# SPUMS ANNUAL SCIENTIFIC MEETING

## APRIL 1985

### DIVING SAFETY

Peter McCartney

I would like to concentrate on the few specific aspects of diver safety that I feel are significant in Tasmania and suggest measures that I feel could be utilized to reduce diver morbidity and mortality.

The first point I want to make is that abalone divers, sport divers and high tech divers are distinct groups with different problems.

There are 125 registered diver fishermen (abalone divers) in Tasmania:

120 abalone divers
2 mussel divers
3 sea urchin and cockle divers

This is by far the biggest number registered in any Australian state.

On the commercial and industrial side comprehensive regulations obtain and are strictly and efficiently enforced. Poaching is monitored and dealt with efficiently.

A new diver wishing to enter the industry has to produce financial resources in the range of $250,000. The bulk of this is for the purchase of a licence and a quarter of it is for a boat and equipment.

There have been 4 fatalities in the last 11 years. Two were due to shark attack, the third involved a ruptured lung from a rapid ascent, in a fit, competent diver with a good record. The fourth occurred in fresh, cold water, at high altitude, with nil visibility, ie. the diver was diving in an unfamiliar environment.

There have been 16 cases of decompression sickness in abalone divers in the last 4 1/2 years. Of these, 3 have been spinal bends and 11 limb bends.

In Tasmania abalone divers have an annual medical examination and every third year a major, more comprehensive medical examination. All divers must and do comply with this. Long bone surveys and audiometry are included. The possibility of looking at psychological aspects of divers is being considered by three separate studies and this is certainly an area worth exploring. On two separate occasions the question of diver education has been raised at State and Federal levels, but so far has come to nothing.

People need training and proof of ability to fly a light aircraft or drive a taxi, but inspite of the costly controls and regulations, there is no such provision for the abalone diver.

It is possible for a new person in the industry to receive a brief 20 minute verbal instruction on the equipment he is about to purchase together with the licence. It is usually the case that licence and equipment come as a package deal. If the newcomer considers himself a ‘strong swimmer’ he may have no scuba training or experience. It is entirely his judgement and he is free to purchase the licence and equipment.

This situation is the exception and most abalone divers have had the practical skills taught by established divers and the majority adhere to safe diving procedures.

I suggest that if a newcomer to the industry is not familiar, comfortable and ‘competent’ at his job, he is at a disadvantage from the industrial standpoint. If he is subjected to financial pressure to service his loan on top of this, the scene is set for danger.

As indicated by our records, the incidence of decompression sickness is not decreasing in Tasmania. I feel that here is an area where education and legislation could provide for some basic improvements in safe diving practice. With the availability of a range of training programmes being devised by the National Safety Council of Australia (Victorian Division), I feel it is remiss not to go ahead and implement a course, which could be supervised by such a body.

I would make the point that the majority of Tasmanian abalone divers are responsible, competent people who have good safe diving practices. Indeed I feel that if more consultation could occur the benefit of the skills learned and passed on over the years, could be made available to a wider group of abalone divers, and the new divers coming into the industry could benefit by this information.

I would make the point that the medical profession is not in a position to lay down hard and fast safety limits in relation to the dive times and depths for abalone divers. However guidelines could be recommended. Abalone diving needs the advantages of the ‘art of safe diving’ as well as the ‘science of safe diving’.

On the sport diving scene I would like to mention three diver deaths. There have, incidentally, been no case of decompression sickness over the same period in sport divers. One death was a novice diver loaned hired gear by a diving buddy. This sad scenario shows up over the years in “Project Stickybeak” reports. In the other two cases there was a reported reluctance to dive by the diver who subsequently met his death on the dive. I feel instructors should be made aware of the need to tell their students not to dive if they have a “gut feeling” that conditions are not right for them on the occasion.

I think anyone interested in this field owes a debt of gratitude to Dr Douglas Walker and his excellent work on the “Project Stickybeak”.

# RED HERRINGS

Peter Chapman-Smith

Red Herrings do not actually occur in New Zealand's subtropical waters but the handsome red snapper is an attractive alternative. It is hardly surprising that New Zealand has a larger population of divers per capita than any other nation. This reflects a readily available underwater environment, lengthy coastlines, and a fascinating marine world. Most sports diving occurs on the East Cape and the Three Kings Islands in the far North, beckoned particularly by the off-shore island chain. Perhaps SPUMS may have an opportunity to explore this region in years to come.

Inevitably diving related incidents or accidents present to interested medical practitioners, and I would like to present two short cases for discussion. I have chosen my title because it could be that neither problem was related to diving.

## Case 1

An experienced New Zealand Underwater Association (NZUA) trained 27 year old male scuba diver presented twice in 6 months with recurrent facial swelling, apparent at shallow depths on ascent. He initially felt "numb" in his right cheek ("like going to the dentist"), the swelling spreading across his upper lip to the midline. This increased over 24 hours and subsided spontaneously over 2 to 4 days.

He dived on most days, predominantly for crayfish. They were frequently hard working dives with reputed non-decompression bottom times of between 5 and 20 minutes. This was to depths of between 100 and 140 feet. (Several other divers confided that he dived below 200 feet on occasions so there is doubt whether his histories are reliable). His ascent rate was allegedly normal, and he always had a snack of potato chips and coke just before diving. He was a non-smoker with no history of previous diving accidents. He was a mild asthmatic on no regular medications but with multiple allergies (to pollen, grass, dust, etc.), and occasional sinusitis, presumably on the basis of allergic rhinitis.

This swelling occurred on 4 occasions, but not on successive dives, and while using different regulators. On one of these occasions he noted reverse ear squeeze (barotrauma of ascent) on ascent, and on another, developed a post-dive bi-temporal headache for approximately 10 minutes.

He presented acutely, as invited, 6 months after his initial presentation. On examination several hours post-dive, he was neurologically normal with an oedematous right upper lip, which was 2 to 3 times its usual size. There were no other relevant signs or symptoms. (On his initial presentation 3 days post-dive he had a similar facial wheal appearance with several small red maculopapules in the same distribution).

X-rays were reported to demonstrate "moderate soft tissue swelling in the inferior aspect of the left antrum". There was apparent dental caries in the right posterior upper molar (which appeared to be non-vital) and also in a right upper premolar. No subcutaneous emphysema was noted.

The viability of a root pulp cannot be determined on radiological appearances alone, but the loss of bone density around the apices was indicative of non-vitality.

He was referred for a dental opinion, but was last seen bound for Hawaii on a yacht.

## The differential diagnoses

1. Lymphatic or capillary obstruction causing lymphoedema as in minor decompression sickness.

2. Dental caries with apical gas tracking, but against this is the fact that no subcutaneous emphysema was noted, either clinically or on X-ray.

3. Local allergy to the rubber or metal of the regulator, but against this is that he used a number of different regulators.

4. Any other suggestions.

## Case 2

This case is reported with the subject's blessing.

A trained and experienced 54 year old male scuba diver presented with a sudden visual deficit on a charter trip to the Three King Islands 50 miles West of North Cape right off the top of New Zealand. The vessel "Elingamite" attempted to bulldoze the West King Island in a storm during a night in 1902. The island is perhaps 100 yards wide! Some divers have made their fortune and some have since met their maker in subsequent salvage attempts on this moderately accessible wreck. The cold blue water and abundant fish life inevitably command attention, but strong, unpredictable currents and remoteness make it still a relatively untouched and potentially hostile area for divers. This diver had dived in the area previously.

After 5 days of regular diving, mostly in search of that elusive superb underwater photograph, this man had a leisurely first non-decompression dive at 100 feet. After approximately a three hour surface interval he was loading film in his camera aboard the charter boat when he stooped forward head down. He then coughed feeling as though he was perhaps developing a cold. On sitting upright he felt that maybe something was unusual in his vision. Coming out from the dark cabin to the daylight it was apparent that a red curtain was descending in his right superior visual field. This continued to descend equatorially over the next few hours. He was aware of some light above the redness peripherally from the onset of symptoms. After specialist consultation by radio, he aborted his trip. He had sustained an inferior pre-retinal haemorrhage in his right eye.