

**JUNE 1994**

*Antibiotics in space (Joint French-Dutch research):* “[W]e studied the growth of *Escherichia coli* cultured in vitro in space in the presence of dihydrostreptomycin... This experiment was carried out during the STS 42 mission aboard the U.S. Space Shuttle Discovery (IML-1 program)... The investigations show no difference between flight and ground experiments for the cultures without antibiotic. The growth rate with antibiotic was accelerated in flight, the growth yield was not changed, and there were no differences in the ultrastructures. The results suggest some changes in antibiotic binding in space. We did not observe any differences between the cultures developed in flight in the 1-g centrifuge and the cultures placed in the static rack in microgravity.”<sup>6</sup>

*Effects of virtual reality (Ministry of Defense, Farnborough, Hants., UK):* “Virtual reality (VR) has become increasingly well-known over the last few years. However, little is known about the side-effects of prolonged immersion in VR. This study set out to investigate the frequency of occurrence and severity of side-effects of using an immersion VR system. Out of 146 subjects, 61% reported symptoms of malaise at some point during a 20-min immersion and 10-min post-immersion period. These ranged from symptoms such as dizziness, stomach awareness, headaches, eyestrain and lightheadedness to severe nausea. These symptoms caused 5% of the subjects to withdraw from the experiment before completing their 20-min immersion period. Further research needs to be conducted that attempts to identify those factors that play a causative role in the side-effects of the VR system, and that looks for methods of reducing these side effects.”<sup>5</sup>

**JUNE 1969**

*Color light signals proposal (Civil Aeromedical Institute, FAA, Oklahoma City, OK):* “[D]ata suggest that pilots do not retain familiarity with the color signal meaning, apparently due to infrequent use. Although this would support simplification of the color signal code, relaxation of the color vision standards is not supported, since there are other uses of color codes in aviation...”

“The authors feel that a reasonable solution to the problem of signal identification could be obtained by simplifying the signal light code. Since the light code is used only rarely, the ten signals currently in use might be replaced with two signals, steady green to indicate ‘clearance to land’ and flashing red to indicate ‘do not land.’”<sup>2</sup>

*Helmet design (Royal Aircraft Establishment, Farnborough, Hampshire, UK):* “A review of the literature shows that knowledge of human tolerance of blows to the head is not available in a form that can be applied directly to the design of helmets, whether intended to protect against a single heavy impact (crash) or repeated lighter ones (buffeting)...”

“Our work so far has led us to think that the main function of a crash helmet must be to prevent skull fracture by efficient load spreading and full use of the space available for deflection. It must also resist penetration and abrasion and reduce the transfer of angular movement to the head as far as possible. The control of concussion is more difficult owing to the limited deflection that can be allowed in the helmet, but attention should be given to the

provision of yielding surfaces at all likely points of impact within the aircrew working space.”<sup>4</sup>

**JUNE 1944**

*Critical medevac (Ft. Sill, OK):* “During the summer epidemic of 1943 a patient was admitted to the Station Hospital at a midwest camp, and a few hours later a diagnosis of bulbar type poliomyelitis had been established. Because of the appearance of complete paralysis of the chest muscles it was decided by mid afternoon that the patient should be removed to a hospital equipped with a respirator, the nearest of which was 300 air-line miles distant. More than twenty-four hours would have been required to cover the distance by rail, in addition to the necessity of making two changes of trains. By ambulance the trip would have necessitated more than twelve hours because of the lack of a direct highway route.”<sup>1</sup>

*Flight surgeon duties (U.S. Navy):* “The duties demanded of the flight surgeon of today, both in combat and training areas, are somewhat different than those visualized when aviation medicine first came into being. It is perfectly true that the original conception of a flight surgeon is still essentially the true one, but a change has occurred in that his functions have been expanded and his responsibilities have been definitely increased. We have always felt that the flight surgeon had two main functions, those of selection and of maintenance. Selection of pilots from the physical standpoint is still the same important job of the flight surgeon that it has always been, but the maintenance of the pilot has now assumed a tremendous importance...”

“It seems logical that a flight surgeon should know something of flight. If he has to live in close association with aviators, if he is to have any authority at all in the discussions he enters or the statements he makes, he must have had at least some flying experience.”<sup>3</sup>

**REFERENCES**

1. Frazier VE. Acute poliomyelitis case transported by air. *Aviat Med.* 1944; 15(3):195–196.
2. Gibbons HL, Lewis MF. Color signals and general aviation. *Aerosp Med.* 1969; 40(6):668–669.
3. Groesbeck B Jr. Modern trends in the teaching of naval aviation medicine. *Aviat Med.* 1944; 15(3):182–185.
4. Rayne JM, Maslen KR. Factors in the design of protective helmets. *Aerosp Med.* 1969; 40(6):631–637.
5. Regan EC, Price KR. The frequency of occurrence and severity of side-effects of immersion virtual reality. *Aviat Space Environ Med.* 1994; 65(6):527–530.
6. Tixador R, Gasset G, Eche B, Moatti N, Lapchine L, et al. Behavior of bacteria and antibiotics under space conditions. *Aviat Space Environ Med.* 1994; 65(6):551–556.

This column is prepared each month by Walter Dalitsch III, M.D., M.P.H. Most of the articles mentioned here were printed over the years in the official journal of the Aerospace Medical Association. These and other articles are available for download from Mira LibrarySmart via <https://submissions.miramsmart.com/asmaarchive/Login.aspx>.

Reprint & Copyright © by the Aerospace Medical Association, Alexandria, VA.

DOI: <https://doi.org/10.3357/AMHP.5399.2019>