## MARCH 1991

*Don't fly 24 h after smoking pot (Decision Systems and Stanford University School of Medicine, Stanford, CA):* "This study finds evidence for 24-h carry-over effects of a moderate social dose of marijuana on a piloting task. In separate sessions, nine currently active pilots smoked one cigarette containing 20 mg of delta 9 THC and one Placebo cigarette. Using an aircraft simulator, pilots flew just before smoking, and 0.25, 4, 8, 24, and 48 h after smoking. Marijuana impaired performance at 0.25, 4, 8, and 24 h after smoking. While seven of the nine pilots showed some degree of impairment at 24 h after smoking, only one reported any awareness of the drug's effects. The results support our preliminary study and suggest that very complex human/machine performance can be impaired as long as 24 h after smoking a moderate social dose of marijuana, and that the user may be unaware of the drug's influence".[3]

## MARCH 1966

*The stress of aerial firefighting (Civil Aeromedical Research Institute, FAA, Oklahoma City, OK, and U.S. Forest Service Equipment Development and Testing Center, Missoula, MT):* "Success in around-the-clock battles against forest fires depends largely on the effectiveness of special air operations. Considering the potential risk of long hours of extensive stress to men and aircraft in such operations, attempts were made to measure physiological responses during simulated aerial fire control missions and to detect measurable symptoms of post-flight fatigue. In-flight heart rates and respiratory frequencies of Forest Service pilots were obtained via radiotelemetry in single 5-hour flights and on three consecutive days of 8-hour flights. Pre- and post-flight exercise tests were performed (a) for the establishment of the individual heart rate: metabolic rate relationship, and (b) for the detection of any 'physical fatigue' effects. Also, for the latter purpose, a simple orthostatic tolerance test was employed. According to the results, the physiological demands in the simulated 5-hour 'bird dog' missions were not excessive. The in-flight metabolic rate of approximately twice the resting rate was not enough to cause measurable physical fatigue. During the 8-hour flights, the heart rates fluctuated between 24 and 39 per cent increase above resting levels in the pilot, and between 37 to 65 per cent in the observer. In the post-flight exercise tests physical fatigue became apparent especially on the third day as heart rate response to a relatively moderate work-load increased from a normal of 125 to 164 beats per minute. Conclusions drawn from this study indicate that the physiological demands of forest fire control missions engage nearly 33 per cent of the pilot's maximum capacity. Actual flying time under such condition should not exceed 5-6 hours daily on a 5-day per week schedule".[1]

## MARCH 1941

*Mental effects of the hypoxic environment (College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York City):* "Variations in the oxygen concentration of the inspired air beyond that to which the individual has become accustomed, result in characteristic changes in mental functioning. It has long been known that acute oxygen-want, produced either by lowering the pressure or concentration of oxygen in the atmosphere, may produce a serious disturbance in bodily function. Recent studies have shown that impairment of reason, memory and judgment takes place at altitudes as low as 12,000 feet. A report is here made of observations of seventeen medical students and nine psychoneurotic subjects who breathed an atmosphere of 13 per cent oxygen (equivalent to an altitude of 12,400 feet) for three hours. In the student group, impairment of emotional control could be demonstrated in all; in 50 per cent elation and over-confidence was first manifested, followed by headache and lethargy, and in 41 per cent mental dullness continued throughout the experiment with headache at the end. The patients revealed a much more marked lack of emotional restraint, with feelings of exaggerated self-esteem and with evident inability of inhibition of instinctive drives. In five patients the mood changed from a hypomanic state to dullness and lethargy; in four, dullness and apathy were present from the beginning".[2]

## REFERENCES

1. Balke B, Melton CE, Jr., Blake C. Physiological stress and fatigue in aerial missions for the control of forest fires. Aerosp Med. 1966; 37(3):221–227.
2. Barach AL. The effect of low and high oxygen tensions on mental functioning. J Aviat Med. 1941; 12(1):30–38.
3. Leirer VO, Yesavage JF, Morrow DG. Marijuana carry-over effects on aircraft pilot performance. Aviat Space Environ Med. 1991; 62(3):221–227.

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