## MARCH 1996

*Impact of aviation fires (Civil Aeromedical Institute, Oklahoma City, OK):* "According to an international study, there were 95 fire-related civil passenger aircraft accidents worldwide over a 26-yr period, claiming approximately 2400 lives. Between 1985 and 1991, about 16% (32 accidents) of all U.S. transport aircraft accidents involved fire and 22% (140 fatalities) of the deaths in these accidents resulted from fire/smoke toxicity. Our laboratory analyses of postmortem blood samples (1967–93) indicate that 360 individuals in 134 fatal fire-related civil aircraft (air carrier and general aviation) accidents had carboxyhemoglobin saturation levels (≥20%), with or without blood cyanide, high enough to impair performance."[1]

*Psychology of isolation (University of Bergen and the Norwegian Underwater Technology Centre, Bergen, Norway):* "Psychological data from environments that are considered as analog to space was collected from 68 subjects; 18 in hyperbaric chambers, 16 in polar expeditions, and 34 on Arctic stations… Crews in hyperbaric chambers indicated a steady increase in coping over the isolation. Polar expedition members reported high aggressiveness and anxiety in the first quarter and an increase in homesickness over time. A personality characterized by strong expressiveness and instrumentality ('the right stuff') predicted superior adaptation in hyperbaric chambers… The data suggest that isolation in hyperbaric chambers and polar expeditions should be considered as models for different aspects of the space environment."[3]

## MARCH 1971

*Sleep deprivation and EEG (USAF School of Aerospace Medicine, Brooks Air Force Base, TX):* "Ninety-six patients referred to Neurology at the USAF School of Aerospace Medicine were studied with a routine resting EEG and an EEG following sleep deprivation. Seventy-eight were patients with neurological complaints other than seizure disorder. Eighteen of the ninety-six had no neurological complaints… and are used as controls. Sleep deprivation did not activate the EEG's of the healthy subjects but twelve of the seventy-eight EEG's in the patient group showed unequivocal worsening following sleep deprivation. In addition, the percent of EEG abnormalities found after sleep deprivation as compared to the percent of abnormalities found on routine EEG is statistically significant ($p<.05$). It is noteworthy, especially in a flying population, that of sixty-two patients with normal routine records, six (9.7%) converted to abnormal records in the sleep deprived state."[5]

*Furosemide at altitude (Defense Institute of Physiology and Allied Sciences, Delhi, India):* "Furosemide… was administered to human subjects who had undergone acclimatization to altitude for a period of three weeks… Results indicate no change in recovery pulse response and exercise ventilation. There was a significant rise in the percentage of oxygen extraction and a highly significant increase in the oxygen uptake during exercise. Furosemide decreased oxygen debt and improved physical work capacity."[2]

## MARCH 1946

*Aerial insecticide spraying (Army Air Forces Committee on Aerial Dispersal of Insecticides, Orlando, FL):* "DDT [dichlorodiphenyltrichloroethane] airplane spray equipment was first designed and tested by entomologists and engineers of the Orlando Laboratory [**Fig. 1**]. Close co-operation between this laboratory, the National Defense Research Committee and the Army Air Forces Center materially aided in the development of airplane spraying of DDT. The AAF has carried on extensive developmental work in this field.

**Fig. 1.** C-47 with exhaust generated spray plume. A fine mist-like spray is produced by spraying a DDT solution into a venturi extension of the exhaust manifold.

"This development is of particular interest to the Flight Surgeon because it presents an ideal method for the early control of malaria, dengue, filariasis, sand fly fever, and fly-borne dysentery. During World War II the aerial dissemination of DDT was employed in all theaters of operation by the Army, the Navy and our allies and has been attended by successful results. During peacetime the use of this wartime development will continue to expand in the armed forces and in civilian life."[4] [Editor's note: DDT was ultimately banned in the United States in 1972 and worldwide in 2004 due to its health and environmental impacts.]

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