Space Medicine: Getting There!

The following contribution to the Space Medicine Branch page was submitted by Dr. Paul Buchanan, the President-elect of the Space Medicine Branch.

Until Skylab, space medicine was practiced only from the ground. True, there were some very noteworthy experiments performed in Keplerian parabolas, on Gemini 7, and by Boris Yegorov, who was but 1 year short of his medical degree when he flew on Voskhod 1 in October 1964. But prior to the flight of astronaut/physician Joe Kerwin on Skylab and his use of the specially designed and selected equipment in the Inflight Medical Support System, the flight surgeons of the space age had been unable to practice their art and science, face-to-face, with their patients in space. Aside from data collection by nonphysician crewmen, there had been no hands-on medical practice in space until late May of 1973. It was almost 10 years later, April 1983, when Dr. Story Musgrave, (selection group 1965) flew on STS-6 as a Mission Specialist. He performed as our first Shuttle EVA crewman and accumulated a fascinating array of subjective impressions on the space adaptation syndrome.

Dr. Norman Thagard, (selection group 1979) made several valuable observations during his flight as a Mission Specialist on STS-7, but Dr. William Thornton, (selection group 1965) probably established a record for Detailed Scientific Objectives during the flight of STS-8. “Dr. Bill,” it should be remembered, was the Scientist Astronaut during the Skylab Medical Experiment Altitude Test (SMEAT) in 1972. This testing and refining of medical hardware for Skylab, while spending 56 days in an altitude chamber, gave Bill an appreciation for designing and building his own hardware for monitoring physiological systems in space. He was given this opportunity and took full advantage of it. He designed and developed equipment to monitor the activity of the extracorporeal muscles, qualitative peristaltic activity, heart rate, and blood pressure. Mission Commander Richard Truly remarked after checking Bill’s progress in the mid-deck, that it “looked like an explosion in an electronics factory.” While in many ways it may have seemed like a one-man show, Bill gained, as a physician, some highly valuable insights into the space adaptation syndrome and, as an engineer, valuable first-hand experience in the problems of attaching, controlling, and stowing this hardware in microgravity.

Without meaning to deprecate the work of Garriott, Parker, Berbold, and Lichtenberg during the first mission of the ESA-built SpaceLab, the physician’s perspective on space flight would skip to Mission 51-A (STS-14) on which Dr. Anna Fisher, (selection class 1978) flew as a Mission Specialist. During the second SpaceLab flight, 51-B (STS-17), Dr. Thornton and Thagard teamed up to flight test some of the equipment and experiment concepts that will be vital to the success of the first dedicated Life Sciences SpaceLab or “SLS-I,” scheduled to fly in late 1987.

Meanwhile, the USSR has not been inactive in space medicine. Physiologists and physicians have visited the Salyut 7 Space Station on several occasions and Cosmonaut Oleg Atkov, of the record-breaking 237-day crew, is a cardiologist. There is no doubt that both the USA and the USSR are now committed to a permanent manned presence in space. There is absolutely no doubt that as space stations become functioning realities, the crewmembers will increase and that both men and women will choose to make long periods of residence in space an integral part of their career/life plans. Colonization will follow and the need for a better understanding of the space-normal physiological base line, and clearly defined principles of space medicine will be mandatory.