

Maui, Hawaii

-- How Not To Relax When Diving

When is it that a human realizes that he is not immortal, that he will not be around for the next ice age? I can only speak for myself. I remember, at the age of 32, diving to 200 feet off the coast of Maui, outside the crater of Molokini. I was with my favorite charter operation, Central Pacific Divers. In those days ("those days" in the Maui diving community were only ten years ago) the whole idea was to "go for it." I did.

At 150 feet a loud bang set my head spinning. I knew my tank had exploded. If I were at 50 feet I would have shot to the surface, surely to embolize. But at this depth, I was half-stoned. I reacted with the speed of a Cheech or a Chong. "Hey man, what's going on?" I felt pain in my hand. Black fluid flowed from my finger, spinning psychedelic patterns in the deep blue water. "Oh, wow!" My finger was cut. The bang had been the plastic case on the rented camera, imploding from the pressure. "Far out, man." I moved fifty feet deeper.

Sometime between then and now I realized that in this body I am not immortal. Whether my next body will be suited to diving is yet to be determined. My realization of mortality did not occur in a single moment of critical insight. It slipped in, bit by bit, until the evidence was too impressive to ignore any longer. Today, I'm a bit more cautious. I cut my dives short by a couple of minutes, stay away from 200 feet, and even have my regulator serviced on schedule. But looking at life in the single dimension of length ignores another dimension of depth. Now and then I must still "go for it." After all, the Schlitz people claim we only go around once (which is probably the case for the indiscriminate who drink their product.)

Mortality sunk in deeper a month ago. I was tested for cholesterol four years ago and my level was quite ordinary. This time it jumped 40%. To me, any such change is a lifestyle indicator, a symptom of something deeper. So, what's going on? I don't smoke. I have cleaned up my diet remarkably and except for an

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occasional foray into the depths of a peanut butter jar, overall fat intake has declined markedly. I run two to three miles four times a week. No doubt I could remove all animal and saturated fats from my diet and increase my exercise, but the fatty finger pointed more directly at stress.

There's plenty of evidence that stress can make cholesterol rise. But in me? A laid back California guy? When I finally stopped denying that I could be stressed, I studied up on Type A and Type B behavior, and thought about the way that I am constantly jumping on airplanes for business purposes (business other than and including Undercurrent) or how I can seldom sit in a chair long enough to see Dan Rather to his conclusion or to finish the editorial page. Then I knew that I was not stopping to smell the sea breeze. I would change that, I swore to myself -- just as soon as I got through the onrushing deadline for the next issue (deadlines which I never make anyhow and now you know why your issue arrives late -- sorry about that).

I'd begin reducing stress with several days of diving. A while back a friend was considering setting up a psychotherapy practice in Maui. He was surprised to discover that only one or two others were practicing on the entire island. "With all the craziness over there," he said, "it ought to be a lucrative practice." "Forget it brudda," a local told him. "When anyone here feel strung out, he just go divin'. Dat's Maui therapy."

Years ago, when I first flew to Maui from the coast, one had to change planes in Honolulu. Now, jets arrive daily from the mainland. My plane was crammed full of tourists, decked out in Hawaiian shirts made in Taiwan that they had purchased back home at the K-Mart to get them in the spirit early on. They could have waited to buy identical shirts in Maui, where the boutiques sell K-Mart shirts for half again as much.

The airport was filled with people. This was not tourist season. This was not a weekend. It was Thursday, May 31. It was 1984. No more obscure car rental companies at the airport where you could shop for bargain rates. Hertz advertises \$99 the week, but if you take insurance add \$42 more (otherwise you're faced with a \$1500 deductible). They get you one way or the other. The highway to Lahaina in midafternoon was packed. Downtown Lahaina was more of the same.

Once a whaling town, Lahaina is now one big frock shop, with a few phony scrimshaw stores, chi-chi restaurants, and beachboy drinking bars like Moose McGillicuddys, a name less suited to Maui than to Minnesota. But that's where all the people came from to fill the unending rows of condos being built along the once-pristine beaches. A once-wonderful town, which but ten years ago still had a truly Polynesian flavor, has now degenerated into one more tourist mall.

I stayed at the Kaanapali Beach Hotel, the only place I could find lodging. My first day I watched bikinis. And I watched the two dive instructors from the beach shack give pool instruction -- 10 minutes for an introduction, 15 minutes for a restaurant and bar review and 15 minutes on the techniques of diving. Then, into the pool, where the students cleared their masks and crawled around the bottom of the pool for ten minutes. All eight were proclaimed ready for the ocean. Four accepted the proclamation and took an afternoon beach dive. All four returned. My cholesterol count was on the rise.

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Though I did nothing else, the day was fraught with stress. I tied myself in knots. When I see a swaying palm tree, hear the hiss of a tank or whiff the aroma of new neoprene, I become an observer, a critic, a writer. In the nine years of Undercurrent, I have never taken a tropical trip without writing about it. In that time, I've not had a vacation free of responsibility or obligation. I work fifty hours a week, most weeks, as a management consultant; on top of this I add my responsibilities as travel editor of Undercurrent. No wonder the cholesterol is on the rise. How could I come to Maui and "just dive." I needed to relax. I would relax. But I'd better get a story.

My first call the next day was to Central Pacific Divers, for years my favorite operation. Earlier in the day, I had wandered in the shop to ensure that I knew no one, since in the days before we launched Undercurrent I had had a couple of conversations with the owners to get their ideas. They had later remembered me, but they were not in the shop now. Once back at the hotel, I called to make a reservation for a dive the next morning. You certified? I was asked. "Yep..." "Ever dive with us before?" I hesitated. "Oh, a few years ago." The voice was cheery. "Good, then you know how we operate. What's your name please?" Since I use my real name when I travel (because of passports and credit cards and certification cards) I told him. "Oh, are you the guy who writes Undercurrent?"

MAUI HAWAII				
Diving for Beginners	★	★	★	★
Diving for Advanced	★	★	★	★
Beach Snorkeling	★	★	★	★
Moneysworth	★	★	★	
★ poor, ★★ fair, ★★★ average, ★★★★ good, ★★★★★ excellent				

There's a longer story here, but I won't tell it. I walked into another shop and ran into a fellow behind the counter who knew my gig. A friend at a hotel, who didn't understand the anonymity I must use, told an instructor at one of the shops what I did. I got an invitation for all the diving I wanted, gratis. I made reservations with another operation whose main man had once worked with Central Pacific. I later cancelled. He sounded so disappointed that either he knew my purpose or needed the cash desperately. He's not a poor man.

I had no choice but to scrub the review. After all, since my cover was blown, how could I review the services? So, I went out a few times with people who didn't have a notion about what I was up to. When I realized I wasn't going to write about my diving, I relaxed like crazy.

Dive boats operate out of Lahaina and Kihei, roughly 45 minutes apart by car. Boats from both ports travel to Molokini, once a volcano which blew its top off, leaving part of the crater visible above the surface. Kihei boats may go to Kahoolawe on the other side of Molokini, or down the south coast of Maui where there are a few lava tubes and some decent reefs off shore. There's little in the way of good boat diving along the shore near Lahaina, so the boats from there usually head across the way to Lanai or, on rare occasions, to Molokai. One way trips are an hour or more.

Most of the shops repeat at a few basic sites, making diving here repetitive for more than a week unless one tries to do a lot of phone work to nail down shops going to new sites. That's not always productive. I called around to find out where people would be diving "tomorrow" and the answer would invariably be that "the captain will determine that in the morning when he hears the weather." Those captains would invariably congregate at the Cathedrals or Molokini.

To a person with Caribbean experience, Hawaii's coral reefs will seem almost dead. The lack of soft corals and prominent sponges are the most obvious deficiencies

and the pastel hard corals are not anywhere as brilliant as in the Caribbean. But then again, it is the schools of hundreds of varied butterflies, the groups of brilliant surgeons surging with the surf, the bright yellow tangs skittering about, the multi-colored triggers hiding in holes, and the trios of graceful moorish idols which bring life to these waters. And there's something a bit more primitive, a bit more treacherous diving here. Perhaps it is the surge of the coast of Lanai -- I got thrown back and forth on my dive near the Cathedrals like a baby being rocked in a 12 foot cradle. Perhaps it's the opportunity to dive with whales in the winter time (which I've never been so lucky to do, but I've sure heard plenty of reports) or to be dropped in a school of porpoises (again, never my pleasure but the pleasure of buddies). Perhaps it's the feeling that the underwater terrain seems much less soft-- and in ways more threatening--than the Caribbean. Or perhaps it's the undeveloped coast of Lanai and Molokai, which provides a sense of traveling to a far-away, primitive island.

Molokini was once a far-away, primitive island. Even as late as 1978, when I made my last trip here, I dived it twice and only once did another boat appear. This time when we arrived, there were already half-a-dozen boats. When I surfaced, there were more than a dozen, including one whopper with more than 50 snorkelers all decked out in orange vests, as if they were on vacation from Rajneeshpuram. I suppose there is plenty of room for everyone at Molokini -- underwater I saw only a couple of other divers below who weren't with our boat -- but does that mean that everyone must come? Molokini is a preserve, filled with plenty of colorful tropicals who have grown accustomed to junk food. And there is a shark family whose generations have lived here as long as anyone can remember. Even with all of the people, this deep dish aquarium seems not to have suffered -- even though I suffered when I compared the surface serenity of years ago to today's parking lot.

I'm not sure what the hordes have meant to other spots. Off Lanai, where I could nearly always find a lionfish or two hanging from the ceiling of a cave, I saw none this time, which was either a testimony to my guide's skill and my failing eyes, or to their demise. Where I would occasionally spot cowries in crevices, I saw none. They are no doubt on book shelves in Minnesota. Nonetheless, everything else seemed the same -- the dramatic features, arches, the caves, and plentiful fish. I like this diving. Always have, always will.

But, I wish my affection for Maui remained. I got a chance to think about what I would like to do on vacation, if I were to have one; I'd reduce stress, I'd slow down. I'd like the diving at my doorstep, the boat down the walkway. Plenty of time to read, walk the beach, do nothing. I don't need night life, restaurant tours, hustle and bustle. That goes on every night in San Francisco. And it goes on now every night in Maui. But if you're a diver, it's tough to revel here because the boats depart at 7 or 7:30 a.m., pronto, and the shops insist that you arrive at their doors at least a half hour before departure (because they must truck you to the boat). What is more stressful than getting up at 5:30 or 6:00, commuting to the dive shop, stopping at McDonald's, about the only place open this time of morning, to wolf down an egg McMuffin or a Danish concocted from sugary library paste? "What's the rush?" The winds come up about noon, so return trips can get a little rough. But in "the olden days," Central Pacific would depart at eight, leaving enough time for divers and the crew to sit on the porch of the Pioneer Inn, near the mooring, and stock up on pancakes with coconut syrup and Portuguese sausage. That's such a traditional way to begin the day in Lahaina, I'd rather pass on the diving. After all, getting up at 5:30 a.m. is not my idea of a vacation.

Though I bad rap Maui these days, a friend who recently went there loved it. She thought it so quiet, so quaint, so unlike Miami or the Clubs Med. And she's right. Kihei is just getting its first stoplight. That was front page news in a local paper. Some people think it puts Kihei on the map, but I think the hundreds of condos there have already done that. And the monstrous new development headed for

MAUI TOUR OPERATORS

American Dive Maui Inc.	628 Front	661-4885	Lahaina Divers Inc.	710 Front	661-4505
Beach Activities of Maui	Sheraton Maui Hotel	661-5500	Maui Adventures	Lahaina	661-3400
Blue Chip Charters		661-3226	Maui Dive Shop	Azeka Place Shopping Center	879-3388
Capt. Nemo's Ocean Emporium	700 Front	661-0429	Me A'u Snorkel Scuba Sail	700 Front	661-0429
Central Pacific Divers	780 Front	661-8718	Sail Hawaii	PO Box 573, Kihei	879-2201
Dive Maui	Lahainaluna Road	667-2080	Scuba Schools of Maui	1000 Limahana Pl. Ste. A	661-8036
Executive Charters Ltd.	840 Wainee Kahana	667-2581 669-0211	Skin Diving Maui	2411 S Kihci Rd.	879-1502
Hawaiian Clearwater Charters	PO Box 627, Kihei Maui	879-6596	Triology Excursions	51 Kauaula	661-4743
Hawaiian Reef Divers	129 Lahainaluna Rd.	667-7647	Wailea Water Sports	Maui Intercontinental-Wailea or Alii Sports	879-8022/ 879-1558/ 667-1963
Hawaiian Watercolors	50 Koki	879-3584			
Kihei Sea Sports	Kihei Town Center	879-1919			

The 661 prefix is a Lahaina number; 879 is Kihei.

McNairs beach, one of the most beautiful stretches anywhere in the world, will put that little piece of privacy on the maps as well. Those are maps I won't be using any more.

You know, I can feel those globs of fat form in my arteries as I write this. I am saying goodbye to a friend because she's jilted me and I'm mad. I've realized that I'm not immortal. Why not allow Maui to age as well. I was lucky to see her in her adolescence, her late teens. She's growing old fast. She's lost the sweetness, the naivete. She's been deflowered. And now she's scarred with highrises, hotels, and shirts from Taiwan. And there's nothing I can do about it. Even by writing about her nine years ago, telling readers of my diving pleasures, I probably contributed to the demise. And when I discover the next undiscovered place, I'll probably contribute to its demise. No doubt Little Cayman will have its high rises before the end of the century, and I can then lament its passing as well.

For the time being, I'm going to lay back, not work so hard, not take things so seriously. I'm going to find an outpost where nobody goes, but where the diving is dynamite. And I'm not going to write about it. I'll let that cholesterol level fall back below 200 where it's supposed to be. And I'll dive till my heart's content. After all, I was able to go to Maui and not write about it. And I'll do the same at the next stop.

C.C., Travel Editor

Divers Compass: There's plenty of good beach diving off Maui and one can rent tanks and explore scores of sites; look for The Diver's Guide to Maui by Chuck Thorne for descriptions and maps of 50 dives. . . .Two tank trips on Maui run a pricey \$50 or more; Central Pacific Divers offers a three tank trip on their large, comfortable craft. . . .Maui is a good place to get certified; many shops offer 4-5 days courses; have your friends work out a deal with a local shop to take the classes at home and get the water work in here. . . .

Storing Your Partially Filled Tank

-- The Unexpected Threat From Fire

If you own a tank and pay attention to what the pros tell you, you store that tank with a little bit of air in it, probably between 100-120 psi.

We are told not to store tanks at zero psi, because moisture may conceivably enter an empty tank. If a tank is emptied too quickly, moisture can be created in the rapid drop of pressure.

Storing a tank full is not recommended because if corrosion is present, then it will reduce the oxygen content of the air. A few years ago the University of Rhode Island reported an unusual death of a diver in 12 feet of water. He had stored his full steel tank for some time, then used it on a dive in shallow water. The internal corrosion had depleted much of the ox-

xygen leading to death from asphyxiation.

The rules of tank storage are applied equally to steel and aluminum tanks. Although aluminum is much more resistant to corrosion, it can oxidize, so precautions must be taken -- and regular inspections should be conducted.

Turning On The Air

What happens if you do not turn the air valve on your tank to its fullest extent?

Consider the case of Noel Roydhouse, an Australian diver, whose near miss was reported by the South Pacific Underwater Medical Society.

"About to dive to 80 feet in search of scallops, I tested the flow of air and found it to be adequate. I left the surface with my gauge indicating 3300 psi. A fairly rapid descent brought me down to 80 feet, where my buddy looked around, saw me six feet away, and started his collecting.

"At this stage I suddenly had great difficulty breathing, as though my air supply had run out. One look at the pressure gauge, which now showed 500 psi, and I decided that up was a good place to go.

"I placed myself in the upright position but I did not move upwards so I inflated my BC half full. I did not rise at the rate which I needed, so I dropped a two pound weight from my pocket weight belt. My rate of ascent increased and I began an emergency ascent, which was equal to my bubbles for the first half and faster than my bubbles for the second. I reached the surface, held up my right hand to indicate my need for help, and the boatman flew into action. Once aboard, I was ok.

"I learned later that I had turned the valve only 2 1/4 times instead of six. This gave me enough air on the surface, but not enough was supplied at 80 feet.

"The tank was due for a check in three months. Corrosion at the stem of the valve tap had me further corrosion in the seating of the valve tap after it had been turned 2 1/4 times. With manipulation and pressure it could be turned fully, but I had only used a light touch and therefore it had been only partially opened."

We have recently learned of another hazard in the storage of aluminum tanks that was discovered nearly 10 years ago but never made public. The Linde Company, a manufacturer of commercial gases, subjected many tanks to temperatures which might occur in building fires. They discovered that a full 3000 psi tank would blow the pressure safety disc in the valve when the internal pressure increased due to the heat of the fire.

But, in a fire, tanks stored with 800 psi *exploded* before the safety disc ruptured. Anyone in a building in a fire -- a resident or a fireman, for example -- could be injured or killed if in the range of the explosion.

Aluminum tends to lose its "temper" when subjected to heat above 350°F for any length of time. In a full tank, the internal pressure increased rapidly and blew out the safety disc before the integrity of the tank was affected. The tanks with 800 psi took longer to build up the internal pressure to the point where the disc would be blown out to release the air. Instead, the aluminum weakened to the point where the tanks exploded.

The results apparently have not reached the scuba industry. Linde was considering tanks used in transporting commercial gases and their frame of reference was warehouse, railroad and truck fires. No one considered applying the results to scuba tanks and household fires. Had they, then they might have realized that even as little as 100 psi in a tank in a household fire might turn it into a serious threat.

The temperature of a "typical" housefire is 1000°F (or 539°C). As a rule of thumb, the pressure of a confined gas increases 5 psi with each one degree increase in temperature. Therefore, with 100 psi stored in a tank, the heat generated by a house fire could build the internal pressure of a tank to nearly 2600 psi, enough to cause an explosion if the heat has damaged the integrity of the tank.

Although the studies were conducted on aluminum tanks, steel tanks should not be considered safe from fires. A representative of the U.S. Department of Transportation, Materials Transportation Division, told us that "under the right conditions, steel tanks could also explode before the safety disc blew." There seem to be no studies indicating what those "right conditions" are, so to be safe one might as well presume that the Linde study can apply equally to aluminum and steel tanks.

How should you store your tank? It depends if you feel more threatened by a house fire than by corrosion. Aluminum oxidizes slowly; if you store an aluminum tank empty or have regular visual inspections then oxidation should pose no problem. But don't take your tank to zero by turning the valve and letting the air rush out; either breathe the tank down or let it flow very slowly from your regulator. Steel tanks oxidize much more quickly than aluminum so to be safe inspections every six months should be conducted.

If you opt for storage with air in the tank, then store it in the safest place you can find, away from bedrooms or living spaces where people may be should a fire occur. If a fire does occur, be sure to explain the problem to firemen before they enter the building. With a lethal tank inside they may decide against saving your Picassos -- but you may have saved their lives.

The Pre-dive Jitters

-- How To Manage Normal Stress Before Diving

"Well, we cheated death again. We brought them back alive."

Those words echoed in my mind as I nervously arrived at the dive boat for my first dive after a long dry spell. They had been uttered several months before by the same Hawaiian dive master with whom I was about to resume my diving. Still, I was eager to get into the water -- I had purchased new equipment which I wanted to test. The boat was large and comfortable and the crew surely expert.

And yet, I was not my usual ebullient self, atypical of me when about to undertake an event that excites me. In contrast, I was quiet, cautious, tight, withdrawn and generally uncomfortable. I had sweaty palms, an upset stomach and quickened heartbeat. These conditions had existed for two days before the dive.

"My attempts at conversation produced monosyllabic replies and increased physical distance, a response almost akin to soldiers entering combat who prefer non intimacy in case of death."

The other divers seemed to manifest similar symptoms. There was a clearly defined space between each. Conversations were nil. There was little of the joking, camaraderie and excitement one would expect that such a fun event would produce. My attempts at conversation produced monosyllabic replies and increased physical distance, a response almost akin to soldiers entering combat who prefer non intimacy in case of death. Even buddied couples responded similarly. The only responsive persons were the dive masters, behaving "appropriately," by joking, discussing the weather, the boat, and the dive spots. Yet, as it turned out, the spirit and socializing after the dives was the exact opposite.

The above scenario may have mitigating circumstances. It was 7:00 am, the day was overcast, the trip was two hours in one direction. And we were mainly strangers. Many had not eaten and had low energy. Yet, I have witnessed the above behavior and sensed the feelings in all geographical areas, on late morning and afternoon dives, with all experienced divers. I have, however, never read about this in texts on diving, and have only heard it discussed once prior to my research when a serious, experienced diver friend of mine admitted his anxiety.

I call the above phenomenon "pre-dive jitters" and have noticed it in no other noncompetitive sports where enjoyment is the only goal. (Perhaps skydiving is an exception.)

What is this phenomenon? Is there something unique about diving that may cause it? And if so,

what might a diver do to manage the responses in order to enjoy the pre-dive -- and the dive?

Physiologically, the responses described above can be classified as a "stress" or "fear reaction." The mind, either consciously or unconsciously, senses a potential danger and prepares for either "fight or flight." This primitive behavior is the reaction to fear as the organism instantly prepares to respond to threat -- it alarms and arms itself and gets ready to resist.

Automatic responses ensue. The heartbeat quickens and blood pressure rises causing an increase in the adrenal-caused sugar level in the blood to reach the muscles and brain. The digestive process stops so that all energy is directed toward the perceived threat. Red cells in the blood increase to enable more oxygen to be consumed and carbon dioxide eliminated. The body reacts physically, emotionally and behaviorally to the above stimuli. Tingling and coldness in the extremities, rapid heartbeat, lightheadedness are physical reactions. Emotional reactions could be fear, depression, sadness, anger, and withdrawal; pacing or aggressive behavior also are possible behavioral responses. Thoughts and obsessions about the dive may increase.

Hans Selye, noted stress researcher, has labeled the above reaction the "General Adaptation Syndrome" (GAS), and included the final stage of "disarming" which occurs either through physical exercise or reevaluating the perceived threat. What is unique about the GAS is that it can happen continually; if the disarming stage is short or non-existent, a severe depletion of energy occurs and exhaustion may result.

At this point one might ask why be so concerned about a little "nervousness" before a dive? What is there to be afraid of? Let me respond in two ways. First, it is important to reaffirm that the "jitters" is a stress reaction and any stress reaction has consequences. The reaction triggers the GAS, and a diver who has a strong pre-dive reaction or series of reactions which he is unaware of may seriously deplete his energy reserves. Continual adrenal responses can eventually cause exhaustion. Generally, we can say that any stress reaction causes degrees of energy loss; prolonged stress can cause mental fogging and could lead to panic and death.

Second, diving as a sport is unique and places demands upon divers that must be acknowledged beyond the obvious conditioning and preparation and beyond the conscious. I believe divers are always challenging the mind's unconscious avoidance of death, and thus the intensity of pre-dive jitters is greater than we acknowledge. Let me explore the

three following propositions:

1. Diving is the *only* sport where the primary necessity of life -- *air* -- is regularly and consistently dependent on mechanical devices and whose functioning at any time is largely beyond the diver's control. The primary piece of equipment, the regulator, is a reliable piece of equipment, and will function under most sport conditions if not abused. Furthermore, The Rhode Island University studies on diver deaths seem to indicate that equipment failure generally is not a major cause of death. Diver error, however, is a major cause of death. Thus, a mistake in this sport can leave little margin for error in terms of our primary life line. And this unconscious knowledge, and fear, I believe, is always present before a dive.

2. Upon entering the water and completely submerging the face, the body undergoes a "death reaction" until the diver begins to breathe normally through the regulator. Those who are aware will experience the phenomenon as a minute shortness of breath, a widening of the pupils in the eyes and slight difficulty with the first few breaths. When the face contacts water, a mechanism triggers the primary mammalian instinctual response to avoid submersion and breathing under water. This is the "diver reflex" or an "anti-drowning reflex." Although only lasting seconds, the GAS is activated and only resumes normal levels as the diver acclimates. Connected with this response is the learned response from childhood not to breathe under water. Diver training reprograms us to overcome our instinctual survival mode. It is my belief that our instincts are continually operative before a dive, no matter how great our training.

These two propositions dealing with potential loss of air and submersion are unique to diving. The pre-dive jitters is the body's method of protecting itself. In the GAS the body attempts to take control and restore situational order. This is difficult when dealing with a largely unconscious response; it is, however, manageable, as will be shown later. My third proposition deals with a situation that, although largely conscious, is no less stressful. I believe it is definitely a contributor to the jitters. This is the loss of social control.

3. A diver may be sure of himself as a diver, make sure his equipment is in good order and be prepared well for the dive. He must, however, depend on his buddy, the dive master and an unknown or changed dive site -- three significant variables over which he has little control. The sport of diving is burdened with instinctual fears, and its social structure is likely to increase those fears. Consider buddy diving with a stranger. The diver frequently is torn between the rules of diving (e.g., cooperate with your buddy) and the practice of diving (which frequently is "buddy in the same ocean.") It is natural that this distance should happen. Any teamwork effort requires time

spent together, knowledge and trust of the other person and social learning through trial and error under safe conditions. One does not produce these prerequisites on a short boat ride to a dive site.

Consider, too, the nature of dive operations and sites. The dive site can be treacherous and a good briefing is essential. Yet, quality is largely uncontrolled and one never knows how much assistance will be available.

"The diver is largely diving alone in an alien environment, coping with unconscious fears and dependent solely on himself and his technology, a unique twentieth century existential dilemma."

If reasonable control is a life necessity, as Freud and Adler have noted, then in combining all three propositions we could say that the diver is largely diving alone in an alien environment, coping with unconscious fears and dependent solely on himself *and his technology*, a unique twentieth century existential dilemma. Quite a recipe for pre-dive jitters.

Let us not, however, totally despair. An awareness of the difficulty of the sport and its circumstances can allow us to take measures to deal with our stress, both the rational and irrational. Good training, well-maintained equipment and extensive pre-dive preparation are areas where we can increase control. This also includes researching and choosing respected guides and dive operations that make appropriate efforts at carefully selecting sites, briefing divers, bridging the "buddy gap" and rendering assistance.

And now all that is possible has been done; and you may still find yourself suffering from "irrational" albeit normal unconscious stress. Remember, fear of death is not rational. Under such circumstances, I have suggested all or some of the following methods to my clients to aid in stress reduction.

1. *Discussion.* Have a dialogue with yourself or others and talk about your fears. Although this requires social risk, I am sure at least one person will be supportive. In the process of discussion, you might review your dive plans again especially, the emergency procedures. Visualize worse case scenes and solve the problem, e.g., "what if..." Review your experiences and note how well you've done in the past. Use your intellect or discussion with another (or both) to overcome what are probably irrational fears.

2. *Distraction.* If you have done all of the above and all that is possible in pre-dive preparation, and your divemates are burned out on your obsessive thoughts, divert yourself into other and possibly more rewarding thoughts and activities. Focus on events that get your mind away from the upcoming dive. This may include anything from your work to your favorite hobby. It may help to move about if the

boat is big enough. Chat with other divers about anything but the dive. Remember, they will probably also have the jitters and may welcome the diversion. When using this method *do not* discuss your fears with others especially if you have tried discussion (#1 above) and this had failed. Chances are, given your mood, you will elicit negative "war stories" from the other divers. This could lead to "symptom swapping" where you adopt other fears and feel worse.

3. *Relaxation.* Use whatever form of relaxation that has worked for you in the past. This could include anything from meditating or simply sitting quietly by yourself to intense discussion with others. For those of you who may not be aware of how you relax, visualize events in your life that have been fun and pleasurable. Think of the beach in Hawaii, the recent promotion or the home run you hit in your softball league. Such thoughts will stimulate a relaxed feeling.

A very effective form of relaxation is slow, steady

breathing, eyes closed in a relaxed position, with your thoughts focused on your breath. As noted before, the physiological reaction to stress is to increase the pace of bodily functions. Reduced breathing slows down these functions and a more relaxed state results. After a bit of practice such a meditation can even be done on a Boston Whaler.

The sport of diving requires us to understand instinctual drives and to relinquish control, both conscious and unconscious. Such conditions are likely in most of us to cause pre-dive jitters. Awareness of the phenomenon, accepting it as normal and then managing the symptoms will allow us to more fully enjoy the anticipation of the wonderful pleasures below -- and to cheat death once again.

The author of this article, Michael H. Smith, Ph.D., is a licensed family therapist in private practice in Oakland, California. He is a member of the Public Administration faculty at California State University, Hayward. Dr. Smith has been a certified diver since 1976, and can be seen chattering away like a jaybird on any dive boat he takes.

Punch Drunk Divers

-- An Australian Physician's Report

I have always prided myself on taking good histories in diving accident cases. I try to indoctrinate my diving physician students to acquire this skill.

Most of the "discoveries" with which I have been associated have been nothing more than medical translations of divers' complaints. Their observations were recorded, their explanations were mainly ignored, and their symptomatology investigated. This has resulted in valuable information about topics such as unconsciousness with rebreathing and scuba diving, marine animal injuries, causes and treatment of hearing loss, the etiologies of disorientation underwater, etc. Each of these diverse subjects was approached without prejudice, i.e. without pre-existing knowledge!

Unfortunately, it was not so when it came to the problem of the "punch drunk diver."

Before I entered diving medicine, my main expertise and training was in determining the relationships and differentiation between neurological and psychiatric disorders. I therefore felt more equipped to make "off the cuff" assessments in neuropsychiatry than in any other area. Thus, when divers requested advice or information about their apparent intellectual impairment that they had noted in themselves and their colleagues, I had no hesitation in reassuring them that the belief was unfounded. My reassurances served only to conceal my ignorance. The one thing that I did *not* do, was to check it out.

There was the occasional case following decompression sickness, with discernible psychometric im-

pairment, often with abnormal E.E.G. patterns, and occasionally with abnormalities in the brain scan. This was not common, and certainly did not represent the problem that the divers feared. They were worried about a progressive or cumulative loss of mental functioning.

At Twofold Bay, in Eden, abalone divers are a closed community. They were obliged to register for licenses in 1980, and a prerequisite was to have had three years full time professional abalone diving prior to that. Thus the minimum duration of diving was six years, without any formal training being required. They tended to be ex-fishermen, from small fishing families, who had moved from their previously profitable and traditional occupation to the more lucrative abalone industry -- taking with them their maritime skills, but little else.

An associate and I headed off to Twofold Bay to test some of our hypothesis on this special diving group. Our hypothesis was: *if this group showed no evidence of dementia, with the enormous diving exposure they had, and with their flagrant disregard for decompression requirements and safety aspects, then dementia was not likely to be a widespread complication of diving.*

The diving was strenuous, with the divers carrying bags of abalone and enduring the tidal drag on their long hoses for most of the dive. Each diver would average approximately 100 days diving per year and in each diving day, he would be underwater for a total of four hours, and this was unrelated in any way

to his depth. The average depth would be about 60 feet and the surface intervals vary from ten minutes to one hour, being the time required to move his boat to another area. No decompression staging was performed.

Obtaining the cooperation from such an independent group was not easy. We gave some lectures, especially tailored for these divers and their type of diving. We socialised with them, windsurfed with them and finally we dived with them (but we decompressed along conventional lines). We gained their full co-operation when we admitted our ignorance regarding many of the questions related to the diving industry. With a little praise and some soft talking, they agreed to assist us by undergoing some of our tests.

One of the tests we performed was to assess the divers' intellectual functioning – both capacity and achievement. As most psychologists and psychiatrists realise, this form of psychometric assessment allows us to determine, fairly accurately, the degree of intellectual deterioration (by how much the past achievement exceeds the current capacity) that has occurred in any individual or group.

The results were horrifying. For technical reasons we had to remove six cases. With the remaining twenty-five, twelve showed evidence of intellectual impairment compared to their previous levels, and adjusted for age. In one case the results were questionable. In the remaining eleven cases there was evidence supporting or strongly supporting the diagnosis of dementia.

As the results started coming in I felt a sinking feeling in the pit of my stomach and a great desire to not want to hear any more. This was a Pandora's box which I did not particularly want to open. I did all the usual things to try and explain the results away.

First, I hoped that there might be a significant age difference between the divers who had evidence of dementia, and those who had not. There was a slight age difference, but it was in the wrong direction. There was also a slightly greater incidence of decompression sickness amongst the demented divers, and also a slightly increased incidence of alcohol intake. Unfortunately, neither were impressive and neither reached statistical significance.

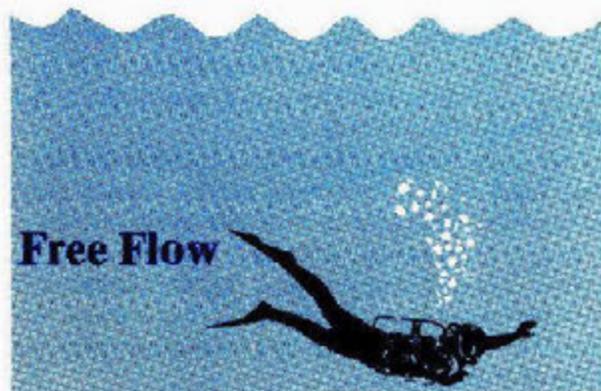
When I think of the number of people I have reassured, informing them that there was no evidence for believing that divers become intellectually impaired in any way! When I tentatively mentioned the possibility of intellectual loss associated with diving to the abalone divers, most of them were genuinely surprised that I would question such an obvious relationship. They took it seriously, and it was a cause of concern to them.

These divers are financially independent workers, and have no possibility of compensation for any occupational injury. In general, they are family men, with responsible positions in that community, and not excessive in activities other than their diving.

At this stage I would not claim that this group of abalone divers is in any way representative of other groups in the Australian region, or elsewhere. In fact, each individual state has developed its own type of abalone diving and I would be surprised and somewhat shocked if this group is representative.

I suppose that E.E.G. assessments and CAT scans, etc. must now be performed, but this is not really my scene. I will continue to add to my small series, in the hope that sooner or later, I show that I am wrong.

The author, Carl Edmonds, M.D., is the President of the South Pacific Underwater Medical Society. This article was reprinted from Pressure, the newsletter of the Underwater Medical Society. Undercurrent takes all responsibility for editorial changes.



Why do porpoises leap from the water? For fun? To breathe? To dislodge parasites? Working from mathematical models, zoologist Robert Blake of the University of British Columbia has found that because of surface turbulence, a porpoise swimming

faster than 10 feet per second saves some energy by leaping and even more by swimming at some depth. At speeds above 16 feet per second, though, leaping is the most efficient propulsion method.

For those of you who have to tote your dive gear from your parked car to the ocean, if you have to travel down cliff, over the rocks and through sand, you may find that diving is the last thing you want to do once you get there. Ken Mayti of Southern California has tried scores of contraptions to assist him, but has finally settled on using a golf cart to carry his gear. The big wheels can roll over just about anything and the frame is strong enough to take it. You can either leave the golf bag attached and shove your tank and suit down inside, or else remove the bag and strap your equipment on the frame. Should you bang up the cart, you can easily find a replacement at garage sales or flea markets for as little as \$10 or \$15.