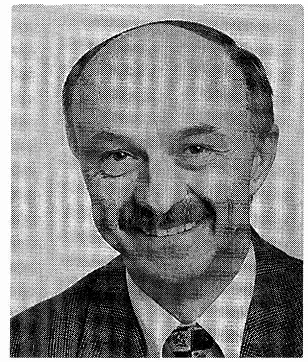
President's Page



Claude Thibeault, M.D.

Just as I was preparing to write my president's page, the terrible news about Columbia appeared on the television. I realize that when these lines hit the paper two months down the road, everything will have been said and these thoughts will be somewhat repetitious since even our journal will have covered it to some extent. However, a tragedy of this nature deserves special attention and I wish to dedicate my page to this event and our colleagues involved in this event.

First of all, on behalf of the Association and on my behalf, I would like to express one more time our sincere condolences to the families of the Columbia astronauts, the National Aeronautic and Space Administration (NASA) and all the dedicated people involved in the space program.

The Aerospace Medical Association is particularly affected by the Columbia disaster because two physicians killed in the disaster, Laurel B. Clark, M.D., and David M. Brown, M.D., were both flight surgeons and members of our association. In addition, Laurel was married to AsMA Fellow, Jon Clark. Through the association's history, a number of flight surgeons and flight nurses have lost there lives in the line of duty. This is the ultimate sacrifice in the service of one's country and for the sake of the advancement of aviation and space research. However, let's also remember that our colleagues died while doing what they always wanted to do. This does not make the event less tragic, but it puts it in a special perspective. As the mother of one of these astronauts said: they knew the risk, they had talked about it and they were willing to take it because they also knew the goal was worth it.

Is it really worth it? It better be; otherwise we might as well drop it all and go skiing. But then again is this worth it? The very same day of Columbia's disaster, seven Canadian teenagers lost their lives in an avalanche! What is wrong with this picture? There is nothing wrong with this picture. Other astronauts will die in the line of duty and other adolescents (or adults) will die in avalanches. Yes there is a big paradox in the human race; while we spend a tremendous amount of money, time and efforts to make people and processes safer, we seem to also do things that disregard safety. Why? We are human! We will all die one day (as far as I know), but we will also continue to reach beyond the horizon and discover to make life better, which we have for millennia. And then we will go to war!!! Does that make sense? Of course not, but we will go to war anyway. I better not get into that one further.

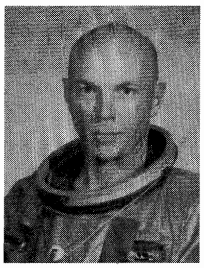
In the Aerospace Medical Association, we will continue to work hard to make the flyers safer so that they live, but we know that some of them will not make it. Errors will be committed, errors will be corrected and we will all move forward in our endless discovery of the human race and its potential.

SPACE SHUTTLE COLUMBIA CREW-- (left to right, front row) Rick Husband, Kalpana Chawla, William McCool, (back row), David Brown, Laurel Clark, Michael Anderson and Israeli astronaut Ilan Ramon are shown in this undated crew photo.

Musgrave to Deliver Armstrong Lecture

Story Musgrave, M.D., NASA Astronaut, retired, will deliver the 38th Harry G. Armstrong Lecture during the AsMA 74th Annual Scientific Meeting in San Antonio this May.

Story Musgrave knew space was calling him when NASA announced plans to recruit scientists as astronauts in 1967. Said Musgrave, "It was an absolute epiphany. It was clear to me that everything I'd done, every path I'd been on, was leading to that."



This calling led to was a record breaking, 30 year career with NASAA and the "next frontier." Musgrave flew six missions, tying the record for most spaceflights by an astronaut. During his inaugural flight in 1983, onboard Challenger for its maiden voyage, Musgrave performed the first shuttle spacewalk. On his sixth flight in 1996 at age 61, he became the oldest person ever to fly in space (until Senator John H. Glenn, Jr. returned to space in 1999 at the age of 77.) At the time, he was flying on NASA's oldest shuttle (Columbia), on the longest shuttle mission ever (18 days). He also achieved the unbreakable record of being the first to fly in all five space shuttles.

A native of Massachusetts, Dr. Musgrave's educational history includes a bachelor of science degree in mathematics and statistics from Syracuse University in 1958, a master of business administration degree in operations analysis and computer programming from the University of California at Los Angeles in 1959, a bachelor of arts in chemistry from Marietta College in 1960, a doctorate in medicine from Columbia University in 1964, a master of science in physiology and biophysics from the University of Kentucky in 1966, and a master of arts in literature from the University of Houston in 1987.

Dr. Musgrave entered the United States Marine Corps in 1953, served as an aviation electrician and instrument technician, and as an aircraft crew chief while completing duty assignments in Korea, Japan, Hawaii, and aboard the carrier USS WASP in the Far East. He has flown 17,700 hours in 160 different types of civilian and military aircraft, including 7,500 hours in jet aircraft. He has earned FAA ratings for instructor, instrument instructor, glider instructor, and airline transport pilot, and U.S. Air Force Wings. An accomplished parachutist, he has made more than 500 free falls including over 100 experimental free fall descents involved with the study of human aerodynamics.

Dr. Musgrave was selected as a scientist astronaut by NASA in August 1967. He completed astronaut academic training and then worked on the design and development of the Skylab Program. He was the backup science pilot for the first Skylab mission, and was a spacecraft communicator (CAPCOM) for the second and third Skylab missions. Dr. Musgrave participated in the design and development of all Space Shuttle extravehicular activity equipment including spacesuits, life support systems, airlocks, and manned maneuvering units. From 1979 to 1982, and 1983 to 1984, he was assigned as a test and verification pilot in the Shuttle Avionics Integration Laboratory at JSC. He served as a CAPCOM for STS 31, STS 35, STS 36, STS 38 and STS 41, and lead CAPCOM for a number of subsequent flights. He was a mission specialist on STS 6 in 1983, STS 5F/Spacelab 2 in 1985, STS 33 in 1989 and STS 44 in 1991, was the payload commander on STS 61 in1993, and a mission specialist on STS 80 in 1996. A veteran of six space flights, Dr. Musgrave has spent a total of 1,281 hours 59 minutes, 22 seconds in space. Dr. Musgrave left NASA in August 1997 to pursue private interests.

Among the highlights of his 6 flights:

In April 1983, during the maiden voyage of Space Shuttle Challenger, STS-6, the crew performed the first Shuttle deployment of an IUS/TDRS satellite, and Musgrave and Don Peterson conducted the first Space Shuttle extravehicular activity (EVA) to test the new

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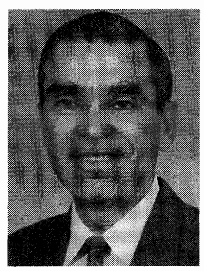
Executive Director's Column



Rayman

Human Factors

I had the rare opportunity to spend several days with one of the Russian Cosmonauts who has flown several long-duration space missions, one of which was for 8 months. When I asked him what he thought the limiting factor would be for future long-duration missions, particularly to Mars, without hesitation he responded, human factors. Admittedly, I was a little surprised as I thought he would say something like radiation or bone loss. In any event, by human factors, he was not referring so much to ergonomics as he was to human interpersonal interaction, conflict in particular, between crewmembers and between crewmembers and ground controllers.

Although this Russian cosmonaut was speaking very much from personal experience, there have been reports from many others who have corroborated his concerns. This is vividly illustrated, for example, by U.S. astronaut Jerry Linenger in his book, "Off the Planet.@" Likewise, Russian cosmonaut Medvedev in his book, "Diary of a Cosmonaut," reported serious inflight conflict.

We often hear that there is a need for the space program to provide adequate resources for research in this area of great concern. However, it becomes apparent why it is difficult to design studies and garner funds from budget decision-makers for this research because the subject of human behavior is so inchoate when compared to doing research that measures more precisely, for example, bone density or ECG changes.

On a long-duration space mission, one can easily understand how human conflict can occur and how it could be detrimental to the mission. The challenge will be even greater since long duration space crews will most likely be men and women of different nationalities. Think of the differences among the various cultures. We differ in diet, temperament, loyalties, expectations, station, and in mentality all of which are fertile areas of conflict. Getting along with others not only requires personal skills, but also willingness and determination. How many times have we almost come to blows with a college roommate, a co-worker, or even another family member -- but in such circumstances, we have the luxury to leave and simply avoid further confrontation. (As an aside, I note that the American Psychiatric Association is considering another category of illness for the next edition of the Diagnostic and Statistical Manual. The newly proposed category will be Relational Disorders.)

In order to overcome some of these barriers, NASA is investigating computer programs that will diagnose incipient personal conflict before it reaches the danger level and, at the same time, recommend intervention strategies. This sounds like a wonderful tool, but will it really work. In the end, the astronauts and controllers themselves will have to learn how to manage conflict in order to prevent mission degradation.

Certainly very careful crew selection will be necessary with ample time preflight for the crew members to become well acquainted, to learn each other's personal attributes, and to adopt appropriate coping mechanisms. I don't believe this is going to be very easy, but it will be essential if we are to realize long duration spaceflight.

New Russian Affiliate

At the November Council meeting, the application of the Association of Aviation, Space, Naval, Extreme and Environmental Medicine of Russia (AASNEEMR) was approved for Affilate status in AsMA. We welcome our Russian friends and colleagues.

Dr. Valentin Vlasov was elected President of AASNEEMR for a 5-yr term.

MUSGRAVE, from p. 486.
space suits and construction and repair devices and procedures.

STS 51F/Spacelab 2 (July 29 to August 6, 1985), also aboard Challenger, was the first pallet only Spacelab mission, and the first mission to operate the Spacelab Instrument Pointing System (IPS). It carried 13 major experiments in astronomy, astrophysics, and life sciences. During this mission, Dr. Musgrave served as the systems engineer during launch and entry, and as a pilot during the orbital operations.

STS 61 was the first Hubble Space Telescope (HST) servicing and repair mission. Following a night launch from Kennedy Space Center on December 2, 1993, the Endeavour rendezvoused with and captured the HST. During this 11 day flight, the HST was restored to its full capabilities through the work of two pairs of astronauts during a record 5 spacewalks. Dr. Musgrave performed 3 of these spacewalks.

On STS 80 (November 19 to December 7, 1996), the crew aboard Space Shuttle Columbia deployed and retrieved the Wake Shield Facility (WSF) and the Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer (ORFEUS) satellites. The free flying WSF created a super vacuum in its wake in which to grow thin film wafers for use in semiconductors and the electronics industry. The ORFEUS instruments, mounted on the reusable Shuttle Pallet Satellite, studied the origin and makeup of stars.

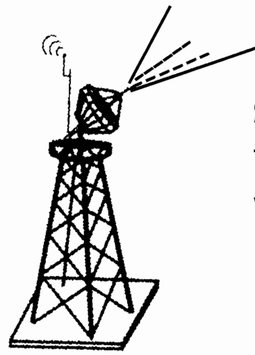
After 30 years of service, Dr. Musgrave retired from NASA in 1997. Today he shares his experiences through performances both in the U.S. and internationally. He is a popular guest of the Astronaut Encounter Program at the Kennedy Space Center and has also consulted for Walt Disney Imagineering and Applied Minds Inc. in their research and development divisions. He is an advocate and visionary for the continual exploration of space and the author of numerous scientific papers on a diverse range of topics including aerospace medicine, exercise physiology, temperature regulation, and clinical surgery.

His honors and awards include the National Defense Service Medal and an Outstanding Unit Citation as a member of the United States Marine Corps Squadron VMA 212 (1954); United States Air Force Post doctoral Fellowship (1965 1966); National Heart Institute Post doctoral Fellowship (1966 1967); Reese Air Force Base Commander's Trophy (1969); American College of Surgeons I.S. Ravdin Lecture (1973); NASA Exceptional Service Medals (1974 & 1986); Flying Physicians Association Airman of the Year Award (1974 & 1983); NASA Space Flight Medals (1983, 1985, 1989, 1991, 1993, 1996); and NASA Distinguished Service Medal (1992).

Dr. Musgrave is a member of the American Association for the Advancement of Science, the Civil Aviation Medical Association, the Flying Physicians Association, the International Academy of Astronautics, the Marine Corps Aviation Association, the National Aeronautic Association, the National Aerospace Education Council, the Navy League, among others.

Educational support for the Harry G. Armstrong Lecture lecture is contributed by GlaxoSmithKline Pharmaceuticals, Philadelphia, PA. This lecture has been given annually since 1966.

[Excerpts taken from the official NASA biography, August 1997; from www.spacestory.com; and from http://www.tamu.edu/texasbest/speaker.html.]



Science & Technology Watch

Keeping You Informed Of The Latest Advances In Science And Technology

Operation of unmanned aerial vehicles provides the aeromedical community with a new set of challenges to support the UAV operators. There are a wide range of potential missions, some lasting very long periods of time, and of the need to maintain situational awareness while interacting with a remote environment. Dr. Warner describes some of the operational and human factors challenges with operating UAVs in this month's column.

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Unmanned Aerial Vehicle Ground Control Stations: Design Issues, Recommendations, and Concepts

Harold D. Warner, Ph.D.
Naval Air Systems Command, Patuxent River, MD

In view of the unprecedented success the U.S. has witnessed through the use of unmanned aerial vehicles (UAVs) in recent military actions, it is anticipated that a far greater number and variety of UAVs will be deployed in future conflicts. UAVs offer a range of advantages that make them one of the most formidable assets in the U.S. defense arsenal. For example, they are significantly more economical to field and operate than fixed wing or rotary wing aircraft, can be configured with a variety of sensor payloads (i.e., electro-optical, infrared, and synthetic aperture radar sensors) and weapons (i.e., missiles and bombs), do not place pilots' lives at risk, can loiter over the target area for hours at a time, can serve as relay platforms for distant sensor image transmissions, and tactical UAVs can penetrate urban areas and maneuver at building level to survey the indigenous defense forces.

Whereas current UAV missions are characteristically supported by single air vehicles and their associated payloads, the military services propose to integrate multi-UAVs in future missions. A mission comprised of multiple UAVs could be significantly superior to either a single UAV or a succession of independent UAVs. First, they could enhance sensor searches in intelligence, surveillance, and reconnaissance (ISR) missions by expanding the target area that can be concurrently searched, eliminating overlapping searches and missed search areas, and providing an immediate replacement for an air vehicle and its sensor payload in the event of an equipment failure. Second, they could be equipped with armament to provide a self-defense capability in ISR missions, allowing the target searches to proceed while simultaneously providing a defensive lookout. Third, they could be used to increase the amount of weaponry that could be brought to bear on hostile targets. Finally, they could be operated from a single ground control station compared to individual UAVs that would require separate, dedicated control stations.

In parallel with the goal of forming integrated UAV teams, the military services are attempting to reduce the number of operators required for a given control station to a single person. Currently, multiple operators are customary, even though only a single UAV is controlled. A current UAV mission may involve, for example, a radio control pilot (to launch and land the vehicle), an air vehicle operator (to control the vehicle in flight), a payload operator (to control the sensors), and a mission support specialist (to plan the mission and perform voice communications). Benefits that are attainable through the reversal of the operator-to-UAV ratio include a requirement for fewer skilled operators and a reduction in operator training resources.

To assist the military in the design of ground control stations that could support multi-UAV missions and that require only a single operator, a human factors assessment was conducted and documented. In this assessment, control station design issues associated with the use of single operators for multiple UAVs were identified and specific design recommendations were provided in relation to these issues. Additionally, two conceptual UAV control station designs were produced, based upon the human factors design recommendations.

The extent to which an individual will be able to efficiently operate a ground control station for multi-UAVs will depend predominantly upon the design of the human-computer interface, the workload imposed upon the operator, and the operator's situational awareness. Consequently, the focus of the human factors assessment was upon these factors. In terms of the human-computer interface, all the relevant design issues (e.g., display content and format, control accessibility and operability) were addressed and a broad array of human factors design standards for improving the interface was provided. As for operator workload, the performance of an operator might be degraded if workload is excessive. It is expected that workload will be elevated when the operation of the ground control station involves multiple vehicles with multiple payloads. In the assessment, factors that are conducive to high workload, adverse effects associated with excessive workload, methods for measuring workload, and workload countermeasures were addressed. With respect to situational awareness, it is imperative that the operator is aware of the critical states of the various air vehicles, their payloads, and the external environment throughout the conduct of the UAV missions. Heightened levels of operator situational awareness will contribute to the successful accomplished of

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the sensor searches, the avoidance of enemy threats, and the mitigation of mid-air UAV collisions. Techniques for enhancing situational awareness, methods of measurement, and the adverse effects of impaired situation awareness were addressed in the assessment.

In the event of operator performance impairment, the two most effective methods for ameliorating excessive workload and degraded situational awareness are task automation and decision aiding. With automation, some of the operator tasks will be allocated to computer control. The requirement for automation is primarily based upon task difficulty and the number of tasks that must be performed. In a mission with multiple UAVs and when there is a single control station operator, it is certain that the operator will be required to perform large number of tasks with varying degrees of difficulty.

Decision aiding reduces operator workload and enhances situational awareness through the facilitation of information processing and decision-making. Decision aids can range from better presentations of information at the control station to decision support systems that evaluate the alternative courses of action in a decision situation, that recommend a course of action, and that sometimes initiate the chosen course of action. With decision aiding, operators are not required to focus their attention on the decision tasks for extended periods of time, which lowers workload and enhances situational awareness.

The conceptual ground control stations that were produced were drawings depicting the recommended locations and content of the control station display screens, the drill-down menus, and the screen control buttons. Two conceptual designs were presented, one to support single UAV operations and the other for control of multi-UAVs. Both designs were configured for use with single operators.

For more information, please contact the author at WarnerHD@navair.navy.mil.

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The AsMA Science and Technology Committee provides this Science and Technology Watch Column as a forum to introduce and discuss a variety of topics involving all aspects of civil and military aerospace medicine. The Watch can accommodate up to three columns of text, which may include a figure or picture to illustrate your concept.

Please send your submissions via e-mail to: ShenderBS@navair.navy.mil

AsMA Future Meetings

May 4-9, 2003
Convention Center
San Antonio, TX

May 2-7, 2004
Egan Convention Center
Anchorage, AK

May 9-12, 2005
Kansas City, MO
Hyatt Regency Crown Center

This Month in Aerospace Medicine History-- April2003

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

Introduction

A lot of things have changed in the past 99 years since modern aviation began with the Wright Brothers' first powered flight. Several technological advances have had such far-reaching impacts on our civilization, and yet we forget so quickly what they were. In my lifetime, the greatest achievement may be the first manned mission to Mars. Our understanding of the physiology of the human body has advanced to such a degree in the past 200 years that we in aerospace medicine have the capability to send human beings to another planet.

Seventy-five Years Ago

Commencing on April 12, 1928, the first trans-Atlantic crossing by air in an East to West direction was initiated in a single-engine all-metal Junkersmonoplane. It was an international effort, with pilots Capt. Hermann Koehl (German) and Capt. James Fitzmaurice (Irish) departing Dublin for New York City, only to crash land 37 hours later on Greely Island, Labrador. They were rescued.

The first trans-Arctic flight also occurred in mid-April. Sir Hubert Wilkins, an Australian explorer, was flown by Carl Ben Eielson from Point Barrow, Alaska to Spitsbergen (11).

Fifty Years Ago

The April 1953 issue included an advertisement for the purchase of U.S. Defense Bonds, as well as several separate pleas for blood donations for the National Blood Program of the American Red Cross, both for the support of the conflict in Korea.

In 1953, aviation medicine was recognized as a specialty by the American Medical Association: "This is the first time a branch of medial science which started as a purely military study has attained specialty status… Currently, Johns Hopkins University offers a one-year course in aeromedicine, and Harvard, among other schools, is prepared to train students in this specialty. The Mayo Clinic offers a residency in aviation medicine." (1). The requirements for certification were as follows: "1. Successful completion (after internship) of at least two academic years of graduate study in preventive medicine and aviation medicine, one year of which graduate study shall be in a school of public health accredited for the purpose of such graduate study by the American Public Health Association…; 2. Residency (after internship) of at least two years of supervised experience in aviation medical practice…one year of which may be an approved clinical residency in a field directly related to aviation medicine; 3. A period (after internship) of not less than two years, in addition to 1 and 2 above of special training in or teaching or practice of aviation medicine; 4. Limitation of practice to full-time teaching, research or practice of aviation medicine; 5. Regular and frequent participation in aerial flight." (2).

The use of corrective lenses was discussed: "Jet pilots note the following disadvantages to flying with orthodox glasses: 1) Fogging; 2) Discomfort over ears and temples (helmet pressure); 3) Distortion of vision (attempt to relieve 2); 4) Discomfort on the nose (oxygen mask)… Three solutions to the above problem are as follows: 1) Attachment of spectacles to helmet. 2) Contact lenses. 3) Flying Evaluation Boards…." (5).

Both white and red lights were advocated in flight: "Before take-off the check list is read by white light and the lights are adjusted to conform with external light intensity. Once off the runway, red lights are used, until level-off when the whites are switched on again to balance the glow from the brightly lighted cities below. As the flight continues and external light intensity decreases, the red lights can be used again. In case lightning is encountered, the white light can be adjusted so that the brightest flashes are barely noticed. In the landing pattern, white lights are used, with no overhead lights needed to read check lists." (9).

Technology was beginning to surpass human performance: "[We] are moving in this era of guided missiles toward the point where the human element in combat aircraft will become the greatest obstacle to improved performance, accuracy and speed. The end of concessions to the pilot is not in sight but it will come. Instruments can do the job better and faster." (4).

Motion sickness was studied by the Army: "About 10,000 men were flown 1,100 miles [for] maneuvers and 900 miles back to a new base… The incidence of vomiting for the placebo group was 6.8 per cent. The following drugs, given immediately before takeoff, significantly lowered the incidence of vomiting: Wellcome 47-83 (50 mg.), Phenergan (25 mg.), Phenergan (12.5 mg.), Trimeton (25 mg.), Pyrrolazote (50 mg.) and scopolamine (0.65 mg.). Postafene (50 mg.) given twenty-four hours before takeoff also afforded significant protection. The incidence of drowsiness, blurred vision, dry mouth and fatigue was increased by some of the drugs, while dizziness, sweating and headache were reduced… Almost 19 per cent of the paratroopers became sick during a sixty-to ninety-minute flight prior to their jump." (3).

Twenty-five Years Ago

In 1978 Johnson Space Center in Houston was working with fish developed in the zero gravity environment: "At 16-17 months of age, three groups of fish from the embryonated eggs in the [Apollo-Soyuz Test Project] killfish experiment were subjected to postflight tests consisting of rapidly changing environments. It was found that the group of fish with the least amount of development at orbital insertion (A-32) had a decreased rheotropism for both the moving background and the rotating water current tests when compared to ground control fish. Exposure to parabolic aircraft flight conditions revealed that the A-32 fish were less disoriented during zero gravity periods and were hypersensitive to high-gravity periods. These results suggested a modified vestibular competency due to a 9-d prehatching weightlessness exposure." (6).

The U.S. Army Research Institute of Environmental Medicine at Natick, MA, looked at differences between men and

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HISTORY, from p. 488.
women: "Psychological states and aerobic fitness were measured using a battery of psychological tests and a bicycle ergometer work test... [Approximately] two hundred male and female subjects were tested at the beginning of a six week basic training cycle and another group of two hundred were tested at the completion of basic training. A difference in mood, anxiety, self confidence and physical fitness was evident in the groups of male recruits, but not in the female recruits after training. A significant difference existed between males and females in terms of physical work capacity. These differences in work capacity and psychological responses would be considered in the assignment and selection of personnel for high work intensity military occupations." (7).

Continued concern over cosmic radiation prompted "the most extensive [study] to date... Data [were] derived from 1973 statistics on 2.99 million intercity flights carrying 468 million seats...yielding a total of 581 billion seat-kilometer. The average flight was 1,084 km in length, was flown at an altitude of 9.47 km, and lasted 1.41 h. The average dose rate was 0.20 mrem/h, resulting in an average passenger dose of 2.82 mrem/year and an average crewmember dose of 160 mrem/year. The average radiation dose to the total U.S. population was 0.47 mrem/person/year. These results are in good agreement with data from several experiments performed by us and others in aircraft at various altitudes and latitudes... At the low doses and dose rates associated with air travel, the biological effect, if any, is extremely small and delayed." (10).

The Royal Aircraft Establishment in Bedford, England looked at physiological responses during takeoffs and landings "recorded during various flight trials involving different types of aircraft. Examples include ramp takeoffs in a [vertical takeoff and landing] fighter, automatic landings in fog, supersonic flight through monsoon rain, and a sortie in which the pilot developed acute appendicitis. It is concluded that heart rate responses in experienced pilots are influenced almost entirely by workload-related factors and not by emotional stressors, such as risk and anxiety. Because of the emotional overtones of the word 'stress,' it is suggested that the term workload should be used when referring to the reason for increased cardiovascular activity in pilots." (8).

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Stapp Aerospace Medicine Facilty Dedicated at Edwards

Edwards Air Force Base Aerospace Medicine Facilty has been dedicated to John Paul Stapp. The dedication ceremony took place on January 14, 2003. The Colonel John P. Stapp Aerospace Medicine Facilty is located at the Air Force Flight Test Center at Edwards AFB, CA. Stapp, who was stationed at Edwards from 1946-53, worked tirelessly for over 50 years investigating the effects of mechanical forces on living tissue, ultimately proving that when properly restrained, the human body could survice a 48-g deceleration. He studied tolerance in crash impacts and sudden deceleration on a track-mounted test sled, which he designed at Edwards. He personally made a total of 29 sled rides. His research provided invaluable data for human tolerance limits during ejection from aircraft and, as a result, major life-saving improvements were made to flight helmets, restraints, safety harnesses and seat position. His research was then applied to the automotive industry, affecting the lives of an entire nation. Stapp, who died in 1999 at the age of 89, was an AsMA Fellow. A special AsMA award was named in his honor.

36TH EDWARD WARNER AWARD--ICAO's Warner Award was presented to the International Academy of Aviation and Space Medicine (IAASM) in Montreal, Canada, last November. Pictured are Drs. George Y. Takahashi, Secretary-General, IAASM; Assad Kotaite, President, Council of ICAO;.Ulf Balldin, President, IAASM; and R. C Costa Pereira, Secretary General, ICAO.

Attention Affiliate Organizations of AsMA!!!

In the past few years it has become difficult to obtain contact information on our many affiated organizations. Please take a moment to contact us with your current list of officers and their addresses, e-mails, and phone numbers. Please include your web address so we can link to your website from ours. Please check out your listing on our site at: www.asma.org/Organization/affiliates.html

Contact Gloria Carter at gcarter@asma.org ; (703) 739-2240, ext. 106

Here is our most up-to-date list of Affiliate Organizations:

Aerospace Medical Association of Korea
Aerospace Medical Association of Taiwan
Aerospace Medical Association of the Philippines
Aerospace Medical Student & Resident Organization
Alliance of Air National Guard Flight
Association of Aviation Medical Examiners, United Kingdom
Association of Aviation, Space, Naval, Extreme and Environmental Medicine of Russia
Aviation Medical Society of Australia and New Zealand
Canadian Aerospace Medicine and Aeromedical Transport Association
Civil Aviation Medical Association
Corporate & Sustaining Members
French Aerospace Medical Association
German Society of Aviation and Space Medicine
Greek Aerospace Medical Association
Ibero-American Society of Aerospace Medicine
Israeli Society of Aerospace Medicine
Italian Aviation and Space Medical Association
Japan Society of Aerospace and Environmental Medicine
SAFE Association
Slovenian Aerospace Medical Association
Society of NASA Flight Surgeons
South African Aerospace Medical Society
Spanish Society of Aviation and Space Medicine
Space Dermatology Foundation
Swedish Aviation and Naval Medicine Association
USAF Association of Reserve Flight Surgeons

Meetings Calendar

April 11 - 13, 2003, Telford, UK. Association of Authorised Medical Examiners Annual Scientific Meeting. International Centre, Telford, West Midlands, UK. Info: enquiries@aame.co.uk

May 3-6, 2003, San Antonio, TX. Air national Guard Health Services Management Meeting, Convention Center. Info: anita.waugh@ang.af.mil

May 4-8, 2003, San Antonio, TX. 74th AsMA Annual Scientific Meeting, Convention Center. Info:320 S. Henry St., Alexandria, VA 22314; phone: (703)739-2240; www.asma.org.

May 7-11, 2003, New York, NY. International Society of Travel Medicine Conference. Info: Lisa Astorga, lastorga@talley.com; web site: www.istm.org.

June 6-13, 2003, San Antonio, TX. Annual Meeting of Association for Professionals in Infections Control & Epidemiology. info: www.apic.org; (202) 789-1890.

June 8-12, 2003, Reno, NV. Annual Meeting of the National Environmental Health Association. Info: www.neha.org; (303)756-9090.

June 14-15, 2003, Helsinki, Finland. 7th Nordic Aerospace Medical Association (NAMA) Scientific Meeting. Contact the Chair, Olavi Hämäläinen, MD, PhD.: Olavi.Hamalainen@finnair.com.

September 17-19, 2003, Catania, Italy. 2nd International Conference--The Impact of Environmental Factors on Health: Environmental Health Risk 2003. Organized by Wessex Institute of Technology, and University of Catania, Italy. Info: www.wessex.ac.uk

September 22-24, 2003, Jacksonville, FL. 41st Annual SAFE Symposium, Adam's Mark Hotel. Dedicated to ensuring personal safety and protection in land, sea, air and space environments. Info: www.safeassociation.com; e-mail safe@peak.org

October 5-9, 2003, Madrid, Spain. 51st International Congress of Aviation and Space Medicine. Organized by The Spanish Society of Aerospace Medicine under the auspices of the International Academy of Aviation and Space Medicine. Info: Viajes Vie-Congresos. Hermosilla 30, 28002 Madrid, Spain; 34-914264750; icasm03@vie.es.

October 22-25, 2003, Mexico City, Mexico. XX International Meeting of Aerospace Medicine, Gala Hotel and Resorts, Playa del Carmen, Q.R., sponsored by the Mexican Association of Aviation Medicine. Theme: Medical And Sugical Therapeutics Of The Modern Medicine ; Its Application In Aviation. Info: Grupo Destinos, attn: Claudia Palomeque, (52-55) 55-75-18-60; cpalomeque@ grupodestinos.com.mx.

Call for Papers: 41st Annual SAFE Symposium

The 41st Annual SAFE Symposium will be held September 22-24, 2003 at the Adam's Mark Hotel, Jacksonville, FL. The SAFE Symposium is the premier international showcase for the professionals, inventors, equipment and systems that have shaped safety in aviation, space, land and marine disciplines. They invite you to participate in this symposium by submitting abstracts or proposals for panels or workshops. Tentative areas of discovery include: commercial and military crashes; safety; rescue; NBC protection; acceleration; altitude; ejection; biodynamics and physiology; human factors; hearing protection and many others.

The deadline is June 20th for abstract submission and proposals. Camera-ready copy of accepted papers will be due August 15. For further information and presentation guidelines contact: SAFE Association, P.O.Box 130, Creswell, OR 97426; Phone: (541)895-3012; e-mail: safe@peak.org.

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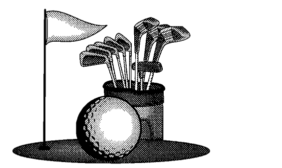

Sports Activities at the 74th Annual Meeting in San Antonio

Golf Tournament--
We will be having the golf tournament Sunday morning, May 4, at Brooks Golf course. Start time will be at 9 AM. Cost will be $25 which will include green fee, cart rental, and entry, there will be an additional club rental fee which is about $5. The prizes will be awarded at the course after the tournament and all will be completed in time to get everyone back to the reception that evening. Transportation will be provided from the downtown hotels and we will also give folks a chance to stop by the Hangar 9 site if they desire. To sign up send checks made out to: Chris Kleinsmith, ASMA Golf Tourney, 434 Chimney Tops, San Antonio, TX 78258; chris.kleinsmith@brooks.af.mil

Annual 5k Fun Run--
The Fun Run will be held on Monday at 7 a.m. on the Riverwalk. (No buses!) The course will be professionally marked. The $10 fee includes a T-shirt! This event is being sponsored by ETC.

CAMA
San Antonio, TX
Sunday: May 4, 2003
Tentative Agenda

The Civil Aviation Medical Association (CAMA) will hold a short meeting on Sunday afternoon, May 4th. The time period from 12:30 p.m. to 4:30 p.m. is being considered. We hope to provide an interesting educational meeting covering specific topics of interest. This year's topic :

In-Flight Medicine

1. Introduction.
   Speaker: John Hastings, M.D.
2. In-flight diversions, economic impact, airline perspective.
   Speaker: David Zanick, Medical Director Northwest Airlines.
3. In-flight diversions due to neurologic conditions.
   Speaker: Joseph Sirven, M.D., Neurologist/ epileptologist, Mayo Clinic, Scottsdale AZ
4. Inclusion of Anticonvulsants in Airline Medical Kit
   Speakers: Alex Wolbrink, FAA, John Hastings, M.D.
5. The physician as an airline passenger-responder
   Speaker: Dr. Delaume, Medical Director, Worldwide Assistance, Asst. Clin. Prof. of Emergency Medicine, George Washington University Medical Center, Washington, DC
6. Telemedicine
7. In-flight medicine, airline perspective:
8. Panel discussion/questions for speakers.

This is a tentative agenda.

Classic Aviation Films Series:

Lunch-Time Program

Monday, May 5--"The Sound Barrier" 1952. 111 min. Starring Ralph Richardson, Ann Todd. Based on a true story line about Geoffrey de Havilland. Attempt at being the first to break the sound barrier.

Tuesday, May 6--"Reach for the Sky" 1956. 136 min. Starring Kenneth Moore, Muriel Parlow. Story of Douglas Bader, who lost both legs in a pre-WWII aerobatic accident, went on to be a fighter pilot and a quadruple "Ace." Spent time in Germany as prisoner of war. Led 300 aircraft in 1945 victory fly-over of London, flying a lone Spitfire.

Wednesday, May 7 (Wed.)--"The Eagle and the Hawk." 1933. 73 min. Starring Cary Grant, Carol Lombard. WWI air combat pilot develops depression.

Thursday, May 8--"Things to Come" 1936. 120 min. Starring Raymond Massey, Margaretta Scott. Prophecies by H.G. Wells: 1936-2036. Predictions of War, Space Travel.

The History and Archives Committee is sponsoring this lunchtime film program. The program is made possible by the kind offer of films for showing by Dr. Richard Jennings.