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*This paper has been in the hands of the SPUMS J since March 1983. A letter in September 1984, asking Dr Harpur whether the long interval had altered his views and whether he had any objections to its being published produced the following reply.*

Tobermory Medical Clinic
PO Box 220 - NOH 2 RO
Tobermory, Ontario

17 September 1984

To answer your questions quite simply, no, I have not encountered anything which would persuade me to alter my views since that paper was completed, and no, I do not have any objection to it being published. Our experience since that time, has if anything reinforced the views expressed, and I am happy to report to you that whether entirely due to the adoption of the principles outlined in the Ascent Protocol you published earlier (SPUMS J 1982 Oct-Dec: 32-38), or to improved instruction, we have seen a drastic reduction in diving accidents and fatalities in our particular region over the past three years. We were reluctant at first to call this a definite trend, but it has been consistent enough that we are now quite certain it is. This has had the somewhat unfortunate effect of reducing our opportunities for expanding clinical experience, as the bulk of the difficulty now encountered centres around sinus and ear squeeze.

Yours sincerely

GD Harpur

We are sure that all our readers would like to be able to quote similar statistics for their region!

Dr Harpur recommended (SPUMS J 1982 Oct-Dec: 32-38) a continuous breathing cycle for out of air ascents. The points are

1. DO NOT remove the regulator from your mouth unless you have another to replace it with, or in cases of entanglement. *The regulator provides a safety valve and a possible source of air.*

2. Continue to attempt to breathe in and out at all times even if out of air or without your regulator. *This ensures an open glottis and larynx and minimises the chance of small airway closure.*

3. Make certain you are positively buoyant by inflating your buoyancy compensator or dropping the weight belt or both. *This guarantees that you will reach the surface despite hypoxia.*

*Dr Harpur also emphasised that* CPR training was the most critical factor, *in the accidents in the Tobermory region*, in determining the outcome if the diver surfaced. Good dive organisation ensured rapid response and prevented incidents from becoming complicated.

## DAN (DIVERS ALERT NETWORK) AUSTRALIA

Robert Sands

The DAN organisation provides a valuable service in the United States of America. It arranges transport for injured divers, coordinates evacuation procedures, and gives state of the art advice to Medical personnel when emergencies do occur.

As well, the service collects accident details and statistics and after considering the material makes observations and gives advice to relevant authorities in a non judgmental manner. It also works to keep the keen diver educated in diving safety and first aid techniques.

As this service consumes a large amount of money to operate it and is no longer funded by the Federal Government it looks to individuals, organisations and business corporations for the funds.

Because the makers of the Bendeez Adaptor are considering becoming a corporate sponsor in the United States and the Directors of Paracel Holdings Pty Limited (the makers of Bendeez) were impressed with the DAN organisation they offered to conduct a small survey to find whether a similar organisation was indeed possible in Australia. It was suggested that if so, it would have an association (non-profit) with the US DAN for mutual benefit (data exchange etc).

The survey conducted was at a number of levels. For example, Diving Medical Specialists with a high media profile were contacted and their views sought on DAN's viability and their own participation if DAN was set up in Australia.

As well, the Instructors from the major teaching groups were asked their opinion and their participation. So too were dive store owners and finally ordinary divers were asked whether they would subscribe to DAN in a similar fashion to their American 'cousins'

It is significant also that a number of very large Australian companies indicated that they would support an Australian DAN.

The findings of this small survey are presented here. The collator of this material, Robert Sands, has endeavoured to be objective in his presentation and does point out that there is no personal gain to be made from his assessments or observations.

DIVING MEDICAL SPECIALISTS

Five diving doctors were contacted. All appeared to agree that an Australian DAN could be of use to the diving community.

Dr Douglas Walker who has done all the hard slogging in Australia's "PROJECT STICKYBEAK" would be best suited to continue this work if DAN is set up in Australia. Dr Walker's findings are considered most useful in the diving community and are held in high regard by the three teaching groups. His statistics are often quoted. Paradoxically these same instructors are the ones who never bare their souls and provide the information needed to compile "Stickybeak". Unfortunately with State and Federal legislation looming the instructional bodies fear that these statistics will only add to the case for regulation. Dr Walker would continue with his work. He would urgently need funding assistance to put existing data into a computer system for easy retrieval. Interestingly, during the survey a large international company indicated that they would consider with providing a computer for DAN.

HYPERBARIC FACILITIES IN AUSTRALIA

Australian Institute of Marine Sciences (AIMS)

Located in Townsville this facility bears the brunt of casualties from the North Queensland area. It is expected that with the increase of tourists there will be an increase in patients recompressed at this chamber. A great deal of the work at this facility is done by volunteers. That is not to indicate that specialised attention is not available to the patient. It would appear that the personnel of this facility are devoted and have a high morale even though the facility is said to need more staff and funds.

HMAS PENGUIN School of Underwater Medicine

Located in Sydney, casualties are transported from all over Australia and the Pacific Basin for treatment at this facility. With the new multichamber facility nearing completion it is expected that this facility will become even more prominent as a research and treatment facility. This facility obviously has no manning problems and is available to civilian casualties around the clock.

Hyperbaric Unit, Royal Prince Henry Hospital

Located in Sydney this multi-chamber facility is often used when the Navy's present small chamber is in use. This facility appears to have been under-used over the years. Recent rumours reported in State Newspapers and on city televisions that the State Government intends to close this entire hospital complex, including the recompression chamber, has caused some comment amongst Instructors. It would be expected that when the new complex opens at HMAS Penguin the chamber at Prince Henry will be rarely used.

The National Safety Council of Australia (Victorian Division)

This organisation is slick, efficient and well funded with helicopters equipped with Forward Looking Infra-Red Radar (FLIRR) and a transportable two-man chamber with support facilities including a modified aircraft and truck to transport the Duocom chamber.

Other Chambers

A smaller recompression facility exists in Victoria at Mallacoota operated by the Fishermen's Cooperative. As well, recompression chambers are available to civilians in South Australia, Tasmania and Western Australia (HMAS STIRLING).

INSTRUCTORS AND INSTRUCTIONAL AGENCIES*

PADI is believed to have the largest number of instructors in Australia although the numerical advantage is probably only slight. The PADI Instructors spoken to by and large were indifferent to the idea of a DAN in Australia. However none expressed negative views on such an organisation. The majority taught their students to consult the Navy in a diving emergency.

FAUI runs a close second to PADI in the numbers of Instructors and Students certified each year. It claims to be superior in teaching diving first aid and the fact that all students must be taught CPR techniques as part of basic training does indicate their feelings towards the safety aspect of diving. A competitive situation exists between FAUI and PADI (FAUI is home-grown) and a deep distrust of anything imported from the USA seems inbuilt in many of the FAUI Instructors when an Australian DAN was discussed with them.

NAUI is represented by a small group of instructors in Australia. Those instructors who commented on DAN in Australia, like their PADI counterparts had no hang-ups about an organisation with origins overseas but were also indifferent feeling that over the years the Navy had provided and would continue to provide an adequate service.

BASIC AND ADVANCED DIVERS

It would appear that a similar situation exists with divers as with those who are conscious of safety procedures and would purchase safety equipment such as the Bendeez Adaptor.

When the student finishes his basic certification he is highly aware of the need of safety procedures and he has had his appetite wetted with lectures on physiology and diving first aid. This awareness drops away with the passage of time and the apparent uneventfulness of his diving life. For those that continue with their education into the advanced category, the awareness level and need for education rises. So it is the opinion of the writer that with proper support and encouragement from instructors and a good marketing approach, a fair percentage of

* The writer has teaching status with both PADI and FAUI.

Australian divers would pay their annual subscription to DAN. The support from the instructors would be vital and would only be forthcoming if it could be demonstrated that DAN was serving a useful role in the diving community.

Finally it appears that with the recent advent of the DES service in Australia a DAN would have to augment this service in other ways, perhaps the dissemination of medical knowledge to divers and/or the acquiring of data (upgrade "Stickybeak") and the making of this data available to divers and instructors.

## THE SPONGE DIVERS OF KALYMNOS

Bev Biggs and John Hayman

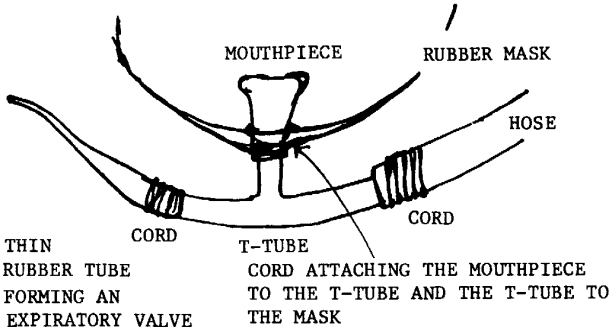
The Greek Island of Kalymnos is in the south east Aegean, 30 km from the Turkish coast. It is a precipitous and mostly barren island, with an area of only 11,000 sq km. Of the population of 14,000, 11,000 live in the port town of the same name. Since Phoenician times the Kalymnians have been seafarers, traders, fishermen and gatherers of sponges.

The history of sponge collection goes back thousands of years. Sponges have been used as padding for armour, contraceptive pessaries, and for more familiar purposes, such as domestic cleaning, since Roman times. Originally sponges could be hooked directly from a boat in the waters adjacent to the island, but they have become progressively more difficult to obtain. Today the sponge divers are at sea for months at a time, travelling to the coast of Libya where most of the sponges are gathered. The sponges are cleansed and processed in several small sponge factories on the island, and exported throughout the world. As well as sponges collected by the local fleet, considerable quantities of sponges are imported in a raw state from Cuba and the Caribbean, processed in the local factories, and exported with the local product.

It seems that sponge collection has always been a hazardous occupation. Diving outfits discarded by the French and British Navies have now been replaced by soft rubber masks and wet suits, but the diving facilities are still primitive. Divers use "hookah" type gear, with compressor and hose. The compressors are in the hold of the boat, driven by the boat's small diesel engine and mounted beside it, with no external air intake. The compression line leads to a reserve tank, which in turn has one or two diving hoses connected to it. These consist of 100 to 120 metres of what appears to be simply better quality garden hose. This hose connects to a mouth piece through a T tube, with a third arm of the T tube forming a primitive valve, sealed off with soft bicycle tubing (see Figure). No regulators are apparent and the apparatus functions with exhaled air and surplus air, if any, being blown off through the primitive valve closing the third limb of the T tube. The mouth-piece is fitted through the rubber of the face mask, with both this and the valve being tied in place with cord. Obvious hazards are carbon monoxide poisoning, if the air being compressed is contaminated by exhaust fumes, and carbon dioxide retention if the diver is forced to inhale previously expired air when insufficient compressed air reaches him.

Two divers working from one compressor, with only a small shared reserve supply, would mean that any "buddy" system would be of very limited value. Using this type of equipment, divers work in depths of 20 to 40 metres, 4 to 6 hours a day, diving every day. The better, more valuable sponges are found at greater depths, so there is a financial incentive for divers to dive deeper and stay down longer.

DIAGRAM OF SPONGE DIVERS' BREATHING APPARATUS




There are several diving fleets operating from the island, each boat carries 2 or 3 divers with up to 50 divers in a fleet. The boats generally leave in April or May each year and return in August or September, at the end of the season, although some boats may come back earlier to unload their collections and then return to the sponge beds. Each year there are one or two diving fatalities, and a much larger number of divers suffer neurological damage from decompression sickness.

There are some 16 doctors practicing on the island, which has a small hospital equipped with a recompression chamber. These facilities, however, are not of much value to divers working sponge beds off the Libyan coast. However, conditions are improving for divers and many divers are now given training in Marseilles. A team from the Massachusetts Institute of Technology visits the island annually and surveys the divers, but there is no record of post-mortem examination after any of these fatal accidents.

A large proportion of the island's residential adult male population suffers effects from "the bends" and has been forced to retire from diving. Most of the workers in the sponge factories are retired divers with varying degrees of disability. We stayed on the tiny adjoining island of Telentos, and here almost all the adult males seem to have neurological problems.

Kalymnos may be reached by twice weekly ferries from the neighbouring island of Kos, which has an international airport and a regular air service to Athens. There are frequent ferries to and from Rhodes, Leros, Samos, Patmos and Piraeus. Motor cycles are freely available on the island and a small boat runs continuously between the township of Massouri on the west coast and Telentos. Our host on Telentos has his taverna and serviced rooms on the waterfront, just north of this boat-landing. An "I love Australia" sticker should be on the wall behind the bar.