

# undercurrent®

THE PRIVATE, EXCLUSIVE GUIDE FOR SERIOUS DIVERS

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## Fantasea, Red Sea

### -- And Fantasy It Is

I sit at the prow of the boat, the sunset casting an amber glow on an ancient coral cliff, broken by a desolate wadi streaming from the tan desert beyond. Below, the just-visible coral reef at 60 feet settles into a twilight gloom. Images of the day pass by: a school of batfish so thick they blot out the sun, a shark lazily moving into the distance, a brilliant blue fish toying with my fin, white octocorals pulsing with the current. Will the night sea hold further wonders—perhaps a Spanish Dancer? In the Red Sea, all things are possible.

I cut my baby teeth diving the Red Sea on Sun Boat trips. Alas, that fine dive boat no longer sails, save for some day trips from Eilat. And since Israel returned the Sinai to Egypt several years back, that international divers' mecca, Na'ama Bay, has fallen into decline. While the Sharm Marina Hotel is still open, and skeleton dive operations still exist, it's no longer the same. So I chose to sign on for ten days aboard the Fantasea, operated by Howard Rosenstein, who had headed up Red Sea Divers in the glory days of the '70's, when the waters at the tip of the Sinai first became known to flocks of American divers.

American-born Rosenstein chose well when the pullout from Sharm el-Sheikh became a political necessity. And Amos Nachoum, an Israeli now long a resident of New York, obviously chose the best option to bring his La Mer Diving SeaFari bookings there, when economic realities took the old Sun Boat out of the picture. The Fantasea, built in 1957 in Scotland as a pleasure yacht, may not be the most elegant, most spacious or best fitted live-aboard, but it is very definitely up to its task. The Fantasea, 85 feet in length and 19 feet of beam, carries a crew of 5, and accommodations for 8 or 9 divers (comfortably) or 10 to 12 (in a pinch).

My trip was one of those offered occasionally by La Mer featuring a "celebrity," in this case Dr. Eugenie Clark, renowned marine scientist from the Uni-

### INSIDE UNDERCURRENT

More On Breathing .....	p.3
Will Treasure Hunter Rewrite History? .....	p.5
Emergency Underwater Recompression -- <i>A Technique To Challenge Conventional Wisdom</i> .....	p.7
A Fisherman's Tall Tale .....	p.8
The Underwater Power Struggle -- <i>Hidden Risks In Buddy Diving</i> .....	p.10
Another Training Death: \$1.8 Million Awarded ..	p.12



versity of Maryland. It had been fully booked with 10 signees, which strained the boat capacity slightly. Not only was the crew relegated to on-deck sleeping, but the water supply was constrained and dining space a bit too cozy. But no matter--the sea would offer space and wonders enough.

I spent the first day recovering from jet lag in Jerusalem, touring that historic city. In the afternoon of the next day, our little band boarded an Arkia flight for the quick jump to Eilat. There a van shuttled us quickly to the marina and the gleaming white Fantasea.

Before setting sail that evening, Captain Yehuda Reich, who had been with the Sun Boat, explained that a few old favorite sites in the Gulf of Aqaba--Coral Island, Nuweiba, Big Ruta, Dahab--could no longer be dived now that the Gulf has become an Arab sea. Nonetheless, plenty of excellent sites were available further south off the Sinai. We would sail overnight the 90 miles to Sharm, where we would officially enter Egyptian territory and undergo the immigration formalities. "It sometimes takes a while," he cautioned. And so it did. I never saw anyone quite so ponderous as the Egyptian bureaucrat who pored over our passports.

But we endured, and within two hours were off to Temple, an easy but interesting site for a checkout dive, which offered several huge coral heads, rising from a sandy bottom of 70 feet to within a few feet of the surface. The place teemed with fish life, darting in and out of picturesque little grottoes and caverns, all fringed with soft corals in hues of scarlet, orange, pink and lavender that are among the chief joys of Red Sea diving. I was delighted to greet groups of lionfish, and to give my wide-angle lens a workout in framing divers gliding within the craggy divisions of the awesome coral mountains. Several times during our sojourn Temple was our protected night anchorage, where we could observe crinoids, basket stars, huge sleeping parrots, and the curious photoblepheron, whose luminescent lower eye pouches gives them the nickname "flashlight" fish.

The next day we were off to the Straits of Tiran. Near the bleak island of Tiran itself lie four reefs which break the surface at the lowest tides. It is here that the rich waters of the Gulf meet the body of the Red Sea, supporting a variety and abundance of sealife that make the Caribbean (and even some Indo-Pacific sites) pale by comparison. All four reefs feature spectacular walls with visibility of 100 feet or more and sparkling shallows with continual surprises. We made several day and night dives at these superb sites, giving us plenty of time to swim among little Picasso fish, with their delicate blue stripes of vertical eyebrows, blue triggers, the glorious Emperor angels, and as-yet unmolested deep black coral. One site, an old wreck, was located by only a couple of our divers; the rest of us had to content ourselves with happening upon two eight-foot black-tipped reef sharks, just rousing from afternoon naps, and a large sea turtle. I felt not the least deprived.

We could barely drag ourselves away from Tiran, and only Captain Yehuda's promises of even better sites prevented a mutiny. The next day would hold the

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spectacles of Ras Muhammed. On the way we made a brief stop at Ras Nasrani, a pretty site north of Na'ama Bay, where I was greeted by a fleeting manta ray before I went on to marvel at a field of tridacna clams, wearing multiple hues of grey, green and blue mantles bordering their scalloped edges. A great clan of peacock angels seemed also to call that home.

Just as I sensed I could spend a whole vacation in the Straits of Tiran, so could I spend a couple of weeks at Ras Muhammed and still feel I hadn't explored it fully. Like Tiran, Ras Muhammed marks a major deep water juncture (between the Gulfs of Aqaba and Suez) and supports an unparalleled concentration of marine life. The mixture blends the small and exquisite tropicals of the shallow reefs

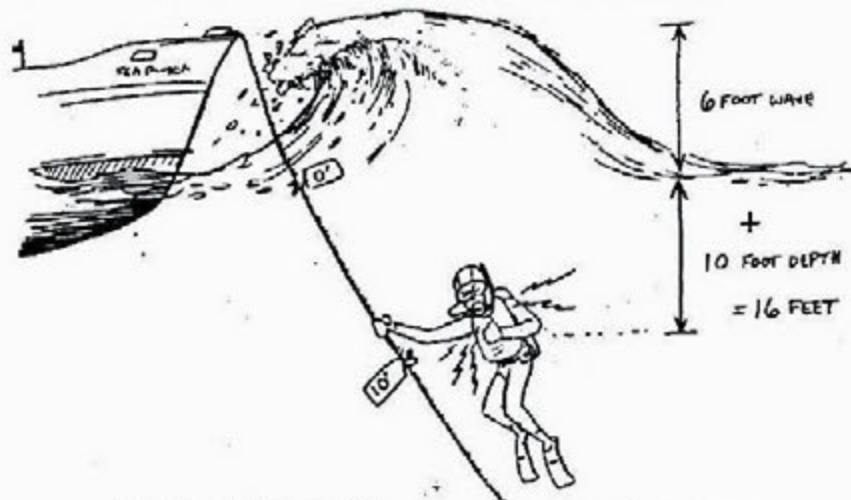
## More On Breathing

In response to the March/April articles on *The Art of Breathing*, by Albert Pierce, reader David Leary of Palo Alto, CA writes:

"I had a near accident in a situation very similar to that which you depicted when a high wave passes overhead. The danger is compounded considerably when the wave reaches the boat, particularly if the boat is small. The bow of the boat will rise with the wave and jerk the anchor rope abruptly. If the diver is holding onto the rope tightly, he will be pulled rapidly toward the surface. This may occur at the same

"David Leary's comments are well made. Divers have been pulled out of the water by hanging tightly to the anchor line in rough seas. It puts quite a strain on your arm, hanging from it while your weights, plus the additional weight of your tank and your body, are trying to pull your arm out of its socket. More important, the quick rise through shallow water could kill.

"Although Leary's near accident happened as a result of an unexpected ground swell, the wave trough passing overhead, or the anchor



*Simply swallowing as a high wave passes may cause a lung rupture.*

time the trough of the wave is passing over the diver as described in your article.

"This happened to me in relatively calm seas. As I pulled myself up toward the ten foot level, an unexpected ground swell lifted the bow of the boat and almost pulled me out of the water. Fortunately I was exhaling or I would now be a statistic.

"The obvious solution is to hold the anchor rope loosely and let it slide through your hand as it rides up and down or else do not use the anchor line at all as you near the surface."

Al Pierce responds:

line pulling you swiftly up through the shallow water, are additional reasons for not diving when the waves are high."

And *Undercurrent* adds:

The problem can be mitigated but not solved by using a decompression bar that is suspended from the side of the boat, permitting divers to hang directly *under* the boat. If the boat is pulled upward on the crest of a wave the diver will be as well. But the bar is not foolproof and Pierce is right. When the waves are high, stay out of the water.



with the breathtaking schools of large pelagics moving in from the deeper waters beyond.

Ras Muhammed is a huge cliff of fossil coral dubbed by the Romans as "Poseidon." Closest of the reefs is Shark Reef, an imposing mountain with sheer and dramatic deep dropoffs. Here is the place to find sharks. I slipped quietly into the sea early in the morning and found at 120 feet a convenient ledge on which to perch to observe a parade of sharks--along with the progression of awesome schools of snapper, jacks and batfish above. The circumference of Shark Reef is manageable for a single dive, so diving again and again at different depths provides different experiences. The reef features nice shallows for decompressing, where trigger mating season was about to begin and the females were readying nesting sites.

Near Shark Reef lies Anemone City. Close by is a fine wreck dive, the Jolanda, which met ill fate only six years ago. When I first visited her in 1981 the wreck was intact and little sea life had settled. Now the ship is broken open, spilling out containers of bath room furnishings. Fish abound, from huge groupers and snappers, to glassy sweepers, lazy crocodile fish, and blue boxfish, which love to disappear into tumbled heaps of bidets and toilets.

An hour's sail west brought us to another spectacular wreck, the Dunraven, which got off course to or from the Suez a century ago, and is intact save for a midsection rift which makes it easy and safe to penetrate. Great fields of soft coral cover the length of this 260-foot beauty.

Genie Clark took us to Eel Garden and to a sandy site with a concentration of razor fish, some tame enough to eat from her hand. On another day we hit Ras Umsid, where we found a grand wall with enormous sea fans--and--unfortunately, a taste of the tricky currents which can unpredictably be present at almost any Red sea site. The next day there was lovely, but on that first occasion, it was a pull-yourself-hand-over-hand dive. Each site had a slightly different mix of the 1,000 or so species to be found in the Red Sea--some had more, some had less--of violet Fridmani fish, antenna angels, surgeons, butterflies, rabbit fish, zebra-fish, stonefish, unicorn fish, gobies.

Yet we should pause for a prayer to Allah that it remains so. Egypt didn't pick up where Israel left off in planning for the sea's preservation. While the need for protection was accepted in principle (thanks to the efforts of Clark and some Egyptians like Anwar Sadat's widow, Jihan) and some funding earmarked, there is no effective force of overseers. Several reefs show damage from dynamite, blamed on Bedouin fishermen. The worst news may be yet to come: it's now reported that Egypt has been conducting drilling explorations in many areas on the coast of the Sinai.

Meanwhile, back aboard the Fantasea . . . it's a darn good liveaboard. As past Undercurrent stories have pointed out, liveaboards are not for those who are claustrophobic, those who tend at all to seasickness, those who enjoy a resort area's entertainment come sundown. To me the advantages--more diving, no schlepping of gear, greater variety of sites--outweigh the problems.

### Fantasea, Red Sea

Diving for Experienced	★ ★ ★ ★ ★
Diving for Beginners	not for beginners
Boat Accommodations	★ ★ ★ ★
Boat Food	★ ★ ★ ★
Moneysworth	★ ★ ★ ★ ½

★ poor, ★★ fair, ★★★ average, ★★★★ good, ★★★★★ excellent



## Will Treasure Hunter Rewrite History

A dispute between the Brazilian Navy and an American marine archeologist has led Brazil to bar Robert Marx from entering the country and to place a ban on all underwater exploration.

Marx, a Florida author and treasure hunter, asserts that the Brazilian Navy dumped a thick layer of silt on the remains of a Roman vessel that he discovered inside Rio de Janeiro's bay.

The reason he gave for the Navy's action was that proof of a Roman presence would require Brazil to rewrite its recorded history, which has the Portuguese navigator Pedro Alvares Cabral discovering the country in 1500.

The Brazilian Navy has denied that it covered up the site and has in turn charged Mr. Marx with "contraband" of objects recovered from other wrecks in this country. Because of this, Navy officials said, the Government had issued an order "to prohibit him from entering Brazil."

To substantiate these charges, the Brazilian officials showed a catalogue of an auction held in Amsterdam in 1983 in which, they said, gold coins, instruments and artifacts removed from shipwrecks in Brazil were offered for sale on behalf of Mr. Marx and his associates. The officials said many of these objects had not been reported on the divers' inventory, contrary to an agreement with Mr. Marx.

Several attempts to give Mr. Marx the opportunity to respond to these charges were unsuccessful. One phone call ended abruptly when Mr. Marx said, "Don't bother me," and then hung up.

Mr. Marx, who has long sought to prove that other sailors reached the Americas well before Columbus, obtained permission to explore the site in late 1982. Diving at a depth of about 90

feet, he found the parts of perhaps 200 broken amphoras and several complete ones, he said in an earlier telephone interview.

According to Elizabeth Will, a professor of classics and specialist in ancient Roman amphoras at the University of Massachusetts at Amherst, the jars are very similar to the ones produced at Kouass, a Roman Empire colony that was a center for amphora-making on the Atlantic coast of Morocco.

Reached by telephone, Professor Will said of the fragments she had studied: "They look to be ancient and because of the profile, the thin-walled fabric and the shape of the rims I suggested they belong to the third century A.D."

After Mr. Marx and Dr. Harold Edgerton of the Massachusetts Institute of Technology had explored the site with acoustical echoes and long metal rods, Mr. Marx said he became convinced that, below the potsherds, they had found the remains of a wooden wreck. A Roman vessel, he argued, had been blown off its course and reached Brazil.

Mr. Marx's expeditions received wide press coverage in Brazil, with some reports asserting that he has perpetrated a hoax and was defaming the name of the Portuguese discoverers of Brazil. Adding to the stir, a wealthy businessman, Americo Santarelli, claimed the amphoras as his property. He said he once had taken such a liking to some ancient Sicilian amphoras that he ordered a potter in Portugal to make exact replicas. To "age" the jars, he said, he dropped 16 of them in Guanabara Bay in 1961, but collected only four.

Marlise Simons  
*New York Times*

Cabins on the Fantasea vary in size and layout; a couple have double bunks, a couple have double-bed fashion sleeping; there is a single or two. Each has a petite closet. The cabins have portholes, thankfully, since there is no air conditioning save in the main salon. In the aft are two heads, including hot water showers, which were kept tidy (in fact, the Fantasea was amazingly ship-shape for a craft in an obscure corner of the world). Much of the credit goes to the hostess, Barbie Key, a gregarious Australian who was always smiling, always ready to do a special favor in between her myriad duties.

A shy, pretty and energetic young English lady, Yvonne Brower, handled the small galley. Before our pre-breakfast dives, Yvonne set out coffee. When we returned there would be juicy Jaffa grapefruit, Israeli yogurts, cheese, hard-boiled eggs, breads, sometimes French toast. After every dive Yvonne and Barbie would have a snack waiting--fruity drinks, cookies or pound cakes--and once,



brownies warm from the oven. Lunches always featured a hot dish plus plenty of salads, cheese and other grazing food. For dinner it was generally chicken or beef, once a splendid fish--and again, a copious array of salads and vegetable dishes and rich desserts. Two divers even complained of being overfed. Still, for anyone not enamored of a generous use of onions, garlic and spices, the food might prove troublesome. I had no complaints.

Lunches and dinners were usually served on the shaded foredeck. Once in a while we ate in the main salon, nicely decorated with beige carpeting, cushy couches, lamps, bookshelves, underwater photos. The salon also has stereo equipment and a VCR, which went on the fritz. And the slide projector failed in the midst of a Genie Clark presentation on marine life. Because of the Red Sea's salinity, it is reputed to eat cameras for breakfast; audio video equipment is also under seige, perhaps due to the hot dry air.

The Fantasea's aft deck was just barely large enough to accommodate our dozen divers; it would be better for eight, or even ten. One could still locate a corner to stash one's milk crate of gadgets and find a few feet of standing space to gear up. The gridlock came at the ladder, especially when we were all diving as a group off the rubber boat, which was about half the time. Yet, for all the slightly disorganized feeling about the diving, and the fact that divemaster John Magor seemed to spend an inordinate amount of time just standing around looking handsome, we got into the water reasonably on schedule.

Somehow the tanks got filled without a lot of fuss and commotion, and there was always someone at the ladder or on the rubber boat to assist with cameras, weight belts and tanks. Not quite "personal dive valet" service, found on some luxury boats. Once the dive begins divers are totally on their own. We were asked to log in depths and repetitive groups, but that was a pro forma exercise. Pre-dive briefings were barest information only, and didn't convey much excitement about the sites below. I missed the infectious energy of Amos Nachoum, who had turned every dive into a big adventure on my prior voyages. But now that La Mer has expanded, Nachoum doesn't accompany as many dive trips, staying behind to mind the store and leaving the tasks of group shepherding to tour experts who are competent divers and experienced travelers.

I logged 27 dives--would have been a few more had I not had a brief bout with a bad stomach, a malady which strikes quite a few mid-East tourists. And though I didn't discover a single Spanish Dancer, that was my only disappointment.

The addictive lure of the Red Sea will strike me again. I hope the Fantasea will still be there, and that there'll be better press on Egypt's conservation efforts. So I'm saving my sheckels (oops, make that piastres now). A Fantasea trip is pricey, but superb.

Diver's Compass: Basic two-week trip cost is about \$2500, plus air from U.S. (more when "stars" aboard); included 10 days on the boat with all meals and wine, domestic transfers and overnights in Jerusalem and Cairo with 1/2 day tours and dinners in each city; book through La Mer Diving Seafari, Inc., 823 U.N. Plaza (Suite 810), New York, NY 10017 (800/348-3669) . . . Tip to boat crew (the norm is about \$100 p.p.) . . . Many folk opt for extensions to Greece, Israel or Egypt . . . travel light but bring spares of critical stuff like strobe charges. Best season: March through November . . . Water is cooler than the Caribbean, so a tropical weight--perhaps even 1/4"--wetsuit is essential . . . Other (smaller) boats currently running Red Sea charters include the Colonna II and Colonna III; book through See & Sea.



# Emergency Underwater Recompression

## -- A Technique To Challenge Conventional Wisdom

A diver comes to the surface, climbs aboard the dive boat, and within a minute or two his arms begin to tingle. The tingle turns to pain. He has difficulty breathing. The pain increases. He is bent.

The preferred treatment is to get him to a recompression chamber. But what happens if he is diving at Glover's Reef in the far corners of Belize? Or in a dive boat fifteen hours from an airport in the South Pacific? According to most dive manuals, the only course of action is to get a diver to a chamber.

But two prominent Australian physicians challenge that idea. Dr. Carl Edmonds, who for eight years was the officer in charge of the Royal Australian Navy School of Underwater Medicine, has developed procedures for treating bends victims underwater, when the circumstances so demand. That's radical thinking. But, as a review of his work will show, it is indeed practical. The following article, which recently appeared in the *Journal of the South Pacific Underwater Medical Society (SPUMS)*, was written by Dr. John Knight, M.D., the co-editor of the SPUMS Journal and past president of that organization.

★ ★ ★ ★ ★ ★ ★

The correct treatment for decompression sickness is recompression in a multi-man chamber. This chamber should have at least two compartments. A multi-man chamber is necessary so that an attendant may be in with the sufferer, and the two compartment chamber is necessary so that the doctor may come into the chamber, examine the patient, and exit.

Unfortunately, chambers like this are not always available.

Experience has shown that the success rate for the treatment of decompression sickness is much better if less than six hours has elapsed since the onset of symptoms. This is partly due to the blood-bubble interactions that occur and result in the bubbles in the blood acquiring a coating of protein material which converts them from being effectively "easily squashed ping pong balls" into "difficult to squash tennis balls." The ideal is to treat the diver as soon as possible after he develops symptoms.

If there is no chamber handy, one has to arrange transport to a chamber. As reduction in pressure will allow the bubbles in the patient's body to increase in size and make him worse, the patient should be transported as close to sea level as possible, preferably in an aircraft pressurized to ground level. That will take a while unless you are lucky and find such an aircraft in the airport nearest you. It usually

means the aircraft has to be flown from a major airport to wherever the diver is and back again.

There are many places where people go diving which are more than six hours door-to-door to one of these chambers.

Some years ago, Dr. Carl Edmonds was worried about the number of people who were coming to HMAS PENGUIN having developed decompression sickness on a Pacific Island and taking days to reach HMAS PENGUIN for treatment. He sat down and compared what was available to him and what was available on the island.

He decided that the divers who took days to reach his chamber would be better served if they were recompressed in the water while breathing oxygen soon after the onset of symptoms. He chose a depth of 9m (30 feet) because oxygen convulsions are unknown at this depth in people at rest. There have been convulsions in divers working hard in oxygen rebreathing sets at this depth, but investigations have always shown a raised PCO<sub>2</sub> in the set. The convulsion threshold of oxygen is lowered by a raised PCO<sub>2</sub>. The diver having in-water oxygen recompression is still and has a normal PCO<sub>2</sub>.

The advantage of in-water oxygen recompression at 9m can be summarized:

- ★ No nitrogen is added to the tissues during treatment.
- ★ There is a large gradient for nitrogen excretion.
- ★ The bubble volume is almost halved.
- ★ The diameter of circular bubbles is reduced by about 20%.
- ★ There is increased tissue oxygenation.
- ★ There is no risk of oxygen toxicity.
- ★ There is no risk of decompression sickness for the attendant.
- ★ The wetsuit is still effective insulation.
- ★ It can be instituted relatively quickly anywhere there is 9m of water.

There are disadvantages. I must emphasize that it is *not* ideal treatment. It is a treatment that is better than waiting around for six hours for an aircraft to fly you to a treatment center that is properly equipped.

The water must be warm. It is not a treatment to be undertaken in cold water. Some three to four years ago this treatment was tried at Australia's Heron Island. After half an hour the patient complained bitterly of the cold, and insisted on terminating his exposure to pressure. By then he was improved but had not completed the treatment. It is not a good idea to



add hypothermia to the problems of decompression sickness.

There are problems of breathing high partial pressures of oxygen. Vasoconstriction is induced. The immersion of a human in thermoneutral water increases his peripheral circulation, but thermoneutral water is not all that common in the ocean. It is more likely that the vasoconstriction induced by cold from the first dive, and the heat loss from the treatment in water will induce vasoconstriction, slowing the elimination of nitrogen from the tissues.

However, when compared with the problems of late treatment, in-water oxygen recompression has its place where the water is warm and when transport to the nearest recompression center will take more than six hours.

In-water oxygen recompression has been used on quite a number of occasions, with success, including at least one person who was unconscious when lowered into the water with his buddy alongside. He woke up under pressure and made a complete recovery from his central nervous system decompression sickness. So far I have not heard of any failures, and that news should go round the diving medical world very fast indeed, as many people consider that in-water oxygen recompression therapy is misguided, to put it mildly.

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*"If I were to develop decompression sickness and it would take more than six hours to get me to a recompression chamber, I would opt, if I were in the tropics, for the in-water recompression therapy immediately."*

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Certainly, if I were to develop decompression sickness and it would take more than six hours to get me to a recompression chamber, I would opt, if I were in the tropics, for the in-water recompression therapy immediately, on the basis that rapid treatment is much more effective than delayed treatment.

The requirements for in-water oxygen recompression are simple:

- ★ A large oxygen cylinder.
- ★ An oxygen reducing valve (regulator) set to deliver at least 80 psi. The regulator from an oxy-acetylene outfit will do very well as it delivers a higher pressure than the usual medical oxygen regulator, which is set to 60 psi.
- ★ 12m of high pressure hose to connect the regulator to.
- ★ A full face mask.
- ★ The patient wears a full wet suit, including a hood.
- ★ A rope marked to meters or feet so that the patient's depth is known.

- ★ An attendant in the water with the patient.
- ★ A support for the patient.
- ★ A communication system both between the patient and his attendant, and between the attendant and the surface. The patient can speak quite comfortably if he is wearing a full face mask because there is an airspace for him to speak into and it is possible, if the buddy holds his breath for a moment, to hear quite clearly what the diver is saying. The other way around is more difficult, and an underwater slate is a good idea. The simplest method of communications between the attendant and the surface is to have another standby attendant who can go down when signalled for and relieve the existing buddy so that he can go up and give a verbal report.

### A Fisherman's Tall Tale

Has there been a stranger cause of the bends than that which occurred in a Montana Lake in early September?

Rodney Johnson, 55, was tooling around in at 55 feet in nearly pitch black deep water when he felt "a bite" on his right ankle, then another further up his leg. As he reached down to investigate, his left hand was then hooked and his masked was yanked off by a fisherman's line.

On the surface, the fisherman, who had been trolling, thought he had a whopper and began reeling as fast as he could. The 195 pound Johnson, who was neutrally buoyant at depth, got pulled quickly to the surface, unable to break the strong nylon line which had hooked him in three places.

Johnson was hooked at 2 pm on Sunday, September 1, and by 6 pm began feeling intense pain in his left arm, shoulder and neck. Local hospital officials arranged for an emergency flight to the recompression chamber, 600 miles away at Seattle's Virginia Mason hospital. After a five hour treatment he seemed fully recovered and on Tuesday flew home to Great Falls. But the change of air pressure in the aircraft brought back the bends and he had to fly back to Seattle once again for treatment. A few days later he went home, this time by train.

The fisherman may be without a 195 pound trophy for his den, but he indeed was a tall tale to tell.

A full face mask, in my opinion, is essential, although I know this treatment has been carried out without such things, because the full face mask allows the person to speak. It is also less tiring than holding a regulator in the mouth for three hours, and



should the patient go unconscious and go on breathing, he will not drown. When using a normal face mask and a separate regulator, if somebody goes unconscious, their jaw muscles slacken and the regulator falls out of their mouth. They may or may not go on breathing. If they go on breathing, they are likely to drown.

### Practice

The procedure is to ready a seat for the diver to sit on. This is more comfortable than sitting in the bight of a rope.

The diver must wear a wetsuit, including hood, because he is probably already cold from his dive, and is certainly going to get cold sitting still even in tropical water, because he will not be generating any noticeable amount of heat. Shivering is undesirable as it increases his oxygen usage, makes his muscles move and will precipitate the formation of extra bubbles in his body. The diver has to be overweighted so that he will stay at the depth chosen. If he is sitting it is a good idea to have weights on his ankles so that they do not tend to float up. This means that the diver must be attached to a safety line which is attached to the boat or jetty so that he cannot sink further than the length of the line.

There has to be a team to carry out the procedure. At least one person to watch the time, the depth and the oxygen supply. Two attendants for the patient. More people are an asset.

The patient is lowered to a depth of 9m. He then stays there for 30 minutes, regardless of how soon his symptoms are cured. In most cases these symptoms have been cured within the first 30 minutes. If the symptoms are not completely cured after 30 minutes the patients spends another 30 minutes at 9m. If he had a neurological bend he spends at least 60 minutes before the ascent is commenced. If there are still symptoms remaining at the end of the hour, the time is extended by another 30 minutes.

So after 30, 60 or 90 minutes the return to the surface starts. Ascent is at the rate of 1m every 12 minutes, or alternatively, for those who date from the pre-metric days, one foot every four minutes. You will have noticed that one foot every four minutes is slightly slower than 1m every 12 minutes, and I think that the slower rate of ascent is to be recommended. Also the ascent of a foot at a time is nearer a lineal decompression than an ascent of a meter. For a given time span lineal decompression is a better method than a staircase decompression. At this rate the ascent takes about two hours.

If symptoms recur during ascent, the ascent is halted for 30 minutes. I have never heard of this being necessary.

If the oxygen runs out the patient is brought

straight to the surface. NEVER give the patient compressed air.

When the diver is out of the water, he is then given oxygen to breathe. Alternate oxygen-on for an hour, oxygen-off for an hour, for twelve hours.

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*"Travelling for 15 minutes over a very pot-holed road converted him from a mild case to a very severe case of decompression sickness."*

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I have used the Edmonds table in a single man chamber. It seemed better at the time to compress the patient on oxygen in a small single man chamber than to lower him into the sea as dusk approached; we would have had to go some way out from the island of Moen to get the 9m of water we needed. It was a wrong decision for the bus ride over a very pot-holed road converted him from being a person with mild neurological decompression sickness, stocking anaesthesia of both feet, into a paraplegic with the left arm also paralysed, who was having difficulty with his breathing. However, within half an hour at thirty feet with oxygen, he was able to move all three paralysed limbs. He was then taken to 60 feet but had little further improvement. Nitrogen loads in the body take a long time to decay. This man had last dived more than 48 hours before he appeared, mildly drunk, at the hotel that we were staying in. Travelling for 15 minutes over a very pot-holed road converted him from a mild case to a very severe case of decompression sickness so that there must have been a lot of gas available to form enlarged bubbles, even forty eight hours after diving.

Any procedure that gets this extra gas out of the body is to be recommended, and if somebody develops decompression sickness they should be given first aid consisting of oxygen to breathe and fluid to drink, because all divers are slightly dehydrated by the end of a dive, and two aspirin to inhibit platelet aggregation. As soon as this has been done, the buddy races to the telephone and gets advice as to what should be done next -- which in most cases on the Australian mainland, is to transport them immediately, at low level, to the nearest chamber.

However, if you are on the island of Truk in the middle of Micronesia, there is no quick arrival at the nearest chamber in Guam. It would be a very expensive trip indeed to charter a Lear jet, if there is one at Guam, to fly over to Truk and pick up the patient and then fly him back to the U.S. Navy Hospital in Guam.

Far better to arrange for an in-water recompression, in warm water with good visibility and watch the symptoms disappear.



# The Underwater Power Struggle

## -- Hidden Risks In Buddy Diving

It was one of those nights: warm, clear, moonlit. Romantic. It would have been a perfect dive with a buddy who was more than a friend -- with the exception of a few minor details.

At the end of my dive the lights on the 40-foot dive boat were so far away they didn't look much bigger than the stars in the sky. Worse yet, we were fighting a current that threatened to carry us to Portugal.

The swim back to the boat seemed endless. The mate and a fellow diver pulled me back up the ladder and stripped me of my gear. I didn't even have the strength to take off my wetsuit. I barely had the energy to tell myself, "I know better than this."

And I did know better. Although it was my first night dive, I had been diving long enough to know that it's much easier to come back to the anchor line at the end of a dive than to fight the kind of current we had just plowed through. And if I hadn't known better, there was an instructor on board who suggested that, considering the conditions, I stick close to the anchor line.

Then there was my buddy . . .

He wasn't going to stick near any anchor line, and he let me know pretty clearly that if I planned to do so, I'd find myself down there in the dark by myself. So instead, I was lying in the cabin below, nauseous from overexertion.

At least I wasn't -- or I'm not -- alone. Very often one member of a buddy team will wind up in some dubious situation under the leadership of the more aggressive buddy. It doesn't just happen to women, and it doesn't just happen among buddies who are romantically involved. Human nature being what it is, it probably happens fairly frequently. For the most part the outcome is no worse than a longer-than-planned surface swim or a similar inconvenience. But at least one member of the buddy team may feel uncomfortable about the dive.

Observes Beverly, Massachusetts-based psychologist Dr. Samuel Midgole, himself a diver, "If you go along and all of a sudden you find yourself at a depth or in a cave where you don't want to be, you're a good candidate for panic." This makes the situation worth an examination.

Not surprisingly, an individual's behavior as a diver will generally be consistent with his or her behavior in other areas of life, notes Dr. Michael H. Smith, a diver and an organizational psychologist at California State University's Hayward campus. A leader in "real life" will most likely take the lead underwater, while a follower will probably go along for the ride -- above or below water. "They're both legitimate forms of behaving in the world. You need

both," he is quick to remind. Most people, he adds, are not entirely passive or aggressive, but instead fall into "gray areas."

Smith believes that buddy teams get together unconsciously, like their topside counterparts, because "opposites do attract." Generally, this is for the good of both. "Two passive people will have a hard time making decisions," Smith observes, "while two aggressive people will be fighting over turf. So pairs tend to be complementary."

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*"The leader of the buddy team may not necessarily be the more skilled diver. Or he or she might be more of a daredevil."*

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Diving complicates the issue a little. The leader of the buddy team may not necessarily be the more skilled diver. Or he or she might be more of a daredevil. And sometimes that diver will propose a dive, or make a decision while underwater, that the other buddy feels may be beyond his limits or knows is unsafe. In that case, a lot of divers will speak up and correct the situation. But a lot of divers won't. They'll just go along with the dive, albeit uncomfortably.

When a primarily passive person follows another into a potentially dangerous situation, a number of factors may be at play.

"To some degree," says Smith, "it is a denial of death. It's a way of saying: 'This is not going to happen.'"

Philadelphia psychiatrist Dr. John Worthington offers another possible interpretation of this type of behavior. "It's almost like gambling. They need the thrill." Or, he says, it may be a type of self-punishment or extreme fear of confrontation. "It's damn near masochistic -- being afraid to challenge someone because if they correct you, they'll crush you." Another possibility is "a death wish people might have."

Most cases just aren't that extreme. Oftentimes, says Worthington, the more passive partner will go along just to save face -- especially if the more aggressive partner happens to be female. According to Smith, "what is more operative is the social interaction."

Walt Hendrick, NAUI's national training director, believes group dynamics play a major role. "Look at what happens with automobiles. Why do people push [the limits]? Why do they drink and drive? They



know better. You're right with them and you're having a good time."

For some people, Smith notes, it is easier to deal with a potentially risky situation than it is to deal with the certainty of a confrontation with the other diver.

Migdole agrees. "People tend not to say the way they feel. They get into a situation they don't like and they just go along with it. Most people don't make waves -- for the same reason they won't send food back in a restaurant." They want other people to like them. But, Migdole concedes, there is a difference between settling for an overdone steak and drifting off to Portugal in a killer current. Maybe if divers start thinking about it, he adds, we'll see some changes in behavior.

There is also a difference between dealing with a waiter whom one is not likely to see again, and confronting a dive buddy who might be a good friend, a spouse, lover -- or total stranger.

Buddy teams who have an intimate relationship have the most potential for complications. Regarding husband-wife buddy teams Smith says, "In my opi-

nion, there's a latent power struggle there that's never really resolved." Says Migdole, "If they can't be honest about their diving fears, that will be indicative of their general relationship." The healthier the relationship between the two, the better their ability to deal with each other in problem solving, the less likely they will be to find themselves in the sort of scenario described at the outset of this article.

When friends dive together, Smith observes, "these issues will have been worked out, the repercussions will be less." But even friendships aren't without their "extra baggage," psychiatrist Worthington points out. "There are all sorts of possibilities that come into a buddy system if there are other relationships involved. If you dove together for a while, you would complement each other, but it would also bring up human deficits like dependency," he notes.

What about strangers buddying up at the dive site? On the one hand, they bring no preconceived notions of their relationship, no power struggle to the buddy team. On the other, they have no knowledge of each other's abilities, limits, fears. Smith is currently

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developing a questionnaire that will let divers analyze their own personality traits and help them choose buddies based on compatibility.

Surprisingly, the answer to dealing with a first-time buddy is the same the experts offer in relation to a closer companion: Communicate.

"Most of the time people who are diving together don't talk enough," says Dennis Graver, NAUI's director of special projects. "You have to coordinate and feel comfortable going with each other into the circumstances you're going into." What is needed, he says, is "a little bit of assertiveness and a whole lot of communication."

The worst situation, according to Graver, is when both divers are about to do something neither feels comfortable about, but both feel an obligation to the other diver. "Because neither of you said anything, you both did it. Later you find out neither of you wanted to."

Talking and asking questions, Graver believes, will go a long way toward allaying unnecessary fears when the dive is not as difficult as the diver perceives it to be. An undecided diver can't make a good decision without information. But if the dive does go beyond the diver's limits, "It has to be OK to say 'no.' I think we have to encourage that."

Saying "no" isn't easy. Hendrick observes that, "It goes right back to that human trait. It takes a lot of guts to say 'no,' when you're on a boat and about to make a dive that absolutely goes beyond the limits of safe sport diving," Migdole adds, "If you've got

issues like identity and self-esteem wrapped up in it, it's going to be very difficult for a less assertive person to say 'no,' and harder for a more assertive person to take 'no.'"

A few things make it easier to decline a dive. One is to plan the dive in advance. "It's much easier before you go to a dive site," notes Migdole, "to say, 'Gee, I don't really feel comfortable with that.'"

Building self-confidence is another key, according to Migdole. "If you feel comfortable, you're much more likely to put a limit on what you'll do. It's harder to be pushed when you're sure of yourself." He recommends taking stock in one's capabilities and weaknesses, and trying to work on the latter.

Still, it's tough to change human nature, especially when the behavior represents a lifetime of reacting to situations in a certain way. And most of the time, it's probably not necessary, as long as the diver is aware of his or her behavior, and stays within limits of comfort and capability. If extreme passivity becomes a problem in diving, if a diver consistently finds himself led into situations that are truly beyond his or her limits, then the same is probably true in other walks of life. If such diving behavior leads to a close call, some form of professional therapy or assertiveness training may be in order.

★ ★ ★

*The author of this article, Cathie Cush, has learned to choose her buddies more carefully...*

## Another Training Death: \$1.8 Million Awarded

Two Florida instructors lost their teaching certificates and the husband of their deceased pupil was awarded \$1.8 million in an out of court settlement in August. The instructors, Charles Brenneka, 50, and Dennis Wells, 37, had taken seven students to the heavily vegetated North Broward lake on a training dive. According to the *Miami Herald*, trainee Anna McGary somehow slipped away from the group. Her body was found two days later when a member of a search team noticed a fin poking up from a thick bed of weeds about 100 feet from the shoreline.

The out-of court settlement meant that Brenneka and Wells would not have to face a grand jury, which could result in criminal indictment and prosecution for criminal negligence/ manslaughter. Brenneka a dive instructor since 1974, is owner of Scuba Divers, Inc. of Margate, Florida. PADI, the Professional Association of Diving Instructors, was also named in the suit.

In a pre-trial statement, homicide detective

Robert Ziegler said that authorities have tried for more than a decade to keep people from swimming in Crystal Lake, a dredged rock pit which was the site of the death. According to court records in the case:

- ★ McGary flunked several written tests as part of her class before the open water test.
- ★ Hydrilla weeds grow as high as 15 feet from the bottom of the lake. A sheriff's deputy testified he had to use a knife several times to free himself from the weeds during the search for McGary's body.

Brenneka maintained in pre-trial testimony that the weeds presented no danger, reported the *Herald*. He said he had no explanation for McGary's drowning. Asked to speculate he said, "She would probably have to blank out, but it's very rare." Brenneka said McGary showed no signs of fear or uncertainty before the accident. "As far as the water, she was not nervous at all. She was always looking forward to it," Brenneka said.