. A pilot suffering from severe nausea, vomiting, headache, diarrhea, or cramps would be a hazard to the safety of his plane, its passengers, and its crew" (2).

Twenty-five Years Ago

Instructor behavior and student stress (Arizona State University, Tempe, AZ): "The purpose of this study was to investigate the relationship between instructor pilot behavior and student pilot stress. Six instructor pilots and 12 undergraduate pilot training students served as subjects. Two students were assigned to each instructor. Ten categories of instructor pilot behavior were coded from audio cassette tapes made during four sorties from the initial instrument phase of undergraduate pilot training in the T-50 Instrument Flight Simulator. Behaviors were tallied and converted to a rate per minute; inter-recorder agreement was 87%. Instructors who relied heavily on acceptance and praise behaviors were placed in a positive group (N=4), while those relying on criticism and scolding were placed in a negative group (N=2). Student stress was estimated from timed urine samples used to quantify catecholamine excretion. Results indicated that missions in the T-50 Instrument Flight Simulator produced a significant stress response in the subjects and that the stress response was greater in lessons taught by the instructor pilots in the negative group" (3).

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2. Health aloft: Importance of aircraft sanitation. Physician's Bulletin 1956 (October).
3. Krahenbuhl GS, Darst PW, Marett JR, Reuther LC, Constable SH, Swinford ME, Reid GB. Instructor pilot teaching behavior and student pilot stress in flight training. Aviat Space Environ Med 1981; 52(10):594-7.
4. Mayo AM. Environmental considerations of space travel from the engineering viewpoint. J Aviation Med 1956; 27(5):379-89.
5. Mebane JC. Psychosis in military fliers: An analysis of seventy-seven cases. J Aviat Med 1956; 27(5):391-6.

Science & Technology Watch

Keeping You Informed Of The Latest Advances In Science And Technology

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This month's edition of the Watch looks at cardiovascular technology trends, briefly reviewing some high visibility advances in imaging and treatment of coronary artery disease, some aeromedical implications, and providing a representative list of evolving technologies.

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Cardiovascular Tech Trends

JAMES R. DE VOLL, MD, MPH
Director, Physician Leadership and Provider Innovation, The Advisory Board Company, Washington, DC

Cardiology: Of the innumerable advances in clinical technology in medicine over the last century, perhaps the area that has captured public imagination or awareness the most has been in the area of cardiology. Death and chronic debilitation due to heart disease remains a top population health problem in all developed countries, and the "westernization" of life-style is unfortunately raising the impact of cardiovascular disease in developing nations. Prevention efforts and the introduction of the "statin" drugs have been shown effective in reducing the risks posed by coronary artery disease. Yet these measures are meeting unexpected challenges, in the U.S. at least, from epidemics of obesity, diabetes, and lack of exercise. So in spite of more options in the prevention arsenal, there remains tremendous need for even more advanced techniques to address existing cardiovascular disease. For the aerospace medicine community, the challenge at hand is to understand these rapidly developing clinical technology advances in order to assess their impact on evaluating the suitability of aviation personnel and passengers to enter the aerospace environment.

Imaging: One area in rapid transition is cardiac imaging. In the forefront is cardiac computed tomography angiography (CCTA). The impetus behind this technology is the desire for a "non-invasive" way to image coronary arteries and identify coronary artery stenotic lesions likely to result in myocardial infarction. The existing gold standard technology, coronary angiography (CA), is invasive from the standpoint of introducing a catheter into a major artery (usually femoral) in order to inject angiographic media directly into the coronary arteries and has well-defined risks, including death. Therefore, CA is only appropriate in situations demanding anatomic proof of lesions: classic angina chest pain symptoms with other clinical evidence risk. Since many patients do not fit these criteria, less sensitive and specific means such as nuclear exercise stress tests and echocardiography are used. These tests are only inferential, so a test to actually visualize plaque lesions without the risks of CA is high on the cardiologist wish list.

Using CT to image the heart is not new, but earlier CT technology suffered motion artifacts of the beating heart and poor resolution. Motion artifact has been largely obviated by much faster scanner rotation speeds and software to synchronize the scan with the EKG. Increasing the number of "detectors" allows multiple "slices" to be imaged in a single imaging rotation. The result was the introduction of the 16-detector multi-slice CT (MSCT) in 2004. Combined with medication to control and slow heart rates below 70 beats per minute, clinical studies have demonstrated the potential value of this technology with impressive sensitivity and specificity compared to the gold standard cardiac catheter angiography. The latest generation of 64-slice CCTA is now beginning to show greater improvement and see widespread adoption.

In spite of the impressive visual resolution of 64-slice machines, exact clinical indications for employing this technology are not agreed upon. Studies have not risen to the level of "clinical trials" sufficient to formally compare CCTA to coronary angiography (CA). As a gage of the continuing level of uncertainty about CCTA, the Centers for Medicare and Medicaid Services (CMS) has not issued approval for reimbursement at the national level. On the other hand, local decisions now allow reimbursement in some 16 states, largely on the weight of demand from cardiologists. In short, CCTA is not a general screening test, and is considered adjunctive in the evaluation of chest pain in the community or in the emergency department. Patients with negative tests are referred back for medical management of chest pain, while positive tests are considered strongly indicative of the need for CA.

While CCTA is rapidly gaining on CA in the ability to detect diseased and narrowed coronary arteries, neither test can indicate which arterial plaques truly put the patient at risk. "Immature" plaques pose greater risk for rupture and clot formation which may block off blood supply to portions of the heart, rather than calcified, mature plaques. So, how do we know which plaques are significant? Who needs an invasive intervention and, more importantly, which lesions in a given patient need treatment? Two different additional technologies loom on the tech horizon to help answer this question. Cardiac magnetic resonance imaging (CMR) appears likely to be able to help assess the maturity or vulnerability of plaques, but the ability to meaningfully evaluate beating hearts looks to be 4-5 years away. A second technology, positron emission tomography (PET) scanning provides metabolic assessment of how well heart muscle is functioning. PET, combined with CCTA or CMR may shed light on which coronary artery plaques are causing downstream impairment of heart muscle function.

Intervention technology: The first revolution in treatment of coronary artery plaques was the open heart surgical procedure to replace diseased arteries, coronary artery bypass grafting (CABG). CABG is the gold standard procedure with demonstrated efficacy. Newer techniques using minimally invasive surgical approaches, such as endoscopy, robotics and "beating heart" surgery foregoing heart-lung bypass machines, have recently gained clinical and media attention. However, a second revolution with the introduction of coronary artery balloon angioplasty (to widen narrowed arteries) and coronary artery stents to keep them open have come to dominate the landscape. Stents in particular have taken the lead, providing a true alternative to major open heart surgery. Since 2004, when drug-eluting stents (DES) were introduced, DES has provided a quantum improvement by delivering clot-preventing medication on site to keep arteries open. Subsequently, the volume of stent procedures has exploded.

DES technology continues to evolve rapidly. Second-generation stents are in development, focused on ease of placing the stents at the site of the plaque. But third-generation stents are also in the works, focusing on plaques where arteries branch, improved coatings, and even bio-absorbable stents. However, it is not clear if these future developments will have much impact on the two major clinical challenges for stenting: left main coronary artery disease and diffuse disease in diabetics.

Aeromedical considerations: From the standpoint of aviation medicine, these advances and others (see Table I online*) are exciting but not likely to change aeromedical determinations near term. CCTA is most likely to help in clearing aviators for flight duty when the test is negative, lending added weight to a cardiology evaluation that concludes minimal risk for a major cardiovascular event. Similarly, DES and the next generation stents do not change the fact that clinically significant disease is/was present and that attention to follow-up will be critical in any decision making. Perhaps the biggest challenge is to avoid letting hype for these technologies in popular and clinical literature, as well as in the opinions of some cardiac specialists, overshadow the objective clinical outcome evidence.

***NOTE:** For an e-copy of this column, including **Table I** featuring a sampling of evolving cardiovascular clinical technologies, please visit to the AsMA website at www.asma.org and click on the AsMA News link under "Publications."

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The AsMA Science and Technology Committee provides the Watch as a forum to introduce and discuss a variety of topics involving all aspects of civil and military aerospace medicine. Please send your submissions and comments via email to: barry.shender@navy.mil. Watch columns are available at www.asma.org in the AsMA News link under Publications.

Send information for publication on this page to: **Maj. Andrew Woodrow, USAF, BSC**
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Three Earn 2006 Aerospace Physiology Certification

The certification examination in aerospace physiology was administered on Sunday, 14 May 2006 in Orlando, FL. Three of the candidates successfully completed the 5-hour test session. Following approval of the Aerospace Medical Association Council, Maj. Randy McCalip, USAF, LCDR Tyson Brunstetter, USN, and LT Richard Folga, USN, were granted certification in Aerospace Physiology. The three were recognized during the Aerospace Physiology Society's annual luncheon and business meeting held on Wednesday, 17 May. Each received a certificate signed by the president of AsMA and the Aerospace Physiology Certification Board Chair, and a gold "pO2" pin signifying their accomplishment. They are also authorized to make use of the recently approved trademark, "CAsP", for certified Aerospace Physiologists. Individuals interested in meeting the challenge of board certification in aerospace physiology may read more about the application process in the November issue of *Aviation, Space, and Environment Medicine*.

Maj. Randy McCalip, USAF, BSC

Maj. McCalip is Flight Commander, Aerospace Physiology, Columbus AFB, MS. He supervises 15 Airmen and 2 civilians and is responsible for over 26,000 hours of Joint Specialized Undergraduate Pilot, FAA pilot, DoD aircrew, and High Altitude Parachutists training.

Maj. McCalip was born in Cleveland, MS, and graduated from the Mississippi Military Academy in 1991, being commissioned as a second lieutenant in the U.S. Army. From 1991-1994, he served in various positions in the U.S. Army, including Det. Commander, Platoon Leader, and Brigade Air Operations Chief. In 1994, he was accessed into the USAF Biomedical Sciences Corps and designated an Aerospace Physiologist upon completion of training at the USAF School of Aerospace Medicine.

Throughout his career, Maj. McCalip has distinguished himself as an operational aerospace physiologist, serving in three different commands and deploying in support of Operations SOUTHERN WATCH and ENDURING FREEDOM. Included in his accomplishments are four Class A mishap investigations, involving F-15C/D, F-15E, MC-130H, and MH-53M aircraft. Two mishaps were in deployed locations during Operation ENDURING FREEDOM, and his recommendations resulted in command-implemented safety program upgrades and publications in two safety magazines. He also developed the human performance plan for the CV-22 "Osprey," identifying key areas to maximize human performance and flight safety in the unpressurized environment. His recommendations in oxygen systems, high altitude threats, night vision systems, and spatial disorientation countermeasures were implemented into the aircrew training plan. His significant contributions to the Joint USAF/USN management of the state-of-art fighter simulator-based reduced oxygen-breathing device assured elimination of decompression sickness associated with hypobaric chamber training, enhanced fidelity of fighter/bomber aircrew Refresher Physiological Training, and, when fully implemented, will save the Air Force millions of dollars per year in aircrew training costs. He designed the USAF standardized Aerospace Physiology curriculum for Federal Aviation Administration and DoD helicopter aircrew. His military awards include: 2005 14th Medical Group Flight Commander of the Year, 2004 14th Flying Training Wing Field Grade Officer of the Year, 2003 Air Force Special Operations Command Outstanding Achievement in Safety Award, 2001 U.S. Air Force Company Grade Officer Aerospace Physiologist of the Year, and 2001 U.S. Air Force Chief of Safety Medical Achievement Award. Maj. McCalip has been a member of the Aerospace Medical Association and the Aerospace Physiology Society since 2000.

LCDR Tyson Brunstetter, MSC, USN

LCDR Brunstetter received his O.D. degree in 1997 and his M.Sc. and Ph.D. degrees in Physiological Optics in 1997 and 2000, respectively, from the Ohio State University.

From 1999 until 2003, he was assigned as a Research Optometrist at the Naval Aerospace Medical Research Laboratory in Pensacola, FL. There, then-LT Brunstetter participated in a variety of projects, studying such topics as night and dynamic visual acuity, ocular torsion during flight, voluntary eye movement patterns of pilots, spatial disorientation, and G tolerance. During this time, he also completed the U.S. Naval Flight Surgeon program and graduated as the 8th Naval Aerospace Optometrist in June 2002. Since 2003, he has served as the staff Aerospace Research Optometrist at the Naval Air Warfare Center - Aircraft Division (NAWC-AD) in Patuxent River, MD. There, he performs as a vision/optics Subject Matter Expert at the NAWC-AD Laser Eye Protection Laboratory and on several DoD Programs such as Joint Advanced Laser Eye Protection Visor, Joint Helmet Mounted [Missile/Bomb] Cueing System, and Joint Service Aircrew [Chem/Bio] Mask; and as a recurring lecturer at the U.S. Naval Test Pilot School. In June 2006, he assumed duties as Research Director of the U.S. Navy Refractive Surgery Program.

LCDR Brunstetter holds optometric and pharmaceutical licensure from Ohio. He is a Fellow of the American Academy of Optometry; a member of the Armed Forces Optometric Society, American Optometric Association, and the Aerospace Medical Association; and an associate member of the Society of U.S. Naval Flight Surgeons.

LCDR Richard Folga, MSC, USN

LCDR Richard Folga (promoted from lieutenant on June 1, 2006) was commissioned in 1997 and completed Aerospace Physiology Training on June 26, 1998, in Pensacola, FL.

LCDR Folga's follow-on tours included Intern and assistant department head at ASTC Miramar, Aeromedical Safety Officer at Marine Aircraft Group 16, Aeromedical Safety Officer and Night Imaging and Threat Evaluation Lab Program Manager, Marine Aviation Weapons and Tactics Squadron One, MCAS Yuma, AZ. His current position is Director, Human Performance and Training Technology, Naval Survival Training Institute. LCDR Folga is the Bureau of Medicine and Surgery appointed Subject Matter Expert (SME) for Spatial Disorientation and Situational Awareness for the Naval Aerospace Physiology Program, and currently serves as the SME team lead for both night vision devices and laser/laser countermeasures.

LCDR Folga serves as an At Large Member for the Aerospace Physiology Society, and is an Associate Fellow of the Aerospace Medical Association. LCDR Folga was the Naval Aerospace Physiology Program 2001 Aerospace Physiologist of the Year. In 2006, he was board certified in aerospace physiology by the Aerospace Medical Association.

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AEROSPACE NURSING SOCIETY NEWS

President's Message

When I reflect over some of my scientific newspapers from the past, I remember how proud my high school senior class was when we saw that first rocket launch into space. Prior to the event, it must have been a shared vision of many people to make that experience a reality. I am very proud to be a member of the Aerospace Medical Association (AsMA). The mission of AsMA is to "apply and advance scientific knowledge to promote and enhance the health, safety, and performance of those involved in aerospace and related activities" and is charting the course for the future of space travel.

As members of the Aerospace Nursing Society (ANS), I am sure that we are looking forward to the future of our organization. Just as space travel moves forward, so will we as an organized group of aerospace professionals. I know that we have narratives and stories to share; it does take time to put our thoughts on paper. Our journal needs to share your stories. Can you take a few minutes to write a narrative that is special to you and send it to us to share with other members? At this time, one of my major projects is to update the ANS Membership Excel Spreadsheet. I have sent out some e-mail messages which have been returned as address unknown. If you have had an address or e-mail address change, please send me the update so that our list for the parent organization remains current. You are important to us; we need to know where we can communicate with you. Once the ANS Spreadsheet is updated, I can send each member a copy by e-mail.

BIOTERRORISM PANEL MEMBERS--(left to right) David P. Millett, M.D., M.P.H., Janet L. Sanner, RN, MSN, COHN-S, CCM, Susan Northrup, M.D., M.P.H., and John Barson, M.D., M.P.H.

It has been a pleasure to share information related to the Aerospace Medical Association with all members of the ANS. During the 77th Annual Meeting in Orlando, FL, three physicians worked with me in order do a panel presentation. The presentation was entitled: Bioterrorism Preparedness and Response: Sharing the Science. The members of the panel utilized technology to communicate continuously to expedite sharing of ideas and knowledge related to each presenters topic that related to bioterrorism. The process worked very well, it saved time, travel, and was always available to each member. Each panel member chose the topic in their area of expertise; during the presentation at the AsMA there was no duplication of information. I think that it is an honor to participate in such a collaborative process. I want to thank each member of the team, Susan Northrup, John Barson, and David Millett, for sharing their topics that contributed our panel.

Now is the time to begin writing our abstracts and submitting them to AsMA (the deadline is October 31). Dr. Rayman has informed us that the website is open for submission. Some ANS members have contacted me with their presentation ideas. It is such an exciting time to share our research findings and outcomes during the 78th Annual Scientific Meeting of the Aerospace Medical Association in New Orleans, LA.

Janet L. Sanner, RN, MSN, COHN-S, CCM
President, Aerospace Nursing Society

Join the Aerospace Nurses Society!
Dues are just $10 ($5 allied health professionals). For further information, contact:
Diane Fletcher, ANS Treasurer
4042 Stonewall Lane
Shiloh, IL 62221
Work: (618) 206-8467
diane.fletcher-02@scott.af.mil

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The following organizations, who share the Association's objectives or have benefitted from its past or current activities, have affirmed their support of the Association through Corporate Membership.

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Theme: Bringing the World Together

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- Clayton Cowl, M.D., Mayo Clinic
- Frederick Tilton, M.D., U.S. Federal Air Surgeon
- Douglas Ivan, M.D., U.S. Air Force Aviation Ophthalmologist
- John Hastings, M.D., FAA Neurology Consultant
- Mike Muhm, M.D., Boeing Corporation
- David Bryman, D.O., CAMA President
- AND MANY MORE

There will also be a full social agenda!
Please Join Us!

WING NEWS & NOTES

Send information for publication on this page to:
Dale Orford
15516 E Acacia Way,
Fountain Hills, AZ 85268
480-837-7919; dorford@cox.net

Message from Our President

from Conoly Barker

Aloha Wing Sisters,

I spent the summer visiting my family, traveling all across the U.S. It made me think of how the Wing is also a type of family for many of us who regularly attend the AsMA meetings with our spouses. We travel to many different parts of the U.S., visiting many exciting cities and renewing our international friendships. One thing I would like for us to focus on this year is to expand our family with new members. Your Board is taking the initiative to contact the new members from the Orlando meeting. I would like to ask you, the membership, to be actively seeking new potential Wing members in your community. Do you know of any AsMA spouses who might attend the meetings but don't know about the Wing? Would you get in touch with them and let them know how much fun we have? Invite them to attend the meeting in New Orleans! Diane Okonsky-Hudson and her team are working on some really great venues for us. We should have an awesome visit there!

Looking forward to seeing you all in NOLA (New Orleans, LA).

Meet Els Salisbury

Els was born in Grave Noord Brabant in the Netherlands and emigrated to Canada with her parents when she was barely a year old. As her first language was English, this "Little Dutch Girl" as she was called in school, felt like a tourist when she visited Holland for the first time at the age of eleven. Says Els, "I started out as the only child of an immigrant family in London, Ontario. After the horrors of the Second World War, my parents made a point of the issue of tolerance. They were very proud to live amongst other immigrant families and 'hate' was a four letter word that we were never allowed to say in our house." Eventually, the family moved to Ottawa and by then, there were six children in the family and Els had attended six different elementary schools before the fourth grade. "Our home life was a noisy circus, a lot like 'My Big Fat Greek Wedding,' but without the reserve! My Mum still cooks feasts for everybody and looks after the whole world. My Dad, a self-taught engineer, spent evenings and weekends knocking down walls and building bedrooms in the basement to make the house fit all of us. He even built us a 14-ft boat for exploring the lakes and rivers and for learning to water ski. I feel very lucky to be living in Ottawa where I can see my parents often."

Els met her husband in the Bell High School Band - Dave played clarinet and she played the flute. Says Els, "That's how I got to see the Rockies for the first time, on our grade 13 trip. When Dave went off to Queen's University in Kingston, Ontario, for medicine, I stayed right in town to go to St. Pat's for English and psychology. He joined the Air Force and I am a special ed. teacher. When he proposed to me, he asked me if I would rather marry a lieutenant or a captain. I thought he meant two other guys!"

"We have two daughters, Jenny and Shelagh. They were born 22 months apart in Moose Jaw, Saskatchewan, just about as Canadian as you can get. They're proud of it. In all of our moves, they have been each other's support system. Jenny is all arts and couldn't wait to drop math. Shelagh and her father have casual conversations about number theory and science, completely over our heads. Shelagh says that if she and Jenny could collide, they would become one complete person."

"I have been so very lucky. Each time my life has had to change drastically, I seemed to be ready for the new chapter. I started out as a childfree teacher and had planned to live my entire life that way. Then, motherhood was fine with me, then part-time teaching, then full-time parenting and homemaking and, now, I am teaching again, but with a big difference. I teach scrapbooking as an independent Creative Memories consultant. It probably comes from my inherited passion for family stories, but I am committed to helping busy people preserve their photographs and stories for future generations. I've completed wonderful keepsake albums for my family and friends as well. My latest business phase is working with the elderly. I get an elderly person to team up with a younger family member and rescue pictures and memories before they disappear forever. People find themselves having tremendous conversations about their family history and insight into who these people were in younger days, in other times. Right now, I am completing albums for an intriguing woman who served with the secret service during WW2 and who has lived in Australia, Pakistan, England, and New York."

"I have been a Wing member since 1978 when I stumbled into the hospitality room in Washington, DC, and instantly made friends with people from all over the world. I get so much out of the Wing, and was thrilled to pay a little back by doing arrangements and tours for AsMA in Toronto with Debbie Anzalone as President, and to work on the advance registration for the Orlando meeting."

Join the Wing! Dues are $20 per year. For further information, contact: Judy Waring, 4127 Kenyon St., Seattle, WA 98136; (206) 933-0884; e-mail: judywaring@comcast.net

THE WING OF AsMA EXECUTIVE BOARD, 2006-2007

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Send information for publication on this page to:
News of Members
Aerospace Medical Association
320 S. Henry Street
Alexandria, VA 22314-3579
pday@asma.org

NEWS OF MEMBERS

In Memoriam

Thomas A. Hawley, M.D.

Thomas Arthur Hawley, M.D., age 55, died peacefully in his sleep on March 14, 2006. He was born in San Francisco, CA, and was a resident of New Orleans, LA, since 1990. Dr. Hawley was a retired U.S. Navy Captain and flight surgeon who served in the U.S. Navy for 22 years, including tours aboard two battleships and three aircraft carriers. He entered the Navy in 1977 and served as the General Medical Officer aboard the *USS Mississippi* until 1979. From 1979-1980, he was General Medical Officer, Branch Medical Clinic, in Portsmouth, VA. From 1980-1987, he served aboard the *USS Carl Vinson*, the *USS New Jersey*, and the *USS Theodore Roosevelt*. In the year following that, he oversaw the physician assistant training program at the Naval School of Health Sciences in Bethesda, MD. From 1988 until 1990, he served aboard the *USS Saratoga*.

In 1991, Dr. Hawley earned an M.P.H. from Tulane University in New Orleans, LA. From 1991 until 1993, he was a resident in aerospace medicine in Pensacola, FL. From 1993-1995, he was Wing Surgeon at the Third Marine Aircraft Wing, and from 1995-1999, he was Senior Medical Officer in New Orleans, LA. He retired in 1999.

Dr. Hawley's awards include three Meritorious Service Medals, the Navy Commendation Medal, and the Navy Achievement Medal. He was a Diplomate of the American Board of Preventive Medicine in Aerospace Medicine, a Fellow of the American College of Preventive Medicine, and a Fellow of the Aerospace Medical Association. Most recently he had been in private practice at Biloxi Regional Medical Center and East Jefferson General Hospital Occupational Medicine Clinics.

BG Bealer T. Rogers, Jr., M.D., USAF(Ret.)

BG Bealer Theron Rogers, Jr., MD, USAF, MC, (Ret.), age 76, passed away July 31, 2006, in San Antonio, TX. He had retired as command surgeon, Air Training Command, Randolph Air Force Base, TX, in 1985. He was born on February 4, 1930, in Tallahassee, FL. He attended Emory University in Atlanta and received a Bachelor of Science degree in 1951. He continued at Emory University in the School of Medicine and received his doctor of medicine degree in 1954. He completed surgical internship in 1955 at Emory University Hospital in Atlanta and received a direct Air Force commission in that same year. He completed specialty training in 1959. His military career included assignments such as Chief, Department of Surgery at the Air Force hospital, Fairchild Air Force Base, WA, and director of base medical services, Thule Air Base, Greenland.

BG Rogers was a chief flight surgeon, a fellow of the American College of Surgeons, and a member of the Air Force Society of Clinical Surgeons, Air Force Society of Flight Surgeons, American Medical Association, J.S. Thoroughman Surgical Society, and the Aerospace Medical Association. BG Rogers' military decorations and awards include the Air Force Distinguished Service Medal, Legion of Merit with oak leaf cluster, Meritorious Service Medal with three oak leaf clusters, Joint Service Commendation Medal, and Air Force Commendation Medal with oak leaf cluster.

In addition to an illustrious military career, Dr. Rogers also served as Assistant Secretary for Health Affairs of the Florida Department of Corrections; Inspector, Joint Commission for the Accreditation of Hospitals; and Gadsden County Public Health Officer, State of Florida.

New Members

Barber, Robert B., Capt., USAF, MC, Rochester, MN
Beard, Petran J., D.O., M.P.H., San Antonio, TX
Burian, Dennis, Ph.D., Oklahoma City, OK
DiVenere, Jason, B.S., Arlington, VA
Georgakakis, George, Lt., M.D., Athens, Greece
Hettinger, Kevin D., Capt., USAF, MC, Mildenhall, UK
Hoffman, Benjamin, M.D., Jerusalem, Israel
Hutchison, Ewan J., M.B.Ch.B., Brighton, UK
James, Donald L., D.O., Rolla, MO
Kelada, Mervat, M.D., Calexico, CA
Langell, John T., M.D., Ph.D., M.P.H., Salt Lake City, UT
Pedersen, Aasta R., Capt., USAF, B.Sc., Sacramento, CA
Shurlow, Chaz, USAF, MC, Beavercreek, OH
Smith, William A., M.D., Fulton, KY
Todd, Brian, M.B., B.S., Manoora, Cairns, Australia
Welsh, Timothy, LTJG, MSC, USN, Lexington Park, PA

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CLASSIFIED ADS

POSITION AVAILABLE

PATIENT SAFETY CRM

The Department of Veterans Affairs National Center for Patient Safety (NCPS) is seeking strong candidates (physicians, nurses, or other appropriate clinical or operational backgrounds) to work in its Ann Arbor, Michigan office as part of its new Medical Team Training (MTT) Program.

The MTT Program is designed to improve outcomes of patient care and staff job satisfaction by implementing Crew Resource Management communication tools from aviation with briefings and debriefings in the clinical workplace. The MTT Program is provided to VA Medical Centers nationwide to improve patient care by enhancing communication in the delivery of care by healthcare professionals.

NCPS is an internationally recognized center that develops and implements patient safety policies, tools, education, and information systems throughout the VA healthcare system. (See www.patientsafety.gov) Salary commensurate with education and experience. Excellent benefits package. Relocation assistance available. Frequent travel is required (9-12 nights/month). EOE. To express interest, mail CV or resume with cover letter to: Chief AO, VA NCPS, PO Box 486, Ann Arbor, MI 48106-0486 or e-mail to: Jeffrey.Heget@va.gov.

Award Nominations Sought

December 15 is the deadline for receiving nominations for awards to be presented at the 2007 Annual Scientific Meeting in New Orleans, LA. Nominations can be made by any member of AsMA. The nomination must be submitted via e-mail or online through the AsMA website under Committees and in the Members Home Section: (http://www.asma.org/members/awards/award-nomination.php). The completed form should be e-mailed (NO Faxes, Please!) to the Awards Committee Chair, Andy Bellenkes: andrew.bellenkes@usafa.af.mil

Attachments or biographical material will be retained in Association files.

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