THE WORLD AS IT IS

WELCOME EUROPEAN JOURNAL OF UNDERWATER AND HYPERBARIC MEDICINE

John Knight

Key Words

Diving theory, general interest, hyperbaric research, physiology, diving medicine.

The SPUMS Journal congratulates the European Underwater and Baromedical Society (EUBS) for producing the first issue of the European Journal of Underwater and Hyperbaric Medicine (EJUHM) and looks forward to many years of international co-operation. The EUBS Newsletter, edited by Dr Peter Mueller, has undergone a transformation into a quarterly Journal, published in English, with an International Editorial Board of 32 drawn from 21 countries. SPUMS members can take pride in the fact that Dr Mueller, who is a member of SPUMS, when he was appointed Editor of the EUBS Newsletter last year, told the Editor that his aim was to turn the EUBS Newsletter into a Journal like the South Pacific Underwater Medicine Society Journal. Dr Mueller is to be congratulated on persuading the Committee of EUBS to back his ideas and on the content of the first issue.

Included in this issue are well worth reading papers by David Elliott (Medical Assessment of Fitness to Dive) and Valerie Flook (The Physics and Physiology of Decompression). The thrust of her paper is that off gassing and bubbles are controlled by physics rather than by supersaturation, and that the basic physics of off gassing were published in 1963.[1] The Editor has always been amazed that so little attention has been paid, in the underwater medical literature, to the asymmetry between gas uptake and gas excretion which has been known to anaesthetists as far back as 1956, when he started his anaesthetic education, as the explanation of why induction of anaesthesia with nitrous oxide was faster than the recovery time. Dr Flook's paper, part of a *Back to Fundamentals* series, should be read by all divers interested in the risks of bubble formation. Dr Mueller deserves congratulation on the standard of production of the European Journal of Underwater and Hyperbaric Medicine. There appears to be only one typographical error, a standard that the SPUMS Journal has hardly ever achieved!

Reference

1 Mapleson WW. An electrical analogue for uptake and exchange of inert gases and other agents. *J Appl Physiol* 1963; 18: 197-204

OZTEK 2000 AUSTRALIAN DIVING TECHNOLOGIES CONFERENCE

Lynn Taylor

Key Words

Decompression illness, equipment, meeting, mixed gas, rebreathers.

Richard Taylor again organised a successful OZTek conference in Melbourne, with the help of David Strike and Barry Heard. The topics for the general meeting were of interest to all divers, even if they had no intention of using high tech equipment. Those interested in rebreathers had displays and workshops as another part of the conference while the general subjects were being presented.

On the Friday night the decks of the *Polly Woodside* were covered with drinkers celebrating the start of OZTek 2000. A wonderful place to meet old friends and new speakers.

Developments in decompression theory

In his introduction Chris Parrett, creator of the Abyss decompression software, referred to the 4 goals of deep decompression recreational diving. To dive deeper, for longer, with shorter deco stops and to experience no decompression illness (DCI). A daunting task.

Chris took us through an explanation of the Reduced Gradient Bubble Model (RGBM) theory which is used for his latest version of Abyss. Much of the physics is complex, but the focus is on micronuclei, bubbles, and the surfactants that stabilise them. In utilising this theory to calculate decompression algorithms, the goal is to keep the bubbles in their tiny stable micro-nuclei state. The decompression profiles produced by RGBM calculations incorporate deeper decompression stops than most other algorithms. These attempt to maximise the rate of inert gas elimination by incorporating a maximal ascent to the first stop, establishing the greatest possible tolerable inert gas pressure gradient in tissues, which may well cause bubbles to form before the first stop. The RGBM is designed to minimise the chance of "exciting" bubble micronuclei into growth; hence, the focus is on a reduced gradient. The deeper early stops, perhaps surprisingly, produce reduced time at the shallower stops, and an overall reduction in decompression time.

The first of Chris' algorithms, the Abyss 100 required 524 minutes of decompression for a dive to 84 m for 250