DECEMBER 1993

Alcohol and performance (Essex Corporation, Orlando, FL; Tulane University, New Orleans, LA; U. of Central Florida, Orlando, FL; Enzian Technology, Inc., Orlando, FL): "Performance tests are generally more reliable and more easily administered than on-the-job measures of performance, and in this way are preferable for studying the adverse consequences of environmental stressors. However, a linkage or context would be useful in interpretation of these laboratory measures. This paper reports findings with two indexing methods using multiple regression. In the first study, we illustrate 'dose equivalency' where deficits on microcomputer performance tests were related to graded dosages of alcohol, and prediction equations of blood alcohol level were established. In the second experiment, 'surrogate criteria' are demonstrated where cognitive mental tests of military aptitude, known to be predictive of operational performances, were administered to a sample who were tested repeatedly on the same microcomputer performance test. Multiple regression analyses of the computerized tests with the aptitude tests were significant ($p < 0.01$) and ranged from $R = 0.50$ to 0.94. Finally, the loss in performance owing to alcohol was indexed to loss on the microcomputer tests through the relationship of the tests to the Armed Services Vocational Aptitude Battery (ASVAB). Since the latter is strongly predictive of all forms of military operational performance, we suggest that alcohol-related losses in microcomputer performance test scores can serve as a useful intermediary, permitting meaningful linkage to these real-world performances."[2]

DECEMBER 1968

Radiation threat at high altitude (Naval Aerospace Medical Institute, Pensacola, FL, as sponsored by NASA): "Although the galactic radiation level at [supersonic transport] SST altitudes is such that, from a radiological standpoint, exposure appears entirely unobjectionable, the prospect of large-scale commercial passenger operations calls for accurate assessment of the radiation load to the individual crew member and passenger and to the population as a whole. The maximum dose rate of about 1 millirem/hour at 65,000 feet in the polar region for 600 hours per year at altitude leads to a yearly dose of 0.6 rem, which exceeds the Maximum Permissible Dose (MPD) for 'Members of the Public' (0.5 rem/year) by 20 per cent but constitutes only 12 per cent of the MPD for 'Radiation Workers' (5 rem/year) in terms of official regulations. On the other hand, shifting all jet travel to SST altitudes would still keep the additional radiation burden for the total population at the level of a few per cent of the fallout exposure although the individual passenger would accumulate the yearly fallout dose in about 25 hours at altitude. Radiobiologically, special consideration has to be given to heavy nuclei because of their high values of Linear Energy Transfer ('microbeams'). However, the small fraction of the heavy flux, which carries the 'microbeam' effects, undergoes a substantially higher absorption in the atmosphere than does the total flux. The microbeam effectiveness of galactic primaries, therefore, is virtually extinguished at SST altitudes."[3]

DECEMBER 1943

Nature of motion sickness (Medical Corps, U.S. Army): "Airsickness in bomb crew personnel constitutes a major medical problem. One airsick member can prevent accomplishment of a mission. Replacement of airsick individuals represents personnel loss, training wastage, temporary disruption of crew and administrative headaches.

"To better understand this disability, a survey was made of 1,006 flying personnel in a combat bomber crew training unit with regard to the circumstances surrounding past and current attacks of airsickness…

"Experiences with combat crew trainees suggest that emphasis on motion, rather than fear, as the primary cause of airsickness, originates in the coincidence that fear provoking air situations frequently are associated with unusual movements of the airplane. Examples are aerobatics and flights during turbulence. Militating against the significance of motion are the occurrence of airsickness in the course of all types of flight missions, its development in individuals after long periods of experience, the dependence of the syndrome on the activities and position of the person in the airplane when the factor of motion remains constant, finally the neglected fact that flight of its very nature is indissociable from movement of aircraft through a medium itself in constant flux…

"A considerable psychologic barrier stands in the way of acceptance of the fear hypothesis of airsickness. A great many people who fly, including some who write on the subject, have been airsick. Extremely few would be willing to admit they were sick because they were afraid, even if the fear were a conscious one. Far more satisfactory to one's ego is a rationalization implicating a factor involving no personal responsibility or loss of self-esteem…

"Airsickness in the great majority of instances appears to be a true aeroneurosis, widespread in occurrence and usually self-limited… Overindulgence, infections, antecedent tendencies to motion sickness may act as contributory factors… Repeated disabling airsickness is preventable or remediable to a significant degree."[1]

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