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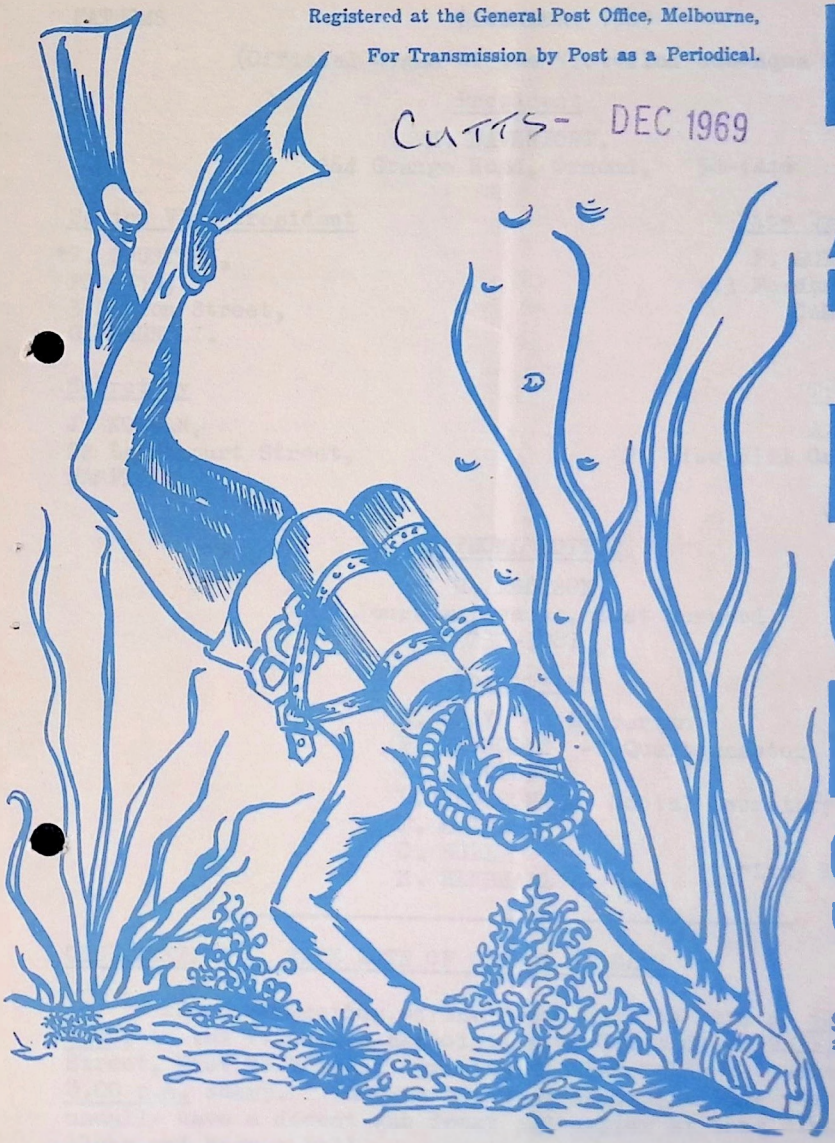

SAFETY IN DIVING

VICTORIAN SUB-AQUA GROUP

(Official Organ of the Victorian Sub-Aqua Group)

CLUB MEETING - TAKE NOTE OF CHANGE OF DATE

The next Meeting of the Group will be held on 12th DECEMBER, 1969, at the Victorian Association of Youth Clubs Hall, Gisborne Street, East Melbourne, opposite St. Patrick's Cathedral at 8.00 p.m. sharp. This is the last meeting of the year and we usually have a decent gab feast and supper at this ding, so come along and have a ball.

PRESIDENT'S MESSAGE

I am happy to have the opportunity of wishing all members of Victorian Sub-Squa Group and their wives and families a very Happy Christmas and a prosperous and successful New Year, together with an enjoyable and safe holiday season with plenty of diving in calm, clear waters under a clear sky.

M. DAVENPORT - President.

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EDITORIAL

I would like to endorse the President's remarks on my own behalf and hope the club leaps ahead in the coming year. I would also like to wish all clubs that receive "Fathoms", the best of the Season.

There will be no meeting in January and no issue of "Fathoms", as everyone will be on holidays.

R. ADDISON - Editor.

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DEEP DIVING

A month ago, we read a report in the local papers of a diver who was reported missing after a dive to 180'. Clearly, here is a case in which the safety precautions for deep dives were not followed. Every club has its own rules which govern its dives and these have been formulated by experienced divers for the betterment and safety of its members.

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An obvious starting point for any consideration of the practice of deep diving is some attempt to define exactly what we mean by a "deep dive". A short answer could well be that it is a dive to depths twice that of one's previous dives on average. Thus, to the diver who has been content with depths of 30 to 40 feet a drop to 60 or 80 feet should be considered a deep dive; to the club diver who has made a number of dives to 60 and 70 foot level a descent to 120 feet is a major step and not to be undertaken lightly. However, the "ton-up" diver who frequents the 15 fathom mark should think seriously when contemplating the "double ton".

In general then, depth is a matter of degree. But, for the purposes of sport diving, any dive in excess of 90 or 100 feet should be considered as a "deeper dive" and planned accordingly.

One further point: everything that followes is written on the assumption that the diver is physically fit, as in diving practice, without outside anxieties and not over-tired due to working strain or long distance driving. This man is in a position to plunge where he will - with due regard to all that is set out below - but the one who gives a doubtful "yes" to these requirements is well-advised to dive warily. Much enjoyment can be found at lesser depths, indeed some say the greatest enjoyment and interest, and here should stay the diver who is slightly over-weight, who has "not had a dip yet this season", who was late at the office yesterday, who found the traffic heavy or says that the "last ten miles nearly killed me". Let 50 to 60 feet be the limit for these people and they and their families and companions can enjoy their diving. A normal Club outing of members with varied experience, and probably even more varied equipment, would be well advised to limit themselves to 90 to 100 feet. If dives to greater depths are required then they should be meticulously planned and carefully manned. The double-ton and 30 fathom mark should be sufficient for the depth-hounds who must get it out of their systems. Deeper dives no doubt are possible, sometimes may be necessary, but are hardly ever desirable for the sporting diver to undertake. The working diver rarely exceeds 50 feet, the experimental diver may not start till 200 feet, only the exhibitionist diver will wish to meet him there.

In considering the problems proper to deep diving, it is necessary to dispel the idea that the difficulties arise merely because there is a greater body of water than normal above the diver like so many hurdles extra in a steeplechase. The problems increase in complexity and danger in greater proportion, in fact, than the mere accumulation of water, and for convenience we shall consider

them under three headings; first, those which affect the diver physically: second, those which have a physiological effect, finally, the psychological aspects of increasing depth.

Physical effects. The primary factor here is to realise that by venturing deeper the diver is placing himself further than normal from his natural environment, from his bodily requirements and "creature comforts". Exposure and exhaustion are always to be considered by the diver, and as depth increases, added precaution must be taken. A base of operations which might be adequate for a dive to 40 to 60 feet will certainly not be so at greater depths and, again, pre-dive planning becomes not just desirable, but essential.

The increasing pressures will affect the diver's buoyancy to a marked degree as he descends deeper. This is generally accepted but it is perhaps not appreciated that an average diver wearing a wet suit may well become negatively buoyant from 100 feet downwards and increasingly so as depth becomes greater. Further, the physical effort required increases just at the time buoyancy is lost and bodily reserves may be called upon in an emergency. The use of constant volume buoyancy aids may assist at these times, but it must not be forgotten that they are primarily intended as a safety measure, not as a means of extending limits of safety. Coupled with the loss of buoyancy will come some loss of heat insulation due to the compression of the material of the suit and the lower levels of water are those having the lower temperatures. This is most marked in freshwater diving where the greater depths may well maintain a steady 4°C. As buoyancy and temperature decrease so will visibility, the water itself may be clear but light will become scarcer as the diver descends.

Physiological effects. Movement under pressure calls for greater exertion of tissues which are already exerting themselves in their adaptation to the increased ambient pressure itself. Let the diver intending to go deep be very sure that his physical condition will match the burden he places on his frame. From 50 to 60 downwards, the diver becomes conscious of the "weight" of water around him and is beginning to call upon his reserves of strength.

The rate of absorption of nitrogen depends upon a combination of time and depth. If the diver intends to descend to depths greater than 70 or 80 feet, he does so at the expense of the time factor and must watch very carefully the length of time of his dive, and

before diving, should carefully consult his dive-planning tables. At depths in excess of 110 to 120 feet he is almost certainly close to normal limits of nitrogen absorption. It must be remembered here that "normality" applies to physically fit persons who are willing to accept some risk of decompression sickness only because there is the assured presence of full recompression facilities. "Normality" does not apply to the run of sporting divers.

The toxic effects of oxygen under pressure occur as the oxygen content approaches two atmospheres absolute pressure (33 feet); but this, again, is an average figure and the individual diver may look for symptons at lesser depths - from 21 feet onwards on occasion. Likewise a trace of carbon monoxide from a faulty compressor, barely discernible at the surface, may soon reach a partial pressure sufficient to affect the diver.

There may be academic argument that nitrogen under pressure is not narcotic, but there is no argument that depth has a narcotic effect and certain individuals may be affected from 60 to 70 feet onwards. Although these narcotic effects disappear on rising to lesser depths, this is a guarantee that the affected diver will be in a position to make the rise in time.

Psychological effects. These must vary with the individual and the practised diver may school himself to overcome many fears and inhibitions related to diving. Nevertheless it must be realised that any dive beyond normal limits will impose nervous strains not met before, whatever the mental capacity or endurance of the diver concerned. His own remoteness from base, low temperatures, low visibility, increased physical effort of movement and of breathing all all tend to impose nervous strain and bring nearer the onset of panic while making its control more difficult. Almost more to be feared is the frequent sense of well-being and supreme egotism which the more compenent and practised diver may have at depth, and which can lead him to false decisions where only the one course of action can keep him alive.

If, then, the newly confident diver is proposing a deeper dive, let him first consider all these facts and then question himself - can he truthfully satisfy himself that he still considers the dive worth making? Let him now find a more experienced diver to assist him in his project and make more certain the success of the venture. His chosen companion must be one who has been beyond the target depth on at least two or three occasions, thus

fully understanding what is involved. What preparations should then be made?

Personal equipment. This must be thoroughly checked. Demand valves which are satisfactory near the surface are not always so beyond 100 feet; harnesses must be well fitting; pressure gauges accurate and easily read, air should be of proven quality; weight belts must be faultless and adjusted for neutral buoyancy at the target depth; suits should be in good repair and well fitting with good overlaps at neck and ankles; ancillary equipment should be checked in good order and readily accessible - it should include knife, depth gauge torch, compass and watch. A lifejacket is essential, it will not necessarily raise the diver from depth, but if it does, it may well save his life should he surface unconscious or uncontrolled.

Support party. This must be increased not only in number but in vigilance and quality. Standby divers must be equipped (one at least with experience at target depth) and have sufficient air for a full dive with a reserve set to take with them in emergency. One member should hold names, addresses, telephone numbers of any emergency services likely to be required and be able to initiate such services.

Surface cover, buoyancy, and coats must be more than just adequate and must be completely reliable.

A shot rope should be used (the anchor chain is not satisfactory), and it needs to be firmly anchored and positively buoyed - remember that it may well have to support the weight of two negatively buoyant divers endeavouring to pull themselves to the surface. Provision for a decompression stop may have to be made by marking the depth required - if a set is to be left for this purpose, see that its buoyancy is adjusted to be at least neutral preferably slightly buoyant.

On making the descent. Make a thorough pre-dive check of your own and your companion's equipment - be thoroughly familiar with both. Is all equipment tightly secured - with compression of the body it will work loose and knife, watch, etc. may well slip round to an inaccessible position - and is it all there? As the descent is made, stop at your normal depth to check again that all is working correctly and equipment is to hand. Also check your buoyancy, you should still be positive. Check buoyancy again during the descent; it is better to drop and lose four or five pounds of lead than to be negatively buoyant at target depth. If

all reserve buoyancy is lost before the target depth is reached the descent should be halted and the dive re-planned. Once on the bottom check your depth, your air supply, your time, and that your companion is in sight and out of trouble. Now carry out your proposed task slowly and deliberately, not forgetting to check air and time for both divers. Make your ascent deliberate the controlled and make certain that you are in fact ascending. Do not relax your extra vigilance until safely out of the water.

Now check again that your true depth and time are within decompression limits before you leave the diving party; if you have gone over your limits you may later be without those very companions who can help most.

In fact the presumptive 'deeper diver', who may have thought himself to have outgrown the nursery precautions for trainee divers, will find that he is again ticking off a check list and doing so with a greater sense of urgency than before. No matter, he will be a better diver for so doing. If this is not so, then the presumptive deeper diver had better rejoin the nursery while still capable.

Much of all this could be dismissed as the obvious. But read again accident reports, or consider the last incident which you witnessed when diving. Was it not the obvious which had been disregarded or not even considered and led to the circumstances from which the incident derived? Family motorists do not drive racing cars; sporting divers should not emulate service deep diving units.

To finish, it is perhaps pertinent to question the reasons any diver may have for descending to depths greater than normal. There are the acceptable reasons for the purposes of scientific investigation, be it marine biology or antiquity; slightly less acceptable are salvage operations, properly outside the scope of sporting divers. Those whose interests take them to such depths would be expected to have assessed the problems involved, if only when considering the methods of recovering their finds. We must, unfortunately, also expect to meet divers who, considering that they have mastered their equipment, then set out deliberately to increase the difficulties of their activity and find that an increase in depth achieved is an easily quoted target for impressing the uninitiated, or those who must always go a foot deeper than before just to prove they can do it. These latter have very

often little appreciation of the difficulties before them or the dangers to which they commit themselves and others.

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PAST OUTINGS

ANGLESEA, 16th NOVEMBER, 1969

Seven divers turned up for this outing, and although the day was overcast, the weather was warm and the sea was relatively calm. We first entered the water at Point Roadknight at 11.30 a.m. on the sea-ward side of the point, whereupon the water started to get rough and visibility was cut down to about eight feet by suspended sand. After half an hour we got out, Paul finding an old weight belt with five very good weights on it, and we went in on the other side of the point.

It was much calmer in on this side and visibility was about 20'. A fair amount of fish like was seen, mainly sweep, leather-jackets (big), and a few other types I was not familiar with. We spent two hours looking in the various caves and holes in the rocks, played with some little crays and then gave it away for the day.

The big sand dune on the point was explored and a new method of descending was tried out. This involved two people, each one grabbing the others ankles and cartwheeling down the very steep slope. I can only say, as one who has tried it, that this is the most stomach-upsetting and balance destroying method of descent ever invented. Paul seemed to have derived some satisfaction out of it because he pestered everyone to have a go. His only taker was Peter who started to look a bit pale on it after the sixth go.

After a late lunch everyone reeled home.

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