

that even if we are able to solve the problem of decompression, so that we can jump off the back of a boat of opportunity, like our little machine, that we are still going to have a little machine following us. Perhaps the diver is going to be telling the little machine what to do. After all, how many watts of power can we produce for any given period of time compared with what a machine can do? I think this gets back to our power breathing, power brakes, power steering. I think that is the way that the oil industry will be going, and I am quite sure that is the way that we will be going in our salvage diving.

LETTERS TO THE EDITOR

PO Box 79,
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Dear Sir,

The factors affecting the advisability of contact lens use vary as widely as the types of diving, and a blanket rule against contact lens usage in diving as suggested in the January to March 1983 SPUMS Journal is rather an over-reaction.

I certainly agree that contact lens wear is never acceptable in saturation or chamber diving. Anything, such as a contact lens, which could possibly affect or reduce the corneal integrity, allowing the possible entry of pseudomonas, which is such a familiar inhabitant of chambers, cannot be permitted. A pseudomonas infection can result in the very rapid destruction of the cornea, the risk of which is not acceptable in any situation, let alone under the limitations of a chamber or offshore environment.

Simon and Bradley's complete paper on the "Adverse Effects of Contact Lens Wear During Decompression" is an extremely interesting paper because, as far as I know, it is the first time that slit lamp microscope observation of the cornea has been utilised during hyperbaric or decompression procedures.

The point that the unfenestrated PMMA (hard) lens caused bubbling in the pre-corneal tear film is not totally convincing in such a limited study. The fact that no details of the corneal or lens variables are quoted in the original paper unfortunately reduces the value of the study.

There are many different techniques of fitting these lenses, each of which involve a slightly different relationship between the lens and cornea. Some techniques require fenestration (holes in the lens) for adequate corneal ventilation, whilst others offer

adequate oxygenation and ventilation by other means.

My own work at the USAF School of Aerospace Medicine confirmed that there are no changes in corneal curvature under pressure so any physiological changes during diving will be related to ventilation (ingassing and outgassing) and not because of any mechanical change in the fitting relationship between the lens and the eye.

A convincing and valuable conclusion of Simon and Bradley's paper, however, is that lenses fitted for diving must have good ventilation. We must remember that this can be achieved by other means in addition to fenestration, particularly including the use of the new oxygen permeable materials.

I am not necessarily convinced that the bubbles in the pre-corneal film had to be nitrogen. As the cornea was oedematous, it could well have been carbon dioxide.

A recent Swedish study investigates the adhesion of contact lenses to submerged eyes. There is no doubt that hydrophylic (soft) lenses have vastly superior adhesion and are far less likely to be lost. Right from the early days of hydrophylic lenses we have known that in fresh (hypotonic) water, adhesion was so great that forced removal could actually pull away the corneal epithelium. Lövsund's group found additionally that adhesion was sufficient in seawater.

For sport and light commercial diving, I cannot find any studied arguments against soft lens usage.

I also feel that the use of hard contact lenses is permissible in normal circumstances. Realistically both types of lens are not likely to be lost during normal diving activities, but it must be understood by the wearer that hard contact lenses do not possess the same adhesion as do soft lenses.

The reservations that I have with hard lenses, therefore, pertain firstly to someone with a high degree of ametropia who, in the unlikely event of both lenses being lost, was unable to find his way, operate his instruments, or find his boat or entry.

Equally, someone undertaking diving activities that present high risk of mask loss such as could occur in some rescue, military, or police diving activities, should not wear hard lenses.

Yours faithfully,
Quentin Bennett