JULY 1992

Laser surgery aloft (126th USAF(ANG) SAC Clinic, Chicago; Loyola University, Chicago; Chicago College of Osteopathic Medicine; Armstrong Laboratory, Brooks AFB, TX; Air Surgeon, National Guard Bureau, Andrews AFB, MD): "The operational aviation and space environments present a potential for surgical trauma to aircrew and passengers. Current wound care techniques for trauma in the aviation and space medicine environment focus on classical surgical management of wounds. Medical lasers used in these environments can provide rapid control of bleeding wounds, reduce aircraft environmental contamination from body fluids and secretions, and foster rapid triage of injured personnel. Self-contained and reusable medical lasers have the potential to reduce the material supply of medical kits in the aviation and space environment. A miniaturized carbon dioxide laser was used to establish protocols and procedures for use on operational military KC-135E aircraft. Laser surgery was performed [on rats] to demonstrate laser efficacy and safety in flight."[1]

JULY 1967

Applying modern technology to medicine (School of Medicine and Dentistry, Rochester, NY): "Present requirements of the FAA permit auditory testing using whispered voice at a specified distance, with an audiogram necessary only if there is evidence of substandard hearing. The author's experience is similar to the observation of others that the whispered voice test is not only inaccurate and inconsistent, but also irreproducible. The widespread use and popularity of tape recorders at the present time has made possible the mass production and the consequent low cost of these items…

"For an outlay of 15 to 25 dollars, for headphones and accessories, any ordinary monophonic or stereophonic tape recorder can be converted to a self-explanatory speech reception threshold tester which may be administered by medical assistants with accuracy and reproducibility… The procedure has widespread application in the field of auditory screening in routine civil aviation medical examinations without large financial investment."[4]

And more technology (Aerospace Medicine Department, McDonnell Company, St. Louis, MO): "The external auditory meatus was studied as a potential location for body temperature monitoring of spacecraft crews in both pre-flight and in-flight testing. A thermistor embedded in a rubber plug which was 'custom' fitted to the test subjects' external meatus was evaluated as a sensor. Sublingual temperatures were simultaneously recorded as a reference. Analyses of the data showed a significant correlation between oral and aural temperatures ($r = 0.75$, $P < 0.001$), and indicated that the device and method were highly suited to the intended purpose. Throughout the study, aural temperatures were consistently lower than sublingual temperatures, and the differential appeared to be dependent upon the position of the ear thermistor relative to the tympanic membrane. Response time differential was never greater than 2 minutes. The device and method may have some general application outside the aerospace industry."[3]

JULY 1942

The value of physicals to pilots (Medical Director, Eastern Air Lines): "[Based on over 300 physicals] The average age of our pilots is 30 years. The average weight is 170 pounds. Average height is 70 inches. Pulse: 73. Blood Pressure: systolic 116, diastolic 60. Schneider index: 12 plus. Solo hours: 3,500. Light adaptometer test: 2 minutes. Average overweight: 9 per cent. The majority of pilots have blue eyes. Next in frequency is hazel eyes, then brown, grey and green eyes.

"Comparing these statistics with those compiled three years ago, it is interesting to note that the pilots have shown an increase in weight, plus an increase in height and a more stable reading in blood pressure with a mild increase in pulse rate and a decrease in Schneider. The increase in pulse with the decrease in blood pressure shows that the pilots, as a whole, are taking better physical exercise and, therefore, causing better readings in blood pressure, but, probably due to the uncertainty of the times in which we are now living, and have been for some time, compared to conditions as existed three years ago, the psychic tension apparently has increased, which is a condition which would raise pulse rates and account for a fall in the Schneider index average…

"As a whole, the pilot, under careful medical supervision and maintenance, actually becomes a healthier individual as he grows older in the service of Eastern Air Lines. This is a very happy state of affairs and should give pilots of Eastern Air Lines a better feeling of security for themselves as to their future, because we have demonstrated that under constant medical maintenance and supervision, their physical health has improved as they grow older."[2]

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