This Month in Aerospace Medicine History--December 2005

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Seventy-five Years Ago

The civilian aviation medical examiner of 1930 (Medical Examiners, Aeronautics Branch, Department of Commerce, Des Moines, Iowa). "Out of our rapidly advancing civilization has developed a rapidly advancing industry. This new industry has forced upon medicine a new field or specialty, and that specialty is aviation medicine. Aviation medicine was first developed in the United States by the Medical Department of the Army, but as aviation has broadened its usefulness so rapidly from that of war to business and pleasure, the work of aviation has had by necessity, to be partly taken over by the civilian doctor.

"The doctor has been appointed by the Department of Commerce to act as a civilian medical examiner. A large number of men and women are being sent to these doctors for examinations, and the number will increase each year. Therefore, the civilian medical examiner has had a responsibility placed upon him and a duty to perform that I am sure he did not realize when he first accepted his appointment. I am sure that I did no, at first, realize this responsibility…

"Until aviation has become large enough to have definite special examiners devoting their full times and all of their energy to the examination and the solving of problems of aviation medicine, it seems that the most logical solution of the medical problem at the present times lies in the close cooperation between the internist and the specialist, working in conjunction, providing congenial working arrangements can be made between honest, faithful, industrious workers, those who have at heart not only the safeguarding of the public welfare with regard to rejection of the physically unfit candidates, but, also the ability to see the future of aviation and to act in a measure as a local representative of the Department of Commerce and aviation in general in the distribution of good will and the dissemination of information to both the medical profession and the laity." (5)

Fifty Years Ago

Ionizing radiation at altitude and…pregnant women? (U.S. Naval School of Aviation Medicine, Pensacola, Florida; presented at the 26th annual meeting in Washington, D.C. on March 21, 1955). "One of the changes in the environmental conditions encountered in the altitude region at the top of and outside the atmosphere is the increased background of ionizing radiation. The earth's atmosphere is equivalent to a lead shield of almost a full meter's thickness. The hard component of the cosmic radiation penetrates this armor to such an extent that it still accounts for about 25 per cent of the background intensity at sea level. Because of the greatly different background intensities at the lower and upper end of this heavy screen, it is of interest to compare these two radiation intensities from the standpoint of the radiobiologist…

"A brief remark has to be interjected here. I am fully aware that the pioneers who will explore the extra-atmospheric regions and fly in the heavy nuclei zones will not be pregnant women. Nevertheless, I believe it is of interest to discuss this situation because it pertains to the maximum damage possible, and might reveal some clues for the proper experimental approach with test animals." (3)

The advantage of a tilted seat for fighter pilots (Division Investigaciones, Instituto Nacional de Medicina Aeronautica, Buenos Aires, Argentina). "Because of the increased speed of modern aircraft and the duration of radial acceleration in curves, there has existed for the last fifteen years a disturbing difference of capacity between man and machine in tolerance to these accelerations. A fighter plane endures safely enough radial accelerations of 8 *g* during more than five seconds; pilots, on the contrary, on an average tolerate only 4 *g*, in the sitting position without visual disturbances. This presents a problem in combat.

"If he wears an anti-*g* suit, the pilot may tolerate an additional 2 *g* but he still needs 2 *g* more to develop to the maximum the power of the aircraft's operation…

"The pilot possibly may tolerate in a long chair position of 45° positive accelerations of long duration up to 8 *g* without visual disturbances and without essential inconvenience in the air combat because:

"1. The reduction of the level difference heart-eyes of about 5 cm. (by bending the head forward to the vertical line) compared with the upright position…

"2. The considerable improvement of the conditions for the venous blood return from the legs and the abdomen to the heart with a noticeable increase of the pressure in the vena cava caudalis through the intra-abdominal pressure on this vessel.

"3. The facilitation of an artificial increase of the intra-abdominal pressure with the aid of an abdominal cuff of an anti-*g* suit or with something heavy in the abdominal belt." (4)

Peacetime adaptation of helicopter air evacuation and medical supply delivery. "The value of the helicopter in war for evacuating the wounded was well demonstrated in the Korean campaign. In any future was helicopters are likely to be one of the main means of transport of serious casualties. Their peacetime use in medical emergencies is just being realized. Recently a helicopter brought medical aid promptly to the scene of an accident on board a Dutch vessel off Flamborough Head. A seaman was badly injured, and radio calls for medical assistance brought a medical officer of the Royal Air Force by helicopter, which landed on the deck of the vessel. A helicopter service is of greatest help in isolated districts many miles from expert medical assistance. In parts of Scotland districts are often cut off by snow in the winter so that roads are impassable for a period of time. Last winter in 'Operation Snowdrop' supplies were landed in cut-off villages by naval helicopter, and some patients, suffering from illness and exposure were rescued by their means. Anticipating that such conditions might arise again, the Scottish North Eastern Regional Hospital Board has now arranged to bear the cost of a helicopter ambulance service operate by naval helicopter from Lossiemouth, which, subject to prior claims by the Navy, will be available for the transport of civilian patients to a hospital in an emergency. A device is now available that enables the helicopter to 'scoop' the casualty from the sea, or scene of accident without landing." (1)

Twenty-five Years Ago

Survival suits for space flight emergencies. "Emergencies arising from actual space flight will require space crews to operate while wearing survival suits, and a degree of suit flexibility is therefore required as a means of saving lives and equipment. The flexibility of body and limbs can further greatly ease orbital duties, and it is expected that the continued development of high altitude survival suits in aircraft, will exploit this possibility to the full. The choice between rigid or flexible construction, hence the materials to be used in a suit's fabrication, must await further research into cosmic ray and meteor conditions in the earth's orbit. The question is complex and at present indeterminate." (2)

On December 3, 1980, a 98-pound female former teacher by the name of Janice Brown became the first person to pilot a solar-powered aircraft in long-distance flight. The minuscule experimental aircraft, *Solar Challenger 6*, was powered by a 2 ¾ horsepower solar-powered engine. Her flight was over six miles near Marana, Arizona, and lasted only twenty-two minutes. (6)

The December 1980 issue of *Aviation, Space and Environmental Medicine* included the society Constitution and By-Laws, Directory of Members, and the annual Index, among other administrative subjects.

References

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