Conclusion

The present status of underwater physiology and medicine is reviewed. Emphasis is given to recent studies which provide the basis for extension of depth limits in deep diving such as the Comex dive in 1972 to 2001 feet of simulated depth of water. The results of this study indicates that selected and trained divers can work and live efficiently at 1400 feet of sea water breathing helium-oxygen. The causes of the 'High Pressure Nervous Syndrome' (HPNS) are discussed.

The critical volume hypothesis advanced by MILLER et. al.[6] is cited as one of the explanations for the lack of anaesthetic effects of helium at high pressures. Pressure reversal of a narcotic action a N_2-O_2 gas mixture was recently demonstrated in human subjects.

The depths of submarine escape could theoretically be extended according to MILLER by the use of carbon tetrafluoride as a breathing gas for nitrogen since it is a slower saturating gas.

Recent exploits in breathhold diving dives to 240–256 feet indicate the necessity for bloodshifts into the thorax during the dives which has been demonstrated to take place.

The elimination of nitrogen from existing bubbles during oxygen breathing in decompression has been demonstrated through monitoring of instantaneous gas exchange using a Mass spectrometer. The development of skin lesions encountered during inhalation of heavier gases such as nitrogen and neon in an ambient helium-oxygen atmosphere has been explained with a steady conterdiffusion of two inert gases.

Recent heat loss studies in water indicate that the conventionally used indices of heat loss such as core temperature and skin temperature are inadequate to estimate body heat loss.

The most recent studies of exercise in divers show an adaptation to diving indicated in a lesser ventilating response to a given exercise load. The latest investigation of aseptic bone necrosis underscore the importance of this hazard in compressed air work and diving.

Zusammenfassung.

Es wird eine Übersicht über den gegenwärtigen Stand der Unterwassermedizin gegeben. Besondere Berücksichtigung finden die in jüngster Zeit durchgeführten Forschungen, die die Grundlage für eine Erweiterung der Grenzen des Tieftauchens bereiteten, wie z.B. der 1972 durchgeführte Rekordtauchgang der Comex Gruppe, bei dem eine Tiefe von 2001 Fuss (610 m) in der Kammer erreicht wurde. Nach den in diesem Experiment erhobenen Befunden können ausgewählte und trainierte Taucher in einer Tiefe von 1400 Fuss (427 m) noch gut arbeiten und leben, wenn sie eine Helium-Sauerstoffmischung atmen. Die Ursachen des «Nervösen Hochdruck-Syndromes», sowie die kritische Volumentherorie von MILLER[6] als ein Erklärungsversuch für das Fehlen der narkotischen Wirkung von Helium unter hohem Druck im Vergleich zu Stickstoff werden diskutiert.

CONGRESSUS

USA

International Atomic Energy Agency Symposium on Dynamic Studies with Radioisotopes in Clinical Medicine and Research

in Knoxville (Tennessee, USA), 15–19 July 1974.

This Symposium, a sequel to the symposium on the same subject held by the IAEA in Rotterdam 1970, will be concerned with all those applications of radionuclides in clinical medicine and research that involve investigation of the temporal patterns of uptake, metabolism, clearance or excretion of administered radioactive materials. Abstracts must be submitted by 8 February 1974. Further information and forms to accompany abstracts of papers intended for presentation at the Symposium may be obtained by R. A. Dudley and E. H. Belcher, Medical Applications Section, Int. Atomic Energy Agency, Kärntner Ring 11–13, A–1011 Wien (Austria).

Switzerland

4th International Conference on Magnetic Resonance in Biological Systems

at Kandersteg, 16–21 September 1974.

The purpose of the conference is to bring together scientists of many disciplines who are concerned with the application of magnetic resonance in biochemistry, molecular biology, biophysics, pharmacology, and medicine. The program will include papers presented by invited lecturers, contributed communications, an discussion periods.

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