



Fig. 1. Aegir interior.

DECEMBER 1996

Ejection and anthropometrics (Naval Aerospace and Operational Medical Institute, NAS Pensacola, FL): “[C]overing a 5-yr period from Jan 1989-Dec 1993... Out of 810 aircrew involved in mishaps, 199 ejected. Of all the ejections, 111 (56%) had some type of injury as a result of the ejection. Severe injuries occurred in 8 (4%) including 4 (2%) fatalities. Back injuries occurred in 44 (22%), and 8 (4%) involved spinal fractures. Although there were no significant risk factors for ejection back injury, weight and height were statistically significant risk factors for severe injury and spinal fracture, respectively... Aircrew with severe injury were heavier (average weight 88 kg. vs. 79 kg.). In addition, taller aircrew (185 vs. 180 cm.) were at increased risk for any spinal fracture.”¹

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Living under water (Makai Undersea Test Range, Makapuu Point, HI): “On June 1, 1970 six men using Aegir [Fig. 1], a new type of undersea habitat, spent five days at 516 ft. in Hawaiian waters. Their comfort and performance were severely limited by low habitat temperatures (72–77°) and their efficiency reduced by the poor communication in helium. Nevertheless they accomplished several tasks satisfactorily during 22 man-hours of outside diving time in the 67–70° water. Some aquanauts developed external otitis, ache or ‘colds’ and all lost weight (av. 2.9 Kg.). Decompression was uneventful using decreasing ascent rates with overnight and mid-day stops.

“This dive demonstrated that man can live and do useful work on the lower continental shelf, however, considerable engineering effort, including redundant design and some new technology, will be necessary to insure optimum diver comfort, performance and safety.”⁴

Fitting helmets what? (Naval Aerospace Medical Research Laboratory, FL): “Although aviators’ flight helmets may possess exceptionally good noise attenuation qualities, maximum attenuation may not always be realized when the helmet is worn, particularly if the helmet does not fit well. The lack of a standardized procedure for fitting flight helmets often results in a poor compromise that sacrifices noise exclusion for comfort. A procedure that involves the use of a noise source and an automatic recording audiometer has been developed as an aid in the fitting process. The noise source allows the aviator to detect acoustical leakage around his ears so that a better fit can be effected. Masked hearing threshold levels obtained with the helmet’s earphones can be used to demonstrate improved performance.”²

DECEMBER 1946

Human factors in mishaps (AAF Flying Safety Service, Australia): “‘Pilot error’ includes all the defects which a pilot may exhibit in flight planning or in operating an airplane, whether on a taxiway, in takeoff, in flight or in landing. The term is customarily applied only to errors which lead to an accident. It covers many dissimilar and often intangible factors. In particular, it evades the issue of the differences in technique demanded by the various types of modern aircraft. Whereas most errors in flying can neither be excused nor condoned, under certain provocations a mistake may be considered almost legitimate. In some circumstances, moreover, ‘pilot

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error' may be completely hidden in an accident ostensibly caused only by structural failure or other nonpilot factors...

"Accident statistics from the several branches of aviation, both here and abroad, have generally shown 'pilot error' to be a major cause factor. In an analysis of accidents to commercial airliners, 'pilot error' was found in only one-third, but in military flying it is involved in part or in whole in over two-thirds of the major accidents and four-fifths of the minor accidents. An even higher percentage has been reported for private flying...

"'Pilot error' has been subclassified in many ways. A conventional scheme endorsed by the National Advisory Committee for Aeronautics recognizes four main categories as immediate causes: errors of judgment, errors of technique, carelessness, and violations of orders. Additional factors underlying any of the above have also been listed:

lack of experience, physical defects, faulty instruction or supervision, and an ill-defined term, 'inherently poor reaction.' The classification of cause factors used for AAF aircraft accidents covers essentially the same items but in a different arrangement."³

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