

Undercurrent®

The Private, Exclusive Guide for Serious Divers

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Aquanaut Explorer; Shalimar; BVI

—By Cattle Boat and Chartered Yacht

Dear Reader,

Looking up through the historic wreck of the Rhone, I could see the Easter moon shining down through 70 feet of placid water. Although thousands of divers, including the cast of the movie "The Deep," have dived the Rhone, it is still full of treasure. My powerful dive light showed yellow cup corals looking like spilled golden doubloons; red sponge simulated rubies from a lost treasure, and innumerable fish guarded the wreck like Peter Pan's Little Lost Boys. In my mind, the Rhone at night is the tops of British Virgin Island diving.

I would see it, again and again, on my two-week adventure on two separate dive boats as apart in size, amenities and philosophy as could be imagined.

I spent the first week on the M/S Aquanaut Explorer, a 165-foot-long, 40-foot-wide, three-deck vessel, called a "ship" by the Captain. (Many of my diving friends would call it a "cattle boat" based on its size alone.) Truth be told, with 26 passengers aboard during my week (compared to a maximum load of 40), I never felt crowded. My cabin was huge, with a queen-sized bed, closet, one wall with book-case-type shelving, a writing desk, patio doors leading to a roomy balcony with two deck chairs and a small table. It should be called a floating hotel.

I was greeted by the purser, Barbara Neunan, wife of the Captain, Rob Neunan, and made welcome immediately. Rob promised that the 12-person crew would spoil us. They did their best. The cabin steward made up my cabin twice a day, and there were always freshly laundered towels hanging when I returned from a dive. At each meal, at least two people served us with a smile.

Connoisseurs of the yachting world will not find this ship attractive. Large red dive flags painted across the white hull clash with the sleek sailboats and motor yachts that congregate in these islands. As a refitted seismic exploration ship, her history shows through her rechristening.

Amidship on the Watersport Deck were an enclosed dining room with television and VCR, a small shop, as well as the daily activity blackboard. Forward are six guest cabins. Tanks and the compressor are on the rather small stern. Two dive floats that travel from the ship to the moored dive sites are kept under the

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giant hoist that is used to set them in the water. There are no compartments to store dive gear. Bring a mesh bag to keep your stuff together and hang it from hooks on the railing. The advertised photo lab was "out of service temporarily," as it has been for some time; E6 processing would have to wait until the trip ends.

The second deck is divided by a large outdoor dining area and bar, where all of our meals were served, thanks to fine May weather. Forward are six cabins and the bridge; aft are eight cabins. Also amidship is a hot water jacuzzi; on the top deck, there's a cooler jacuzzi and lounge chairs for sunning.

Literature of the Explorer and people in the booking office promise "unlimited diving," but I made only 18 dives the entire week - and I made every dive offered! The trip is sold as a Friday-to-Friday cruise, but we didn't make the first dive until almost noon on Saturday, blamed in part on late arrivals. Some days we made three dives, other days two. Monday was happily touted as "Dive Mania Day:" 9:00 a. m., dive Vanishing Rock 50 feet for 40 minutes; 11:00 a dive at Haulover Bay at 30 feet for 40 minutes; then 2:00 p.m. Jagged Point at 50 feet for 40 minutes, followed at 4:00 by a dive at Copper Rock at 35 feet for 40 minutes. After dinner, a night dive at Haulover Bay at 30 feet for 40 minutes.

Divers familiar with serious liveboards might smirk at this attempt to promote rather tame depths and times as "Dive Mania." All dives (except the bow of the Rhone) were timed ("this is a forty-minute dive, including your safety stop"). The average maximum depth was 45 feet, and my average bottom time was 49 minutes (I got extra minutes by being first in and last out). Six of the dives were at less than 40 feet. The deepest dive of the week was at 87 feet on the wreck of the Marie L (a dive only offered to three experienced divers). I usually found myself ascending with more than 1,000 psi. Annoying, but I could see no way of extending dives any further except by keeping my fellow divers waiting on the float in the sun without shade ... not a likely way to keep newfound friends.

One dive guide was on vacation, so the Captain and the other guide, charming, hardworking Louisianan Lauren Boozer, capably shared duties. Both were happy to point out unusual undersea creatures. They also assisted with dive gear, hauling weights and tanks up from the float ladder for each diver.

All dives were made at mooring buoys installed by the BVI National Parks Trust, never more than 15 minutes away on the excruciatingly slow, flat-bottomed, four-cornered rafts powered by a 30 hp outboard. Currents were never a problem and visibility usually exceeded 70 feet. Water temperature was a constant 81 degrees, so a lycra skin was all I needed. Others wrapped themselves head to toe in 1/4-inch full wet suits with hoods and gloves. Who knows why?

BVI diving is easy and basic Caribbean diving. The Rocks at Cooper Island at night yielded colorful corals, encrusting sponges and an aquarium full of sea life, including spotted eels, slipper lobster, and giant porcupine puffers. I swam through the Chimney at Great Dog, with beautiful queen angels, small rays and lobsters, as well as anemones with their tenant shrimp and crabs. At Mountain Point at Virgin Gorda, I observed hundreds of sergeant majors, blue chromis, file fish, several juvenile spotted drum, plenty of parrot fish and puffers. At Cooper Island at Haulover Bay, yellowtail snappers, schooling black durgons and a

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Deep Do-Do

Just before the first tank of a two tank dive at Guanaja, Honduras, a terrible thing happened. Actually, it was about to happen. My bowels went into an uproar and there was no head on Posada del Sol's boat. And, we weren't due to return to land for three more hours.

I ruminated about my potentially embarrassing dilemma, suspecting that those young guides might say in booming laughter, "You have to what?" So, I decided that I would simply bring up the rear of the dive group, hide behind a coral head and take care of business. I took off my dive skin, unfastened the beaver tale of my wet suit top, and joined the dive.

As it turned out, at 60 feet, nothing happened. The urge had disappeared. In fact, I was able to complete the second dive and return home undaunted.

But, what if that were to happen again? What's the protocol, I wondered?

We called a lot of long-time divers, delicately asking what they might do in such a situation. Surprisingly, most had actually faced the dilemma one time or another. Each was willing to discuss his or her personal situation — but only if we kept their names out of it.

There's wide spread agreement that the appropriate initial response is to inform the captain. He or she has probably encountered uncooperative bowels before and should be able to offer suggestions for the specific boat or trip. One lady diver, an *Undercurrent* travel reviewer, told us that in Cozumel, the captain dropped a line off the stern and told her to jump in and take care of things while they motored to another dive site with her in tow. That was in the days of those slow moving boats.

But, we've all met those insensitive captains and crew members who might get too much of a kick out of what for many of us would be no laughing matter. In such a case, our interviewees seemed to agree that the easiest solution then is to get in the water, swim to the anchor line, hang on so you don't sink or drift, drop your britches and do your business. One diver, about as famous as they come, told us he simply climbed down the dive ladder and hung on to it. No one paid any attention.

After all, it's no secret that after every dive, people

are hanging off the end of the boat to eliminate that post-dive bladder pressure. Nonetheless, I suspect that Miss Manners would urge us to swim a little farther away than the dive ladder to conduct more serious business.

Several of our contacts said that dumping in the deep seemed preferable to a surface squat, admitting that they too had sought out a large coral clump to hide behind. One long-time resort proprietor told us that, when a guest presents him with the problem, he often suggests going deep. "The shy, as long as they have privacy, will not be embarrassed by floaters," he says, "which is what happens if they drop their drawers at the surface. And," he added, "at depth, the fish will quickly clean up after you."

Whether you decided to sink or swim, your diving apparel can complicate the problem. One lady diver tells us this is why she wears a two piece suit. And consider the problems with a skin; if you can't remove it, you may have to decide to suffer the consequences, doing your best to clean out the garment while underwater. You could even go so far as to cut open a flap with your dive knife.

What if you're wearing a dry suit? That provides its own dilemma, which is why some dry suit divers have taken to wearing disposable diapers. Makes sense to me.

If getting off the boat is not an option, then look for a bucket on board. Partially fill it with sea water and request the passengers and crew to go to the bow. Do your business, dump it overboard and rinse out the bucket.

Whatever your beliefs about bodily functions, if you travel enough, you're going to have to face up to reality; where to go when you gotta go.

That problem, however, is not confined to dive boats alone. One of our experts told us of drinking several glasses of iced tea waiting for a late plane in the Bahamas. No sooner than the plane took off, he had to go. The plane was small and he crawled forward to tell the crew of his problem. The co-pilot handed him a sick sack and told him to ask his seat mate to be understanding. Since it was a three hour flight, that's exactly what he did.

C.C., travel editor

profusion of tropicals meandered among the healthy stands of pillar coral. Most dive sites had flamingo tongues galore; Christmas tree worms and giant fan worms were prevalent. Oddly, isopods, inch long parasites, had attached themselves to many fish.

No complaints about the meals. Plenty of tasty and filling food. Typical breakfast: eggs to order, pancakes, and French toast, fresh fruit, cereals, juices, and coffee. For lunch: grilled dorado, cheeseburgers, chili with cheese, and always soup. Dinner highlights: marinated beef stew, roast turkey, stuffed chicken breast, Creole fish chowder, and fish in Creole sauce, accompanied by broccoli, or carrots or peas, lots of lettuce for salads, and soup. The waiter service was a nice touch, as was the choice of wines from the bar (for a fee). There is no undue restriction on enjoying a beer for lunch; the bar opens at 10

a.m., and stays open until midnight. Those accustomed to post-dive snacks as Aggressor brownies can concentrate on maintaining body weight - no between-meal snacks from this operation.

In keeping with the premise that the Aquanaut is a mini-cruise ship, Barbara engaged most of us in inane activities throughout the week. If any of my mongo dive buddies finds out that I joined in the "Crazy Hat Luncheon," the "Island Fashion Show," or the "Grand Masquerade Party," I'll be forever drummed out of their ranks. Most guests seemed to enter into this foolishness in good spirits, and nobody forces you to do anything you don't want to. But I, for one, would forgo some of this nonsense for more diving. (Me a grouch? No. Just an enthusiastic diver.)

A serious complaint: Two unescorted females (one married and leading a group of divers) discussed at length with me how they received unwelcome, continued, and increasingly overt sexual attention from two crew members. As is often common in these cases, the two women spent several days trying to avoid making a fuss. The overtures increased, the women said, with phone calls to the rooms late at night and attempts to bed them down after the evening dives. By the end of the week, both women were afraid to inform the Captain because they were concerned about the crew's retaliation. Finally, the last evening ended in the Captain confronting his crew - without the women present - with denials by the crew members and both women upset and worried. An ugly scene that could have been better handled by immediate complaints to the Captain after the first unwelcome incident. Isolated incidents? Both crew members have been with the ship for several years. You have to wonder.

Although this liveaboard is not exactly my cup of tea, it was popular with all other guests, who ranged from teenagers to couples in their sixties. (Only two of us made all 18 dives.) Even the two females told me they would return if they could be sure of no harassment. The ship gets lots of repeat guests, including two couples this week; one dive instructor has brought eleven groups for warm water checkouts.

Another reason for the popularity is price: \$1,295 for the least-expensive cabin for one week, and that includes air fare from the East Coast. The West Coast price is \$1,495. Add a nonvoluntary gratuity of \$70 and a few dollars for the ferry trip to and from St. Thomas.

Diving from the Explorer is fine for beginning and intermediate divers; those getting into fish, creature, coral and sponge identification can see most everything here. But, for those who have done more serious diving in the BVI, this trip will be a disappointment (for example, the ship never gets to distant Anegada). So, I looked forward to my next dive ferry, the 50-foot custom Chris Craft motor yacht, Shalimar.

In Tortola, I met two friends with whom I had chartered the Shalimar. Captain Terry Kennedy and his wife, Karen, were waiting for us, on board at the Village Cay Marina in Roadtown. The craft is fitted out like a small hotel.

An overstuffed sofa and two overstuffed chairs in the oriental-carpeted salon became my resting place for much of the cruise. A stereo and VCR were supported by a vast collection of tapes, CDs and videos and an extensive library of books about the oceans and its inhabitants. The entire below deck area was air-conditioned. The large aft cabin had two 3/4 beds, a closet, and plenty of room. My cabin was smaller, with two criss-crossing bunks, a chest of drawers and a closet, and room for stowing gear. The marine head had plenty of towels, shampoos, conditioners, soaps, and a medicine cabinet full of minor first-aid relief.

Water and Light: A Diver's Book

Water and Light—A Diver's Journey to a Coral Reef is a very special book. In the annals of diving literature, there's been nothing like it since Walter Starck's 1979 book, *The Blue Reef*. The difference is that Starck had a biologist's eye; *Water and Light* author Stephen Harrigan has a writer's eye.

Harrigan, a novelist and well-published essayist, spends months on Grand Turk island (it's about 500 miles southeast of Miami) living a dream: he dives and dives and dives. He begins as a typical diver, watching individual fish do individual things. Eventually, he comes to view the reef as a synthesized whole. While developing a spiritual dimension about what he sees, he conveys his passion in such fashion that we become disciples.

A good writer must first observe his subject in great detail, second make sense of it, and third convey it in a compelling manner. Let me demonstrate how Harrigan sees the eye of the octopus, which he calls one of the "most awesome sights in all of nature."

"An octopus. . . has a startlingly complex eye, complete with iris, retina, pupil, lens and cornea. The octopus eye, we assume, sees more or less what the human eye would see, and like the human eye it not only receives but emits. It takes in light, forms images, and send out expressions of mood and thought. When you look eye to eye at an octopus, something clicks. You feel it staring at you, taking your measure, *thinking* about you. There is a disturbing, almost unspeakable recognition. You realize that the octopus's eye, like yours, is the window to its soul."

If you've stared into a crevice, into the eye of an octopus, you may very well understand his message. If not, consider what he has to say about common gobies as they dart about: "My eyes crossed as I tried to keep track of their comings and goings, and my imagination wore itself out trying to conjure up some authentic sense of the tenor of their existence. I know that many gobies are monogamous, that the male and female excavate a nesting burrow together in the sand, and that in some species the male slips into the burrow to stay with the eggs while his mate closes off the entrance with sand, releasing him a few days later to swim around a bit before sealing him up again. But what does this mean? How does it feel? Could the reflexive pair bonding of gobies loom as dramatic to them, as essential, as human love

does to us? I didn't know. I felt sheepish in even speculating about it. Gobies in love! And yet, why not? We dismiss animals as instinctive beings and we think of instinct itself as an unfeeling mechanical urge, an electrical command fired from a witless brain. Be we only know what we observe; we see only the motions. The acts of fish may be in fact nothing more than instinctive impulses, but we can never know the specific timbre of those impulses or the way a fish feels when it is impelled by them."

Now I suppose there are divers among us who don't care to think about fish this way. To them, Harrigan's work will make no sense. But, he is not anthropomorphizing sea creatures. Rather, he is generating possibilities, consistent with an increasing body of evidence that critters think, communicate and, yes, feel in far more profound ways that we egocentric homo sapiens wish to believe. For those of us who inquire into what it is that draws our very hearts under the sea, Harrigan is mighty stimulation.

Along Harrigan's journey, we meet a few people of Grand Turk — one, in fact, I shared a drink with many years ago — and learn of its history and geology. He provides fascinating anecdotes about the history of diving. About whales and turtles. And most of all, about the behavior of reef critters, recognizable by anyone who has dived any Caribbean island.

The story is also about Harrigan, who, as his time on Grand Turk passes, becomes concerned "that when I was not underwater I was wasting my life."

Harrigan calls his concern "unreasonable." I think not. On the one hand, had he refused to leave the water long enough to record his observations, he would have not produced his sweet, stimulating, thoughtful work on the underwater world.

On the other hand, we serious divers have come to know that bottom time is what life is all about. Now, Mr. Harrigan, perhaps we can view it with a fine eye like yours.

Water and Light is available in bookstores or from *Undercurrent*. Send \$19.95 + \$5.00 s & h to *Undercurrent*, 175 Great Neck Rd., Suite 307, Great Neck, NY 11021. For more information about this very special book, please see page 2 of the enclosed insert entitled "Book and Video Summer Specials."

Ben Davison

The stairway from the salon led to the bridge and the dining area, with a table for four, and a mini-bar with an icemaker and a refrigerator stocked with beer (even the non-alcoholic stuff), soft drinks and chilled wine. Forward of the bridge, is an open area for rinsing gear and for sunning on comfortable padded seats. To the rear of the bridge and down the ladder was a small swim platform and a freshwater shower.

When booking the *Shalimar*, we had specified that we were intent on making five dives a day and forget the shore excursions. Terry and Karen, whose usual

guests content themselves with great food, cruising, shore visits, a couple dives a day, responded beautifully. We were diving two hours after boarding, and two hours before departure. I made 28 dives, with one evening off for dinner ashore in Roadtown. Almost all diving was from a roomy 16-foot inflatable with a 45 hp engine. The usual procedure involved Terry anchoring the Shalimar, loading the filled tanks into the dinghy, kitting up the tanks with our gear, which hung on hooks over the rear transom, loading us, then zipping us to one of the BVI mooring sites, assisting us with our gear, handing over cameras, joining us for most dives, assisting us with weight belts and tanks which we handed to him after the dive, motoring back to the

Shalimar, breaking down the gear, lifting the tanks to the compressor, and filling those tanks while loading another set for the next dive. Whew!

Our diving was off the islands comprising "Drake Lake," the Sir Francis Drake Passage. All dives were at the moorings, but only a few were on sites I had visited the previous week. One of our first was at Pete's Place, off Pelican Island. In 45 feet of water, I saw blue chromis by the hundreds, fairy basslets, a juvenile princess parrot, yellowhead jawfish, juvenile scrawled file fish, garden eels, foureye butterfly fish (many with isopods), queen angels, rock beauties, gray and French angels. Visibility was excellent. This was comfortable diving, with plenty of bottom time.

At the Indians, we went through a lovely arch and into a cave with dozens of spiny lobster tucked into crevices. Several lobster shells on the floor of the cave suggested that some poacher had ripped off the tails, but it turned out to be a massive molt; what I saw were rejected carapaces. To get to the rear of the cave, I had to part a huge curtain of silverside and fry. Pure magic! Near the surface, seven squid flew "Blue Angel" patterns.

We made five dives on the Rhone, including two at night. Terry has blown billions of bubbles on this wreck and knows it like the back of his hand. Squid, jacks, cowfish, lobster, trumpetfish, barracudas, and even several minutes with a lovely spotted eagle ray make the Rhone special. One night, I used a red lens light in a tight area to see a giant green moray, several species of crabs, a bristle worm large enough to put fear into the heart of Jacques Cousteau, and an octopus intent on stuffing himself into a dime-sized hole.

Blonde Rocks is named for the abundance of fire coral at the top of the pinnacle. The current brings schooling fish: yellow jack, crevally jack, Bermuda chub, and two large amberjack on a feeding frenzy. We took a tour of a new wreck, the Marie L, a deliberately sunk freighter in 85 feet of water. A good-sized green moray has taken up residence in the cargo hold and coral nubs are just beginning to appear.

I came to the Shalimar with dreams of motoring to secret dive sites off Anegada, sites known only to Terry or Bert Kilbride, who was reputed to have brought up tons of treasure over the years. Alas, it was not to be. Terry explained that Horseshoe Reef had become off limits to sport divers and that he did not make trips out to the wrecks of the Rocus or the Chikuzen. His backyard was the "Drake Lake" and that's where we dived.

Ratings on the Caribbean Scale

Aquanaut Explorer

Diving for Advanced	★★
Diving for Beginners	★★★★
Accommodations	★★★★
Food	★★★★
Money's worth	★★★★

M/V Shalimar

Diving for Advanced	★★★
Diving for Beginners	★★★★
Accommodations: Aft Cabin	★★★★★
Other Cabin	★★★★ 1/2
Food	★★★★★
Ambiance	★★★★★
Money's worth	★★★★★

* poor, ** fair, *** average, **** good, ***** excellent

One reason for paying a premium for a yacht is to enjoy superlative dining. Karen, a graduate of the Culinary Institute of America, is a real charmer whose meals exceeded even my high expectations. Breakfast favorites included eggs to order, Canadian bacon, banana pancakes, sausages, blueberry pancakes, apple cinnamon pancakes, melon, strawberries, bananas, and kiwi fruit. Lunches included chef's salad with deli meats, spinach bread, vegetables with curry dip, cheese tortellini with pesto, black bean meatless chili, tacos with artichoke heart dip, classic borscht with grilled swordfish, curried salmon in puff pastry with a side of carrot-raisin coleslaw.

And then came dinner. Entrees included New York strips (grilled on the charcoal barbecue) with bearnaise sauce, grilled Cajun tuna with mustard sauce, linguine with parmesan cream sauce served with chicken cordon bleu, veal calvados with dumpling noodles, and a special scallop dish a la Kay. Evening meals were served with an appropriate wine and followed by a wide assortment of liqueurs. Crisp salads and homemade soups accompanied the evening repast. Only with portion control on my part could I hold down my weight gain. NOT. Then those desserts! Chocolate mousse, creamed mango in crepes with chocolate sauce, chocolate cheesecake. . . . There was a large basket of fresh fruit always available on the coffee table in the den.

Had I found Eden in the Caribbean? Well, somewhere a serpent usually slithers in the tree. A small motor yacht with its generator, engine, and compressor all operating is noisy. (That's one reason people sail.) Thankfully, I had brought a pair of ear protectors to mute the cacophony, but even in my cabin, I could hear the damn compressor pumping away for hours to serve our needs for five dives. By day four, I had become inured to it. Still, it makes paradise a little less so.

Our request for five dives daily (actually we averaged only four) pushed Terry and Karen to the limits. We kept them so busy, that only once did they have time to rig the underwater scooter or use the large underwater video camera. Terry took care of E6 processing one evening, but even that ate a big hole in what was left of his day. One saving grace was that even for a 50-foot boat, there was ample room for each of us to find privacy. I read or napped in my cabin, or listened to music on earphones in the salon. Another used the dining table to massage her camera gear. Another snoozed or played with his laptop computer. Terry and Kay had their private end of the boat so we did not step on each other's feelings as might have been expected.

Four friends content with a couple of dives a day, will find the Shalimar near perfect. Quoted cost of \$6,000 for four people for a week and a suggested tip of 10 percent comes to \$6,600 divided by four comes to \$1,640 per person, plus air fare.

Finally, how do I rate it all. I think the stars speak for themselves. As a budget liveaboard in the Caribbean, the Aquanaut Explorer does just what it sets out to do; as an expensive charter operation for four people, the Shalimar does just the same.

J.G.

Prologue: The Aquanaut Explorer has temporarily left BVI waters for the Grenadines, where diving is comparable to the Virgins. While Martinique is her home port, she may return to the British Virgins as early as August or as late as January. The Aquanaut cruise line, which once operated two additional boats, has not been known for stable itineraries. Says Bob Goddess of Tropical Adventures: "they have been everywhere in the Caribbean. They do not stay in one place long enough to create confidence among the wholesalers." Over the years, however, we have had no reports of travelers being stiffed.

Diver's Compass: Aquanaut Cruise Line, 241 E. Commercial Blvd., Fort Lauderdale, FL 33334 (1-800/327-8223 or 305/491-0333. . . M/V Shalimar, c/o Caribbean Connections, P.O. Box 4065, St. Thomas, USVI 00803 (809/494-3623). Air can be arranged either through San Juan into Beef Island, Tortola, or to St. Thomas with transfer to Tortola via inter-island ferry. . . St. Thomas has plenty of duty-free shopping. . . There is oxygen aboard both craft and the BVI can provide fairly quick transportation to the chamber in St. Thomas.

Normal Aging and the Diver

— *Diving 'till the nursing home gets you*

In an issue of The British Sub-Aqua Club magazine *Diver* some months ago, a 53-year-old male diver wrote to protest the BS-AC requirement of an annual physical for divers over the age of 50, saying "this is costing me a fortune in medicals and X-rays." He added an interesting aside: "With only 40 or so dives this year, my cost per dive is becoming heavy." He wrote that if the requirement stood, he might have to "drop out of the club scene and go back to 'pirate' diving."

His letter underscores a realistic problem of expensive annual medical examinations. That he had "only 40 or so dives this year," hardly justifies the modifier "only," considering the lower number of dives the "average" diver logs each year. Moreover, this British colleague is probably diving in the chill waters off the United Kingdom, and cold water is a major stress for all divers, and for older divers in particular.

What are the effects of aging on the diver? Should the aging diver have an annual medical exam? After all, it's required in England.

"Aging divers develop lowered tolerance for cold."

I will cover the major effects of normal aging on a diver. Stress affects the male over 50 more than the older female, particularly in the cardiovascular area. (Virtually all the research data have come from longitudinal studies on male subjects, by male researchers, a subtle form of sexual discrimination that needs to be addressed.)

The aging diver must concern himself with *cardiovascular, respiratory, and muscular fitness*, the latter including the critical factors of stamina, strength and range of motion. Each is affected by normal aging.

Remember: physiological age differs from chronological age; a fit 70-year-old is probably much safer diving than a sedentary 30-year-old.

Cardiovascular Factors

As the male ages, he is at higher risk for cardiovascular stress, although recent studies have shown that women

are at increasing risk: one out of seven shows symptoms of cardiovascular disease. Hypertension rises dramatically in women over 45.

Increased blood pressure may result from normal aging; the aorta stiffens, resiliency increases, and the microvascular channels in the network of blood vessels near the body surface shrink. A serious implication is an increased risk of decompression sickness in the older diver.

Another cardiovascular problem in the aging diver is the increase in heartbeats occurring out of normal pattern. Called PVCs (premature ventricular contractions), they occur with increasing frequency between ages 40 and 50 and are to be expected after age 60. They may indicate a higher risk of cardiac arrhythmia.

Denial

One of the more serious aspects of heightened risk is a macho attitude — believing one is superior and invulnerable.

Denial is common among such individuals. Take, as an example, the study by Northcote and his associates in England, of squash players. In their study, 30 *sudden deaths* were recorded on squash courts; 29 were male with a mean age of 46 (range 22-66). 27 had significant coronary heart disease and 22 had reported symptoms that included shortness of breath, chest pains, palpitations, heartburn and dizziness before their sport activity. Of the 22, only four had sought medical advice regarding the symptoms, ignoring the symptoms.

Eldridge's studies of sudden death among older divers (35-55) revealed a similar finding. Among the divers who experienced a cardiac-related death, there was a 40 to 60 percent occlusion of coronary arteries. All the sudden deaths were male and all occurred in cold water. We can only assume that these divers knew of their cardiac conditions and ignored, denied, or decided to rise above them.

Respiration and Ventilation

With normal aging, there are changes in the ability to breathe adequately.

The elasticity of the lung tissue decreases, making for a stiffer and less flexible bellows. The stiffening of the

rib cage tissue compounds the problem by reducing expansion of the chest wall. The percentage of lung that remains unventilated rises as a result of the lowered elasticity.

The total lung capacity, the vital lung capacity (the amount of air a person can exhale, starting from the total lung capacity) and the amount of air remaining in the lungs after maximum expiration change in the aging person. For example, the vital lung capacity declines from approximately six quarts to three between ages 30 to 70. Australian medical standards are a bit over four quarts for male divers. An older male with normally reduced VC could be disqualified from diving.

Of importance as well is the change in maximum oxygen uptake, which decreases after age 20. Perhaps critical for divers is the reduced ventilatory sensitivity to carbon dioxide production with exercise, for an awareness of CO₂ buildup is crucial.

Muscle and Strength

Normal aging results in a loss of stamina, muscle strength and range of motion (flexibility) to a degree in all persons. At age 30, a 175 pound individual has approximately 70 pounds of muscle. At age 70, he has lost approximately 10 pounds of muscle. Muscles tend to become stiffer; they tense and relax more slowly and take longer to heal.

Strength and stamina decrease with reduced muscle mass, changes in respiration and ventilation and ever-stiffening body elements. Fortunately, the water environment can compensate, in part, for muscle and flexibility reduced capacity, but there is a normal change in performance to be expected.

Cold and the Aging Diver

The changes that occur with normal aging can present some problems to the diver in warm water, but the problems are multiplied a thousandfold in cold water.

Cold is the major stressor in diving. The changes effected by cold begin with the *diving reflex*, which begins when the face is immersed in water. The results are initially a reflexive cessation of breathing (gasp) and an elimination of the lung inflation reflex. The heart slows, more so in colder water.

Cold affects the vagus nerve, which restores heart rhythm balance. Even in physically fit males over the age of 40, there is a reduction in the ability to restore balance quickly. In aging individuals with a history of cardiac problems such as irregular heart rate, cold water can be extremely hazardous, as was suggested by the sudden death studies of older males in cold water.

Inhaling cold, dry air and exhaling warm, moist air can create problems. The lungs warm and moisten the inhaled air, leading to a degree of respiratory heat loss even under optimal diving conditions. In a cold water environment, the air in the tank can be cold enough to elicit a cold air inhalation reflex, which can alter breathing patterns.

BC Failure

Dear Undercurrent,

"On my second dive after certification at Cozumel in 1990, I came to the surface and inflated my Sherwood Silhouette BC. I heard a loud pop and immediately lost buoyancy. I tried to reinflate the BC and used up my remaining air, but I was over weighted and had difficulty staying on the surface. I could not just drop the weights because there were divers below me. I struggled and swam to another boat and was "rescued".

The cap on the top of the inflator fitting had blown off the BC. I checked my wife's BC and found that her fitting was loose so I tightened it. When I got back home I took it back to the shop and they replaced the power inflator for me at no charge. If I had known to check for loose fittings, I would have done so."

Michael Baker, Anaheim Hills, CA

Dear Michael,

Sherwood referred us to Soniform, the company that makes the Silhouette for them. Niel Bergstrom, a Soniform engineer, said it was a new problem to them, "but that doesn't mean that it hasn't happened before. The shop may have replaced a unit and not told us about it, or they may have told the local distributor and the distributor in turn did not let us know about it."

Later Bergstrom told us they recently added a suggestion to their manual that purchasers check that all fittings are tight.

Does this mean that Soniform had the problem before? "No", Bergstrom told us, "but as we learn more about things, we pass the information along to owners so that they know as much about the equipment as we can tell them."

Thanks for telling us about the problem and providing us with an opportunity to remind divers to check the fitting of all their equipment before they go under.

Ben Davison

Aging divers develop lowered tolerance for cold. The person has a lowered basal heat production, skin tissue becomes thinner and subcutaneous fat is less, factors that contribute to less insulation and more susceptibility to cold.

Aging persons also have a lowered sensitivity to a sense of cold and discomfort. The thermal regulatory system, which controls the body's response to changes in temperature, changes with normal aging, making it less effective in discriminating temperature differences. This accounts for the accidental hypothermia in older individuals.

The older diver, as a result of changes in muscular

strength and stamina, is more likely to respond less well to exertion and become fatigued more readily than a younger person. The cost of exertion and fatigue markedly increases when the diver is performing in cold water. The combination of cold and fatigue can contribute significantly to the risk of cardiac problems, particularly in the susceptible individual.

A Summary of the Situation

The older diver, then, is likely to:

- be less cold tolerant and sensitive to temperature change
- have lowered stamina, muscular strength and flexibility
- respond less effectively to exertion and experience fatigue
- require more work in breathing, owing to lowered elasticity in lung and chest tissue
- have lowered ventilation as a result of lung changes
- be more susceptible to decompression risks

The Good News: What You Can Do About It

What can we tell the 53-year-old British Sub-Aqua Club diver who railed against medical examination?

1. *Get into a proper exercise program, which includes aerobic conditioning.* For the aging diver, a good physical condition is imperative. Earlier, I noted that a physically fit 70-year-old was likely to be a much safer diver than a sedentary 30-year-old. Physiological age is more important than chronological age. In Tufts University studies, 90-year-olds improved their strength and stamina from working on a properly designed weight training program.

Proper aerobic exercise can improve aortic compliance and lessen stiffening, improving circulation from the heart. Proper exercise can improve peripheral circulation and gas exchange as well as lowered blood pressure. Proper exercise can also improve stamina, muscle strength and flexibility, and reduce susceptibility to fatigue.

2. *Know your limits.* Denial of problems and a macho approach to diving can be hazardous. Be aware of how much you can accomplish without undue exertion and fatigue and pace yourself accordingly.

3. *Avoid cold water* — or at least prepare properly for it. “Silent” or “progressive” hypothermia is common in diving, where heat loss can occur without the diver’s awareness, especially in the older diver whose thermoregulatory system is less effective.

If you dive in cold waters, be sure to have the ultimate in protective equipment. (Be aware that exposed facial areas are susceptible to cold and that 50 percent of body heat loss is through the head.) Avoid undue exertion and fatigue. Have a thorough physical evaluation by a physician to explore potential problems of a cardiovascular or pulmonary nature, in particular.

4. *Be careful with decompression diving.* Decompression dives may pose an increased risk for older divers, in view of the vascular changes we have discussed earlier. Plan well, don’t overdo it, be cautious in repetitive and deep diving, regardless of whether they involve decompression.

5. *Watch your diet.* Recent studies show that severe caloric restriction enhances longevity, but none of us is likely to engage in the intake recommended. Nevertheless, sensible intake is crucial. A diver’s seven-course meal of a six-pack and a hamburger is less than optimal. Maintaining lower weight helps with coping with exertion, improves stamina and flexibility, reduces cardiovascular risk and improves respiration and ventilation. Besides, you look better!

6. *Do I need to belabor that smoking and diving don’t mix?*

With care and thought, the effects of normal aging should pose no serious problems to the diver. Experience over the years in diving should make for a safer diver who can continue to enjoy the beauty and excitement of the underwater world.

Arthur J. Bachrach, Ph.D., the author of this article, is a research physiologist whose work in universities and naval biomedical laboratories focussed on behavioral and physiological effects of diving. He is co-author with Dr. Glen Egstrom of *Stress and Performance in Diving*. An aging diver himself, he has retired to Taos, New Mexico where he operates a cozy, well stocked book store he’s aptly named Moby Dickens. Drop in and say hello.

Why Divers Die: Part II

This is the second of several installments of *Why Divers Die*, based on reports of the 1990 Report on Diving Accidents and Fatalities, by the Divers Alert Network (DAN) and the National Underwater Accident Data Center. We take all responsibility for editorial changes and errors.

Seventeen of the 80 certified diver fatalities in 1990 were female (21 percent), the largest number of female deaths since 1986 when there were 19. The record year for female deaths was 1978 when there were 21 female deaths of 144 total scuba fatalities.

Forty-six percent of the fatalities held basic certification or were taking their initial training. Lack of experience most likely played some role in individuals with entry level training only. Divers who complete an open water certification are not complete divers. Accidents can occur when individual or group diving skill level and ability to respond to underwater situations do not match dive conditions and the skill required to successfully complete a dive.

Thirty-eight percent of all divers had dived twenty times or less since certification; 33 percent were very experienced with a minimum of 61 dives. Fifteen of the experienced divers died of drowning, three of cardiovas-

cular disease, three of embolism, two were diving without a buddy, one trauma case, and two unknown cases.

Fatalities that occurred during pleasure dives were often the result of the individual being unable to control some aspect of the dive.

Struggling with a speared fish can add stress to the already physically challenging environment. The same can be said of task oriented diving such as collecting golf balls or retrieving lost articles. Even photography can divert a diver's attention from keeping an open airway, maintaining proper buoyancy control and monitoring air pressure and depth gauges.

Open Water Dive Scenarios

A 23-year-old man, certified for three years, lost his life in Seneca Lake in New York. He had logged about ten dives in the previous year, none deeper than 50 feet. He and his two companions had planned to dive down the steep slope of the lake to explore three sunken barges that rested in a line on the slope at depths of 30 feet, 60 feet and 90 feet, then bounce to 140 feet. At about 135 feet, the victim's regulator began to free-flow, causing panic and a rapid ascent. He suffered a massive air embolism.

The wreck of the "IDA," ten miles off Monmouth, New Jersey was the site of the death of a 49-year-old male, certified with several years of diving experience. He was in the water with six other divers at depths between 85 and 115 feet. His body was located on the surface about two hours after the start of the dive and his tanks were out of air. None of his companions was aware of any problem that might have caused him to drown.

A 35-year-old man certified as an open water diver died on the *USS San Diego*. He was found lying on the hull of the wreck at about 70 feet. Separated from his buddy, he became entangled in his ascent line and ran out of air.

A 50-year-old man died off Honduras while on his first open water dive to a wreck 100 feet deep. He signaled out-of-air and buddy-breathed to about 30 feet, then broke away and made a rapid ascent.

In the U.S. Virgin Islands, a 50-year-old man completed a 60 foot dive and returned to the boat. With the help of the captain he was taken on board and began vomiting. He collapsed and despite resuscitation efforts died of a myocardial infarction — basically a heart attack.

Another case attributed to a myocardial infarction took the life of a 56-year-old certified diver who was exploring an 80-foot deep shipwreck in Bermuda with his son as a buddy.

Training Case Scenarios

Divers under instruction accounted for nine deaths. Six were taking their initial training, while the remaining three were taking advanced level classes. Alcohol or drugs contributed to several of the deaths.

An advanced open water training night dive off California resulted in the death of a 49-year-old woman. She had completed three dives that day. On the last dive, she apparently became entangled in heavy kelp but was

rescued. Initial CPR was successful, but she died four days later.

At a reservoir in Utah, a 29-year-old woman was making a dive planned for 80 feet. The instructor allegedly lost sight of the victim and her buddy in the silt disturbed from the bottom. He found the buddy in distress and assisted him to the surface, then had to make two more dives before finding the victim on the bottom. Extensive efforts at resuscitation were unsuccessful, and the death was attributed to drowning. She had 1,500 psi remaining her tank.

The third fatality during advanced training was that of a 54-year-old man who developed distress during the ascent of his second dive off the coast of Puerto Rico. The autopsy report indicated he was intoxicated.

During 1990, six fatalities were recorded while the victims were undergoing entry level training. Two occurred in Florida and involved a 50-year-old man and a 62-year-old woman, both of whom died from a myocardial infarction.

“Separated from his buddy, he became entangled in his ascent line and ran out of air.”

A 39-year-old man drowned off Jamestown, Rhode Island. This 280 pound victim was wearing 37 pounds of weight attached with a jury-rigged suspender-type harness (under his buoyancy compensator) which could not be removed during the emergency.

A 32-year-old, 275 pound man died during his first open water dive near Nubble Light, Maine. While on the bottom in 25 feet of water and having completed an escorted bottom swim with his instructor, this victim signaled “out of air” to his student-buddy partner who assisted him with an alternative regulator part way to the surface. He then panicked and made a rapid ascent. On the surface, he stated he could not breathe and continued in a panic state until he lost consciousness and was towed to shore. Despite extensive resuscitation efforts he drowned.

A deep pond behind a dive shop in Ohio was the location of the drowning of a 35-year-old man. This victim indicated that he had only 500 psi of air just before making a descent to 35 feet. An immediate head count on the bottom discovered him missing. A recovery team located his body three hours later.

After surfacing from an uneventful fourth certification dive, a 65-year-old female complained of being tired. The instructor towed her to shore during which time she lost consciousness. The autopsy listed her cause of death as drowning.

Saving Lives

Due to the remoteness of dive locations, recreational divers often do not have immediate access to emergency

medical service. Having to use secondary roads reduces response time. Air evacuation assistance is widely available but may involve long flights. Furthermore, only U.S. Coast Guard and military helicopters have crews capable of making open ocean sea to air rescue. The U.S. Coast Guard provided search or rescue assistance in 33 percent of the certified diver fatalities in 1990. There were only nine air medical evacuations.

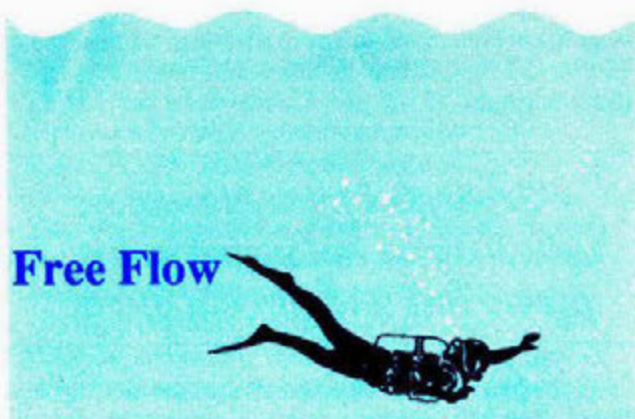
Surviving an unexpected underwater event may depend on timely and effective CPR. The shorter the non-breathing time interval, the better the chance of survival.

Effective CPR in diving accidents is hindered because the underwater event goes unnoticed or there is buddy team separation, prolonging initial rescue. Once

located, the victim must be removed from the water and placed on a hard surface capable of supporting a CPR effort. Finally, many of these individuals require a level of care found in hospital emergency departments. The diver who has had a myocardial infarction, near drowning or suffered some other serious medical condition is not likely to survive with the limited medical skill and resources available at a dive site.

The delivery of oxygen is important in the treatment of near drowning and myocardial infarction. Oxygen should be given during CPR as soon as it becomes available, but it is still not widely available for emergency use by divers.

Continued next issue



■ In an advertisement in the *Wall Street Journal*, Cayman Airlines employees claim that American Airlines is trying to put them out of business. By adding a second flight from the U.S. to Cayman and unfairly discounting tickets, they are seriously hurting Cayman Airways, which last year lost \$10 million. Cayman hotels don't see it that way. Having added more than 800 rooms in the last three years, they don't care what airlines fly to the islands, as long as they have enough seats to fill the hotels. Cayman airlines' employees say that in tough times American will pull back, but the government owned Cayman airlines will hang in. During Hurricane Gilbert in 1989, only Cayman Air continued to evacuate tourists until the last possible moment. And Cayman Air serves the Brac and Little Cayman, while American doesn't.

■ One reason sharks are disappearing from the seas is that Asians want shark fin soup. Another reason will soon be to fuel the \$3 billion world acne drug market. A British researcher has found that shark bile reduces grease production and significantly reduces acne. Within two months, 14 of 15 patients who applied shark bile extract on their face had significantly improved or altogether cleared their acne problems. Shark livers serves another end as well. It's an ingredient in Preparation H.

■ Thanks to Jacques Cousteau, Fiji now has a recompression chamber. Cousteau donated the chamber to the Fijian government. Funding for installation at the hospital in Suva as well as operating and maintenance costs are being shared by the Fijian government and dive operations. The first patient was an American diver traveling from the Solomons to Fiji who got bent during a flight. The pilot radioed Nandi while the crew administered oxygen. When the plane arrived at Nandi, an ambulance was waiting. The treatment was successful and the diver has returned home.

■ How dangerous is Jaws? Compared to Bambi, not very. In fact, an average of 130 people are killed annually by deer (most because the auto in which they were driving struck a deer), while one death is attributable to a shark. The chances of getting killed by a stingray are listed at .05. At least that's what *Men's Health* magazine reports.

A FINAL WORD OR TWO...

(1) **All-New T-Shirts.** They're 100% cotton, heavyweight and great looking. They're *Undercurrent's* all-new T-Shirts (please see the enclosed *Undercurrent* T-Shirt offer). Each spectacular design was created by artist Jennifer Nidao exclusively for *Undercurrent*. So, don't miss out! It's first-come first-serve--place your orders today.

(2) **2 New Special Reports.** If you haven't already done so, I urge you to take advantage of our special "Extension Super Saver" offer to receive ABSOLUTELY FREE our 2 brand-new Special Reports: "Why Divers Die" (value, \$24.95) and "The Bizarre and Unusual" (value, \$17.95).