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The recent 300 ft. dive by a Sydney teenager must cause some alarm among the thinking diving enthusiasts of the area. Already some sections of the diving community must surely reason along the lines of 'if she can do it, then so can I!' This type of reasoning following diving 'stunts' could lead to accidents-even fatalities. These 'deep' dives accomplish little apart from putting lots of water between the diver and the air which is 'so nice to come home to'.

At the other end of the scale members and visitors at the August meeting were treated to two superb films on the business of saving life. The two films on Mouth to Mouth Resusitation and Closed chest Heart Massage introduced a practical demonstration by Howard Couch after which members and visitors were invited to put into practice the theory they had absorbed.

The demonstration showed how easily a life can be saved provided the simple but dramatically effective procedure is undertaken promptly. The lessons learned at this demonstration were taken a step further when members of the Group attended a training dive at Clovelly Pool where the drill of recovery of an 'apparently' drowned diver on the bottom was practiced and then followed by oral resusitation.

diving spots visited by Group members during the past month include Oak Park and Boat Harbour, both locations usually afford better visibility than encountered around Bare Island. Boat Harbour suffers in comparison to Bare Island as regards varieties of plant and animal life but Oak Park has, if anything, a wider range of species.

five Group members assisted the C.S.I.R.O. Fisheries Dept., on an unsuccessful attempt to locate a lost dredge. The dredge was lost in the vicinity of Osborne Shoals and while the group were unfortunate in not finding the dredge they did, however pinpoint the shoals-a goal which has for some time eluded us.

Individual Oxygen Poisoning Suspectibility

The breathing of pure oxygen in excess of atmospheric pressure is poisonous.
The degree of poisoning varies with individual people and even the same person from day to day.
The accepted depth limit, when swimming or doing light work, is 33 ft. for 30 minutes, although this does not mean that oxygen poisoning symptoms are not to be expected or experienced in shallower depths and shorter time exposures.
Conversely some people are able to go much deeper and for longer periods before the onset of symptoms and therein lies one of the most dangerous aspects of 02 breathing. Bearing this in mind it is obviously important that your own suspectibility should be suitably and efficiently tested before venturing to the widely accepted depth and time limit of 33ft. for 30 minutes.

Up to date many experiments have been made and numerous theories put forward. A great deal of inaccurate information has been written and published on the subject, which unfortunately can lead to the dangerous confusion of the novice diver. However, the symptoms are effectively and firmly established and are in no doubt. I can assure you they are anything but pleasant.
Symptoms of oxygen poisoning at positive pressures are nausea, dizziness, twitching of muscles and often, though not certainly always, the muscles of the face stiffen and begin to twitch, this can lead to loss of control of the mouthpiece and flooding of the system.
Sosme people get uncontrollable hiccups, disturbance of vision, irritability and numbness with finally loss of consciousness and convulsions. These convulsions are like an ordinary epileptic fit, except that occasionally the muscular contractions are violent enough to break a bone and crush some vertebrae. Before the onset of convulsions there are almost always vague feelings of discomfort.
Unfortunately, certain people often get no warnings at all and the period of time from initial symptom to convulsion is quite short, possibly only a few seconds. Considerable knowledge, training and experience are required therefore in using oxygen rebreathing apparatus safely. They are not considered safe for the average sports diver.
As a point of interest, Dr. Hans Hass and his team have always favoured and extensively used rebreathing sets beyond these limits and much publicity has been given to this fact from time to time. However, let us all bear in mind that the late Lieutenant Commander J.H.Hodges (Royal Navy) lost his life in the Carribean with Hans Hass. At the post mortem the cause of his death was not established. One cannot out some unknown factor connected with the continuous use of oxygen breathing apparatus beyond the accepted limits.

SUMMARY

1. If you wish to dive beyond 33 ft depth, oxygen rebreathing is no way suitable and in fact must be ruled out.
2. do not be tempted to purchase or make up oxygen equipment until you are sure of your own reactions and tolerance to oxygen breathing.
3. Above all, do not take stupid risks. In view of the many hazards involved when breathing oxygen NEVER DIVE ALONE.
4. Never be tempted to dive, whatever the prize, beyond 33 ft. on oxygen.
5. This article is not intended to scare off divers from using oxygen, but only to make sure you appreciate and are able to instantly recognise all KNOWN risks and hazards involved.

Technifacts- from a Master Diver

The most important misconseption divers have of bends is its seriousness. This is particularly true in scuba divers. In 28 cases of bends studied, 18 were in helmet divers. Sixteen of these cases were successfully treated with no serious after effects. Two victims died. Of the ten cases in scuba divers, four died during or after treatment, two were permanently crippled, and only four were successfully treated.

It is common belief that bends is the result of excess nitrogen in solution being releasewd in the diver's tissues as a free gas following improper decompression.That this fails to explain many inconsistencies in the occurrence, severity, and symptoms of bends has been ignored. However, scattered through recent articles in the growing literature on diver's diseases are several theories and the results of tests that help explain many of those inconsistencies.

First of the older theories to be abandoned was that nitrogen alone was the cause of bends. It is now known that the gas bubbles causing bends symptoms in divers that have been breathing air will contain not only nitrogen but also oxygen, carbon di-oxide and water vapor.

A person at sea level is saturated with atmospheric gases at a pressure on one atmosphere or 14.7 pounds per square inch. At a depth of 33 feet twice as much gas can go into solution as at sea level pressure; at 66 feet, three times as much; at 99 feet, four times, etc. But it takes approximately 12 hours for a diver to become totally saturated for a changed pressure condition. A diver making a dive of one hour duration is far from totally saturated, at least not in all tissues because all tissues do not absorb gases at the same rate. Some are 'fast' tissues and take up large amounts of gas in a short time. Other tissues are 'slow' and absorb relatively little gas in an equal period of time. Tissues liberate excess gas at the same rate as they absorb gas, pressure changes being equal.

When a diver begins to ascent from a dive, tissues contain more dissolved gas than would normally be present under the new condition of reduced pressure. The tissues are supersaturated. If the ambient pressure is reduced enough, the threshold pressure is reached within the gases dissolved in the tissues and bubbles form. The deformation pressure of the bubbles tend to displace and deform adjacent tissues. If further reduction in ambient pressure occurs, the tiny, microscopic bubbles could expand and coalesce to form larger bubbles.

There are at present two theories regarding when the formation of gas bubbles take place. The oldest of these theories is that gas bubbles do not form until a certain state of supersaturation is reached-the old two-to-one rule that stated the absolute pressure surrounding the diver could be reduced by one half without danger of bubble formation. The second school of thought is that bubble formation takes place immediately when a state of supersaturation is reached but remains 'silent' until a reduction in pressure and consequent increase in bubble size and/or location of bubbles is reached that cause symptoms to be felt.

If the two-to-one rule was a hard and fast rule, prevention and treatment of bends would be simple. Unfortunately, many other factors enter into whether or not a diver will get 'bent' following a dive. In addition to depth and duration of the dive (the two most important factors influencing the possibility of a diver getting the bends) several other factors may contribute to (or help eliminate the probability of) the bends. They are: (a) circulatory efficience, which, through heart and lung condition and to a lesser extent diet, contribute to the rate of elimination of excess gases from tissues; (b) the physical condition of the diver with regard to overweight (and overweight person is far more likely to get the bends); and (c) a diver who is physically run down, nervous, or who has been indulging in alcoholic beverages is more likely to get bends. Also a tall person seems more susceptible than a short individual, and an older person more susceptible that a younger person. Excessive smoking, which affects both respiratory and circulatory efficiency, can also contribute to the possibility of bends.

One of two things apparently happen tp produce symptoms. Or perhaps both occur simultaneously. When deformation pressure exceeds threshold pressure nerve fibres or endings are stimulated by the mechanical effects of deformation of tissues. Coalescing or growing of bubbles could create sufficient pressure to block conduction in nerve fibres. If deformation pressure becomes too great, tissues give way and limiting membranes are torn. secondly, coalexcing of bubbles may block the blood supply with a resultant anoxic condition developing in the tissues.
Still another factor is that, apparently, tissues must contain permanent nuclei, or the tissues must be subjected to sufficient force to open up tiny cavities in the fluid spaces into which gases in solution may diffuse so that, when the strain is relieved, a small gas containing space remains. This theory of contribution to bubble formation pre-supposes that, in either case, continuing pressure waves from either muscular exertion or circulation of blood through arteries would, under certain favorable conditions, greatly contribute to the formation of bubble nucleus into a true bubble form. It is further supposed that forces are developed that can cause tiny cavities to appear in tissues that, once they are formed, would quickly fill with water vapro and carbon dioxide, both abundant in tissues. Damaged tissues, such as would result from a blow, could also result in cavitation with similar results.
These factors (presented above in oversimplified form) can account for many of the inconsistencies of bends in divers. In one recent incident a diver made two fifteen minutes dives to a depth of 150 feet within an hour. No decompression was taken and no symptoms of bends developed from this flagrant violation of decompression requirements. Two weeks later the same diver made two dives to a depth of 120 feet for fifteen minutes each, again within an hour and without decompression, since, as he said, 'I didn't get the bends from two dives to 150 feet.' Yet in the latter case the diver suffered a severe case of the bends. Another example. Three divers made two repetitive dives to a depth and for a period of time for which decompression should have been (but was not) taken. One diver was immediately stricken with bends. The other divers suffered no ill effects.
Basically inadequate decompression remains the cause of all bends cases, whether in helmet or scuba diving. It is important to note that inadequate decompression does not necessarily mean improper decompression. Contributing factors may be present that make even proper decompression, as set forth in the U.S. Navy's latest repetitive dive decompression tables, inadequate. However, this is highly unlikely if the tables and rate of ascent are followed carefully. During the past three years a series of commercial diving jobs in Hawaii utilized nearly 10,000 man hours of diver time in depths of 60 to 120 feet. Scuba divers worked underwater from one to three hours per day. Decompression schedules for all dives were according to Navy repetitive dive and exceptional exposure decompression tables. There were no cases of bends and only two diving accidents, neither related to decompression problems (one scuba diver lapsed into unconsciousness from carbon dioxide buildup and one helmet diver cemented his air hose to the ocean bottom.)
Most divers fail to realise that proper use of modern, repetitive dive, multi-depth decompression tables will permit more safe diving in a day than divers are now getting with improper and often inadequate decompression procedures that result in a high incidence of bends. Pre-dive planning of decompression schedules takes onle a minute and is better than trying to use tables underwater. By using an underwated watch and depth gauge the diver will be able to follow the decompression schedule to prevent bends.

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