undercurrent®

THE PRIVATE, EXCLUSIVE GUIDE FOR SERIOUS DIVERS

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P.O. Box 1658, Sausalito, CA 94965

Cable Address: Gooddiving

Buccaneer Inn, Cayman, Brac:

Maybe next year, maybe not.

On my April trip to Cayman Brac the liabilities and assets of writing an anonymous "tell it like it is" review for Undercurrent were indeed apparent. Hopefully, the assets will be experienced by the reader of this review, for I certainly experienced the liabilities. But "all for a cause," so the editor tells me.

Cayman Brac, about 65 miles from Grand Cayman and 2+ hours from Miami by DC-3, is a highly touted dive area, spoken of in the same terms as Bonaire and Grand Turk, and presumed by the uneducated to be superior to Grand Cayman, because it only has about 2% of the tourists of its larger sister. Diving out of the Buccaneer is also touted, due in part to trips to Little Cayman, a highly regarded diving paradise purported to be among the best anywhere--not just among the Caribbean best. So you can imagine and share my anticipation and excitement from the time I called my travel agent to the moment I slipped my regulator into my mouth and bit down on those familiar little nubs, the last signal to my body that I was ready to hit the water.

As soon as my head slipped below the surface and I began to look around, I knew I would have a pleasant dive, but not a spectacular dive. Adequate, yet not what I had hoped for. And that sums up my week. Some dives were excellent, most were good or satisfactory, and a couple were terrible. Visibility was fine, averaging 100 feet, and never dropping below 50-60. Water temperature remained a constant 80° at all depths I visited. The dives were without current. The conditions were superb.

The dive sites are on the north and south sides of the island and generally similar, although the north side has better fish life. The bottom, which is the top of a wall, and quite a nice wall at that, is 80 feet from the surface on the south side, and 50-70 feet on the north. Strands of elkhorn coral in shallower water are spectacular and perhaps the largest I've seen anywhere; massive sponges were big enough to hide a diver inside. All varieties of hard coral were apparent, and at times the bottom was so covered with gorgonia I wondered if they had been cultivated. Yet, in other places the bottom was covered with dead coral or sand, and not the least bit interesting. I discovered several large black coral trees. They cannot be taken, nor can shells. The rules are enforced.

INSIDE UNDERCURRENT

In such occasionally scenic water, I found a surprising lack of walkers and swimmers, an unexpected and major disappointment. There were the usual small tropicals, however in limited quantity, a few queen triggers and angelfish, random scorpion fish and hogfish, and very few groupers. There were many large and friendly barracudas (with such friends who needs enemies?) and large parrotfish. My most exciting encounter was with a 150 lb. black grouper, indeed a treat. But remember, this encapsulation sounds enticing, but spread over a week it was simply insufficient for my tastes.

The night dives were interesting, but four were cancelled. To me, the reasons seemed to be a function of the malady that hits many distant resorts--bad management. First, the guides spend a lot of time underwater, they become apathetic and tire of the frequency of diving. Second, there is no incentive for them to get in the water because they're salaried; they can cancel a dive for the flimsiest of reasons and still get paid. Third, once the tourists have arrived the shop has a monopoly and there is no other place the diver can take his business. Fourth, it can be policy to reduce the number of dives, and especially long trips for dives, to save gas (it is expensive!) and to reduce wear and tear on the boat. And all of these contributed, I'm sure, to my disappointment.

The Buccaneer advertises and promises at least one trip to Little Cayman. As I learned when I arrived there can be winds this time of year, forcing the cancellation of the trip, but for the first four days we had calm and glassy water which we used for diving around Cayman Brac. When at last we tired of local diving, and had our interest piqued by tales of the marvelous diving at Little Cayman, we asked head guide Jef Fox, "How about our trip to Little Cayman?" We were told that it would cost us an extra $90 for the boat trip, that they only had one boat and it was too small to take everyone, and that the water was too rough to make the trip anyway. And that was that.

So we contented ourselves with other diving. Diving off the beach was adequate for night and provided mildly interesting snorkeling behind the hotel, but was not distinguished for daytime diving. One dive in particular will always stick in my mind. After piling 18 bodies into a truck with a ten foot bed, we were led to easily the worst guided dive I've ever taken. Entry and exit was by snorkeling 20 yards, through a cut that was filled with fish guts, skin and heads, including one reef shark head, and at the end of the cut we dived down to a world of dead coral, ripped up by the anchors of thousands of boats over the years. Had I owned the Buccaneer, I'd have fired the guide.

The dive shop is not much. There are plenty of well kept tanks, packs and weights, but you must bring anything else you need. Jef Fox, and two other guides, provide good dive plans, and lead guides safely and carefully. C cards are required, and a check out dive is run the day of arrival. The 27 foot boat has a good stern entry platform and carries 12 divers comfortably. A large barge-like boat is leased by the Inn when the number of divers warrents it; it's my belief that we didn't see Little Cayman because they did not want to lease this boat.

The Inn: The accommodations were clean and comfortable, with good maid service. Expect a few cockroaches, ants and other tropical residents, but overall the conditions were more than satisfactory. There are 34 rooms, a salt water swimming pool--without circulation so the water stagnates rapidly and has to be drained far more frequently than it is--bicycles and motorcycles for rent, and

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transportation nightly to a nearby moviehouse. The beach behind the Inn is composed of jagged coral, but the snorkeling is acceptable. A sandy beach is 10 minutes away by Inn-sponsored transportation.

The food? Not bad, not bad at all, I concluded. Lunch and dinner were buffet and I found the meals tasty, with enough to go around. A departing group complained, however, that unless one was at the head of the line, the meals were inadequate; it is true that once the food set out is gone, there is nothing left in the kitchen. A meat and a fish dish are usually served at dinner, but recognize that you're not going to be in Betty Crocker's kitchen; one steer they served up had certainly died of old age after a rousing rodeo career. Nevertheless, I still rate the cuisine 7 out of 10 compared to similar resorts.

The dining room has a small bar. The beach bar is a small, open-sided building with a thatched roof. It has plenty of potential, but the grounds are littered with broken bottles, soft drink cans and assorted trash. The locals who come to drink away the hours jam their cars around the building. As you sit in the tropical darkness, sipping a cold Heinekens ($1), listening to the warm wind ripple the palms and warm your soul, the spell is broken by a ratty Chevy pulling in, engine revving, headlights blinding, and parking in front of you to spoil the view. Angered by the intrusion into your romantic evening, you pay the tab (cash is required for all bar tabs--no room charges) and leave for the hotel bar, only to cut your foot on the mounds of broken glass. Had I been taken to Little Cayman for a few days, I might have been sufficiently mesmerized by the memories of great diving to overlook the slums of the beach bar. As it was, the beach bar is one more reason not to return.

Getting There: I flew Red Carpet Airlines as part of a $419, 8 day, hotel, air fare, 2 dives/day package. Red Carpet, out of St. Petersburg, enforced a 44 lb. limit for baggage. Paying the additional 27¢/lb. was not the problem. If the plane is overloaded, and it frequently is when divers are flying, the overage must be sent out on a freight plane the following day--if one runs the following day. My overage did arrive the next day, but imagine being on the island without all your gear. By the way, I have since learned that Cayman Airways, also flying DC-3's, does not enforce the baggage limit.

Would I return? No! Definately not just to dive Cayman Brac. However, the Buccaneer expects to be getting a new 40 foot craft soon and then they say they'll be diving Little Cayman several days out of the week. If so, I would try again. The boat has been due for some time, but by mid-July it had not yet arrived. If it does, I'll reconsider. But I won't go without verifying that the craft has arrived. Almost every Caribbean resort I've been to is expecting a new boat; sometimes it arrives, sometimes it had never even been ordered. Without a new boat at the Buccaneer and more firm guarantees that I'll be diving Little Cayman better than half the time, they won't be seeing me again.

Buoyancy Control, the Weight Belt And Emergency Procedures: *A symposium.*

There are a number of significant issues in diving which by no means enjoy common agreement and the following article represents a clear example. Lou Fead, a NAUI instructor, organizer of the forthcoming IQ9 and author of Easy Diver, *presents his case for reduced attention to jettisoning the weight belt as part of the emergency ascent procedure. He suggests that the technique is not properly used, and presents evidence that it may not be effective in all circumstances.*

We sent Fead's article to a number of prominent people in the training agencies and are publishing edited versions of their responses. We think each dialogue is important to understanding training, and understanding our own behavior as divers, and may save some lives. If you approve of the format, let us hear from you.

Saving Your Own Life:

Is dropping your weight belt the right response?

Divers' weights, whether on a belt or in a pack, are designed to counteract the excessive positive buoyancy of a diver, his tank and wetsuit. Weights permit him to attain neutral buoyancy for easy diving. Some divers, particularly photographers or researchers, use extra weight to offset surge or currents for more stability on the bottom. Some divers use less weight to compensate for wetsuit compression on a deep dive. Weights are designed to allow a diver to adjust his buoyancy. They are not worn to be available to a diver for jettisoning in an emergency.

Some divers who are trained with weights may later dive without them. This may be true of a diver trained with a wetsuit and weights who, on a tropical vacation, finds he does not need a wetsuit and can achieve neutral buoyancy without weights. If this diver has been trained to rely on dropping his weight belt to bail out of an emergency, he will find himself without the training for an emergency ascent when he reaches for his non-existent belt buckle.

How Divers Use Weights

Even those divers who wear weights on every dive cannot count on them as emergency devices. A recent survey has shown that weight belts often rotate during a dive so that the buckle is no longer readily accessible to the diver, or his buddy[1].

Divers may trap their weight belts on their bodies with tanks, crotch straps, and leg knives, so that if released, the weights would still remain with them. Others may not recognize that releasing a weight belt buckle is insufficient action for attaining positive buoyancy. The belt must not only be released, but dropped and cleared of the body as well to rid the diver of its weight. It's a two-handed job.

Furthermore, some divers trained in B.C.'s who switch to integrated back-buoyancy systems have not learned how much weight they need to jettison, much less how to jettison it.

McAniff & Schene's analysis of diving fatalities revealed that most divers who die (80-90%) had not dropped their weights to save themselves[2]. Of those who had, most had been dropped by buddies or rescuers. Once a diver believes he's in serious trouble, logic is replaced by panic–unreasoning action based on fear. Dropping weights may float the victim to the surface for air, and a diver without weights may be more comfortable by either floating higher or by having the restriction to breathing removed from around his waist. Nevertheless, the panicked diver tends only to recognize the need for relief, not the *means* for getting it.

Another survey shows that of 717 diver rescues conducted by the San Diego City Lifeguard Service from January 1, 1971, through June 30, 1975, only 12 weight belts had been dropped prior to the lifeguard arriving on the scene[3].

The San Diego Council of Diving Clubs offers a free weight belt to any diver who had to drop his to save himself. The Council suspects that many divers don't drop their belts because it will cost them to replace it, so this program offers free replacement to encourage divers to save themselves. In two years of the program, no San Diego diver has requested a belt, although the program is well advertised. Some divers may not wish to admit it, but the data does suggest that divers in emergencies *don't* drop belts.

Effect of Dropping Weights

Divers in serious situations don't drop their weights. In many situations panic probably prevents the action. Yet many divers who don't panic *decide not* to drop their weights. One reason is their ego: they're embarassed by having to confess they got in trouble. Another reason is that many believe that dropping weights when submerged may send them shooting to the surface in a cloud of bubbles and ruptured lungs. It doesn't happen that way.

In open-ocean experiments, 16 instructor candi-

AN ENGINEERING BULLETIN FROM SCUBAPRO

During recent testing of the Mark VII and Pilot Mark VII regulators, two potential problems with the audio alarm system were brought to light.

The first potential problem is brought about by attaching more than one low pressure hose to the audio port. If more than one low pressure hose is attached, the added air volume of the additional hoses may cause the audio alarm to not function properly.

The second potential problem concerns the use of air moisturizers for the audio port. When air moisturizers are used on the low pressure hose from the audio port, they also provide additional air volume which affects the function of the audio alarm.

To avoid both of these potential problems, do not attach any accessories or more than one second stage regulator to the audio port of the Mark VII or Pilot Mark VII regulators.

Correspondents located strategically in the major diving areas of the world as well as on all coasts and major inland waters of the continental United States.

The editors welcome comments, suggestions and manuscripts from the readers of *Undercurrent*.

TABLE I

Depth Weight For Neutral		Ascents to Surface			
		Drop Weights Only		Kick Twice Only*	
(Feet seawater)	(pounds)	Time (sec)	Av Rate (ft/sec)	Time (sec)	Av Rate (ft/sec)
0	15	–	–	–	–
16.5	12	6	2.75	–	–
33	9	13	2.54	16	2.06
66	3	69	0.96	78	0.85
99	2	–	–	–	–

*With BC inflated to neutral buoyancy and weight belt retained.

dates, naturally buoyant at the surface, ditched their weights at 30 feet, relaxed and floated to the surface[4]. The average ascent time was 20 seconds, just half again as fast as the maximum proper ascent rate–60 feet/minute.

A more recent examination open-ocean of the weight belt effect on a wetsuited scuba diver confirms that dropping does not result in a headlong rush to the surface (Table I). The test was made to quantify buoyancy and ascent effects of weight and depth.

Comparison of figures in the column entitled "Weight for Neutral" shows how much flotation the diver's ¼" Farmer John, Nylon II, hood attached wetsuit lost on descent. It was measured while wearing a single-70 tank deflated vest, and a weight belt weighted for neutrality at the surface. Neutrality was achieved on the surface when breathing from the regulator; the diver floated with his eyes alightly above the water's surface. Diving to the stated depth, the diver removed excess weights to re-achieve neutrality in which full lungs caused him to ascend and empty lungs caused him to descend. (The little weight needed at 66 feet and deeper shows that dropping a 15-pound weight belt does not necessarily make a diver 15 pounds more buoyant. In fact, the change in buoyancy when losing a weight belt in 70 feet of water could go almost unnoticed.)

Ascents were made from typical diving depths of 33 and 66 feet. The first ascent, labeled "Drop weights only," had the diver drop his weights, without being neutralized first. He relaxed, breathed normally, and ascended with no other effort to reach the surface. An unconscious diver would be rescued in a similar manner. The ascents started slowly and gained speed as the wetsuit expanded to resume its uncompressed buoyancy. Note that the rate of ascent after jettisoning weights is much greater in shallow water than in deep.

The second ascent, "Kick twice only," had the diver adjust his vest buoyancy to achieve neutrality at depth, then push off the bottom and make two strong kicks. After that he relaxed and breathed normally for the remainder of the ascent.

Without some strong kick, just pushing off the bottom did not result in an ascent. The "Kick" ascent is equivalent to a neutralized diver's heading toward the surface to let the air in his vest expand for additional lift. This technique is recommended for normal ascents. It can, with some venting of excess vest air near the surface, control an ascent at 60 feet per minute quite handily.

In Review

It's apparent that weight dropping is not frequently used by divers as an emergency action in time of stress, regardless of the depth of the dive.

Second, at depths up to 60-70 feet, a dropped weight belt on a diver who is *neutrally* buoyant would provide sufficient lift to get the diver to the surface with no expended energy, but the speed of ascent might not be sufficient to satisfy the emergency.

And, if a diver at a greater depth is not neutrally buoyant, his dropping a weight belt may not lead to his ascent. The greater the depth, the greater the validity of the statement.

At depths below 60-70 feet, a neutrally buoyant diver can ascend quickly if necessary by dropping weights and kicking up. Our experiment yielded an ascent time of 20 seconds for a 66-foot ascent.

Conclusion

Dropping weights is not the proper reflex action in diving emergencies. Dropping weights cannot solve all problems. Dropping weights *cannot* be counted upon to save lives.

The solution in emergencies is the too often stated but all too true *thinking and acting.* In fact, the thinking begins with dive planning so equipment is well maintained and does not fail, so the diver does not run out of air, and so he does not need sudden positive buoyancy. Dropping weights, which is not *the* solution, only makes a diver lighter.

Essentially, safe divers avoid the need for sudden buoyancy. Practice of the following techniques of buoyancy control can help avoid the need for sudden buoyancy.

1. Weight yourself to be neutrally buoyant at the end of your dive, in the shallowest water you intend to explore. You will be a few pounds heavier when starting your dive, but you can offset that by adding a little air to your B.C.

2. If positive buoyancy is needed during a dive, you can:

a. Breathe with *fuller* lungs. A typical diver's

Author Lou Fead, a part time NAUI instructor at San Diego's Diving Locker, has published in most diving related periodicals. His new book, *Easy Diver,* a light hearted yet serious general text on diving, is available from Deep Star Publications, P.O. Box 1266, Crestline, CA 92325.

FOOTNOTES

1 Hardy, Jon and Jeanne Bear Sleeper, "The Last Ditch Attempt–Weight Systems," *Proceedings of the Eighth International Conference on Underwater Education,* Nov4-7, 1976, NAUI, Colton, California

2 Schenck, Hilbert V. and John J. McAniff, *United States Underwater Fatality Statistics–1973,* NOAA Grant No. 4-3-158-31, University of Rhode Island, May, 1975.

3 Bruton, Al and Lou Fead, "The Lifeguard's Headache," *Proceedings of the Seventh International Conference on Underwater Education,* Sep 26-28, 1975, NAUI, Colton, California.

4 Graver, Dennis K., "In Support of Emergency Ascent Training," *Addendum to Proceedings of the Eighth International Conference on Underwater Education,* Nov 4-7, 1976, NAUI, Colton, California.

lungs can provide up to eight pounds of buoyancy, but normal breathing provides about half. Fuller breaths can add buoyancy.

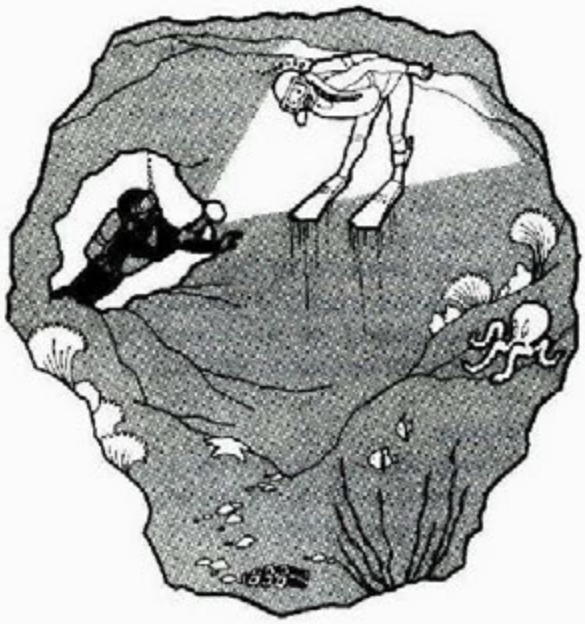
b. Kick up. The closer you are to the surface, the greater your buoyancy changes as you ascend. A normal kick provides about 15 pounds of thrust, the same as dropping 15 pounds of weight, but kicking is tiring.

c. Inflate your B.C. to gain controllable flotation, and vent the excess air to slow your ascent.

d. Drop your weights. It's a last ditch effort which does not normally allow reversal of the action (you can't regain the weight) and you will ascend sooner or later.

If you can't think of anything else to do and you are indeed in an emergency, drop your weights.

But if you are going to rely on dropping weights for solving emergencies, stay out of caves, kelp, wrecks—and don't ice dive. In those situations, dropping your belt can pin you against the ceiling forever.



Reaction to the article follows:

Jean Gregor,
Nautic International

Lou Fead implies that many diving instructors preach, and most divers believe, that every diving emergency can be handled simply by dropping your weight belt, nothing else.

I doubt that's what most instructors teach. I know it isn't what Nautic instructors have been trained to teach.

Nautic trains divers in a variety of techniques, including use of a buoyancy control system throughout every dive, to avoid fatigue, make diving easy and prevent emergencies. Prevention is the best solution for all emergencies.

But as long as people and equipment aren't perfect, responsible diving instruction must include effective training to handle life-threatening situations if they do occur.

Dropping weights is still a valid part of diver emergency training.

Nautic trains divers to drop their weights in two situations:

1. When they need additional buoyancy on the surface because their buoyancy system is not providing enough lift to allow them to rest and breathe comfortably.

2. As one step in a safe emergency ascent procedure when in the "out of air and no trained buddy on hand" situation underwater.

All of the data showing that divers fail to drop their weights suggests training problems, *not proof that dropping the weights wouldn't have helped if it had been done successfully.*

Nautic believes that inadequate open water training prior to certification is the cause of most diving emergencies and most of the failures to drop weights effectively when an emergency does occur.

We wonder how many of the people who didn't drop their weights had ever actually practiced dropping their weights in open water prior to certification, not just once, but several times until they could do it easily, quickly, reliably.

With regard to the effect of dropping weights underwater, I was especially bothered by Mr. Fead's statement: "The little weight needed at 66 feet and deeper shows that dropping a 15-pound weight belt does not necessarily make a diver 15 pounds more buoyant. In fact, a change in buoyancy when losing a weight belt in 70 feet of water could almost go unnoticed. The implication is that in this situation it would do little good for a diver to drop his weights. That simply isn't true.

It's most important to understand that Fead's argument hinges on a person diving neutrally buoyant, and that often is not the case. Unfortunately, many divers are certified without understanding or mastering buoyancy compensation. Furthermore, a diver in trouble may find himself sinking while he's trying to help himself. When buoyancy is not neutralized, the deeper one goes, the more vital it is to drop weights in an "out of air and alone" situation. Divers must be trained to act in emergencies without presuming their natural buoyancy will assist them.

In Fead's example and using his figures, when a diver wearing a 15-pound belt arrives at 66 feet without neutralizing buoyancy, if his suit retains only three pounds of positive buoyancy, the result is that the diver is *12 pounds negatively buoyant,* 12 pounds of weight tending to hold him on the bottom.

A diver who is out of air and alone, and tries to kick up against this 12 pounds of negative buoyancy will find it extremely difficult if not impossible. Retaining the weights greatly increases the risk of not making it to the surface and drowning, and because of the strain, also increases the possibility of breath-holding, lung overexpansion and embolism.

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It is true that releasing the weights will only provide slight positive buoyancy on the bottom. But three pounds of positive is a *lot* better than 12 pounds of negative when one has to kick to the surface.

Nautic looks forward to the day when buoyancy control training and equipment has evolved to the point that no diver ever needs to abandon weights to solve a problem. Until then, we believe it is a valid and central part of open water emergency training.

Robert W. Smith, National Director
YMCA Center for Underwater Activities

I concur that the advent of highly sophisticated buoyancy compensators calls for serious reconsideration of the old adage, "drop your weights in an emergency." The validity of Fead's position relates primarily to the submerged diver. He does not give adequate attention to the fact that many if not most scuba diving accidents occur or at least terminate on the surface. In most of these situations, dropping the weight belt may not be absolutely necessary for total buoyancy control, but it certainly does not hurt.

The correctly reported finding that weight dropping is historically and practically not used as an emergency action does not invalidate dropping the belt; it simply reflects the sad fact that the emergency procedure is not used. In fact, the same statistics which Fead reports indicate that many dead divers have failed to drop their weights and inflate their buoyancy compensators. This fact does not make either weight dropping or vest inflation an invalid emergency procedure. It simply means we still have a training problem.

I applaud Fred's article to the extent that it will motivate instructors in training agencies once again to reconsider the complex problems of precise buoyancy control in diving emergencies. I agree that "drop your weight belt" is only part of the story in a diving emergency, but I hope that Fred's article will not encourage a single diver to omit this emergency procedure when positive buoyancy becomes a matter of life or death.

John Gaffney
Executive Director, NASDS

So what else is new? In 1975 the goals of the NASDS Store Owners only clinic was to eliminate buddy breathing and eliminate the weight belt as an emergency device.

Jon Hardy, General Manager, NAUI

I believe Lou Fead's article is beautifully done and applaud your publication of it. I look forward to the discussion after it is published.

In our review of accidents, we found that no diver who lost his life had been able successfully to ditch his weights. Some had tried, but were unsuccessful in all accidents which resulted in fatalities. On the other hand, in the "near miss" category, a large number of divers did ditch their weights successfully. Additionally, all rescuers found it necessary to ditch the diver's weights.

I don't think that Lou has rejected the concept of ditching weights, just that he has put it in proper perspective. I am still a proponent of teaching total buoyancy control and that includes both the use of an inflatable device and weight removal.

Bill Bernard and Ed Brawley
Professional Diving Instructor College

Diver training can't be reduced to a matter of dropping weight belts. It's a larger issue. What disturbs us about Fead's article is his statement that *thinking* is the answer to diving emergencies. As Fead himself points out, the typical reaction to a diving emergency is panic and a panicked diver can't think.

Consider the article by Dr. Irvin Kraft in the May issue of *Undercurrent*. In "Panic as the Primary Cause of Diving Deaths" Kraft explains that a large percentage of diving fatalities are a direct result of panic. He shows that an anxious, frightened diver in an uncomfortable situation will react with a set of perfectly natural physical responses that most people recognize as panic. Kraft states that a panicked diver "loses control over his thinking."

For Fead to suggest that divers should think their way out of an emergency is dangerously misleading. A person in panic cannot be expected to think. It's impossible for him to do so.

Consider a typical emergency, below 60 feet. The diver's air stops. His buddy is not in sight. He doesn't have any training experience to help him out of the problem, so he follows an instinctive process as old as humankind—when underwater, hold your breath and head for the surface. With compressed air, this programmed reaction will kill, not save him.

Kraft explains that this type of response can be avoided by adequate training. If divers were able actually to experience simulated emergency situations during training and acquire habits to deal with them,

the number of divers dying or being badly frightened would decrease. Training techniques are being employed by a growing number of diving instructors. More and more people in sport diving are aware that *habits* acquired in emergency training, not thinking, are the answer to diving emergencies. Dropping weights is one in a series of acquired habits that will help a person to make a smooth emergency ascent.

Dropping weights is also critical because a person may pass out on the way to the surface. If he's still wearing his weights, he can sink and drown. Divers who drop their weights but pass out in the ascent may wake up on the surface. Furthermore, divers who panic and power their way to the surface still carrying their weights often arrive frightened and exhausted; the extra weight can be enough to pull them back down into the water.

Fead accurately states that most divers who die do not drop their weights. This is a clear indication of the inadequacy of most dive instruction. There is no reason why students can't experience emergency situations in training and acquire habits to save their lives. When a diver dies wearing his weight belt and an uninflated vest, it tells us he was certified without learning how to dive safely.

Search and Recovery:

Going down at the drop . . .

When John Dean testified that he was told by John Erlichman to "deep six" a briefcase filled with electronic equipment, few people had any doubt about what he had been ordered to do. Disposing of incriminating evidence by dropping it into the local river or bay is so much a part of the national concept of crime that its lingo is familiar to us all.

The trouble is that the action comes not only from the imaginations of movie and television writers. Evidence connected to all sorts of real crimes is left to disappear beneath the surface. When that occurs, or is suspected, investigators must have the facility to work under water, and to that end law enforcement agencies throughout the country have organized their own scuba teams.

To be sure, the divers are not the only people used in criminal investigations, nor are police the only officials involved. Fire department and Coast Guard units, as well as the police, are called to assist in a variety of boating and swimming accidents and emergencies. Fire departments require scuba-equipped fire fighters to combat certain types of fires. In the event of a dock fire, for example, divers can man hoses from beneath a dock where there is not enough room for boats. Police and fire units often carry out public water safety programs, and dive teams may even be employed to perform minor maintenance on the department's surface craft, or to inspect bridges or other structures.

Glamourous or Grim?

But the primary mission of police and fire department scuba teams remains search and recover, and, when possible, rescue. Consider some typical situations: a stolen safe has been emptied and discarded in a lake; a gun used in a robbery has been tossed off a bridge; a stolen car has been driven off a pier; or a drunken owner may have unwittingly driven himself off the pier; a ship entering a port city is suspected of carrying drugs fastened to the underside of its hull; or, grizzliest of all, a murder or accident victim is believed to be somewhere in murky waters off shore.

Diving in these or other situations for search, rescue and recovery may sound exciting, but to those who must face it regularly, it is viewed with far less romance. Jim Kennon, undersheriff in Glen County, California, and dive master of the scuba team, says he considers the diving to be "serious and dangerous business." Henry Burnevich, a member of the Suffolk County Police Diving Unit on New York's Long Island, feels much the same. He told us that his police work was like "diving in a cesspool" and had little to do with the clear waters and reefs of Carribean vacation spots. Chief Bill Bassett, Coordinator of the San Francisco Fire Department's Water Rescue Team, speaks chillingly of groping in dark waters for the body of a young drowning victim. "In a way," he says, "you hope you won't find it."

Just as those of us who dive for sport find that each dive is different, these working divers find that each assignment can present new problems. Waters in many parts of the country are cold—in fact frigid. Currents can be severe. Since they are diving in heavily populated and commercial areas, scuba squads often find themselves working in the midst of shipping lanes, or are confronted with pilings, cables and other underwater obstacles. But the most consistent problem is visibility. Pollution and silt can reduce visibility to no more than a foot or two, and some divers told us that it can be so dark when they go down that they cannot even see the glass of their own masks. Under such conditions, it is not only hard to work, but navigation, ascent and descent become nearly impossible to judge.

It is not surprising, therefore, that team leaders pay careful attention to safety. Unless there is an emergency and a life is at stake, the teams will take whatever steps they can to protect themselves and their equipment. They often will not dive at night, and will always dive in pairs, normally with other team members keeping watch on the surface. Training also emphasizes familiarity with the conditions that will be faced and the work that will be performed. Teams drill regularly with their face masks blackened to accustom them-

selves to visibility and firefighters practice operations with hoses and other equipment as often as they can.

A Human Drag Chain

There is, then, a serious conflict between the scuba units' most frequent task—search—and their most consistent problem, visibility. Lights are seldom helpful, and the many obstructions often make useless sonar, chains or other standard search equipment. Selecting the appropriate search pattern, then exercising great care in execution becomes critical. Jackstay lines may be drawn to define a rectangular search area. Concentric circles may be searched around an anchor point. Or, when enough divers are available, they may simply line up abreast of one another and move across the bottom like a human drag chain. But the fact remains that whatever pattern is used, the divers are not likely to see what they are searching for. Their hands become their eyes, and the search might better be described as a group grope.

Jim Kennon of the Glen County sheriff's team is a firm believer in the importance of the search pattern. He has logged every dive the team has made since 1963, and from this has developed different approaches to searches in different situations: lakes, rivers, canals or what have you. Despite all the difficulties Kennon says: "If we know where the subject of our search entered the water, we can find it."

FAREWELL TO FARALLON INDUSTRIES

On July 22, the owners of Farallon Industries signed the papers required to end their role in the diving industry. During the next several months Farallon products will slowly be phased out of the market and replaced with gear from Oceanic. Bob Hollis and associates—the crew at Oceanic products—are now the owners of Farallon—the name, products, plant and whatever goes with it.

For some time industry insiders have known of Farallon's financial difficulty, just as they have known that Oceanic has been interested in becoming a full-line manufacturer. Some expected them to bring out their own gear in an already crowded market, but as Wes Williams, Oceanic's vice president for marketing told *Undercurrent*: "This looked like a natural extension for us so with Farallon's good name it opened up possibilities we'd been exploring." It should be good for the industry, too.

It should come as no surprise that most police and fire department scuba units are the brainchildren of divers rather than department authorities or civic officials. Divers, after all, are most aware of the service they provide their communities where underwater work is concerned. It is unfortunate, though, that despite their demonstrated value they receive so little financial and organizational support. The teams are set up differently in different areas, but some facts are common to most of them. The members are, of course, certified divers; they are also volunteers. Generally, they provide their own equipment and train on their own time. Their department may have facilities to provide air at no cost, and some have money to replace equipment that is damaged on assignment. But that's about it. By and large, techniques are devised and and training methods are developed by the teams themselves. Divers from neighboring units may get together to share experiences and ideas, but there is no centralized clearinghouse for such information.

Why There's Not Enough Money

While the divers we spoke with all agreed that more support would be beneficial, they also seemed to understand why it is not forthcoming. Police and fire departments, like all public agencies, must husband limited financial resources. Underwater units can provide unique and valuable service, but in many areas the calls for that service are not frequent enough to justify more than minimal expenditure of public funds. Such decisions are likely the result of valid assessments of local priorities, and the divers accept them. They figure, in part, that since diving is also their hobby, they have their own equipment anyway. Still, it seems that much more could be done for the teams, particularly in regard to information for training and safety, at relatively little cost.

If you are interested in learning more about, or even participating with, the scuba units in your area, get in touch with your local fire or police department, sheriff's office or state police. As a rule, the teams in metropolitan areas consist only of active members of the police or fire department who are also sport divers. The forces are large enough that an adequate number of their own men are divers. They, of course, are thoroughly trained in police or fire and rescue work (in police investigations this can be important to protect the chain of evidence) and the department has fewer insurance problems when the team is made up of its own personnel. However, in less urbanized areas, public officers are often assisted by citizen volunteers, and in some cases the dive squad is made up entirely of volunteers from all walks of life.

Keep in mind, too, that if you do volunteer your services in this way, you may be able to take tax deductions for your time and equipment. See *Undercurrent*, May, 1977.

And, if you find that there is no scuba team working with the police or fire department in your area at all, you may want to get one started. Discuss it with

local public safety officials. Talk to other divers in your community. If money is needed, you may be able to get it from your city council or county supervisors. Or, you may be able to raise it yourself. The Sonoma County Divers in California, for example, are holding a water rescue workshop this fall to raise money for the county sheriff's dive team.

Who knows? If someone had organized a search and recovery team in that "dusty delta town," we might all know what Billy Joe McCallister threw off the Talahachee Bridge, and we'd never have had to suffer the countless repetitions of Bobbi Gentry's riddle.

Note:

PADI has recently announced a new certification rating for "Rescue Diver." Training includes first aid for diving maladies and marine injuries, emergency procedures, rescue equipment, panic syndrome, rescue entries and approaches, missing diver procedures and more. You may find the name of the instructor nearest you by writing PADI, 2064 North Bust St., Santa Ana, CA 92706.

OSHA's Last Stand:

Sport diving slips from the grasp of government.

Our favorite friend in Washington (as loveable as the gigantic eel in *The Deep*), the Occupational Health and Safety Administration, put the force of law into safety standards for commercial diving on Friday, July 22. Sport diving came out a winner.

In the July, 1976 issue of *Undercurrent* we reported on the battle and how temporary regulations requiring expensive and cumbersome safety procedures for employers of people using scuba on the job (such as dive shops employing instructors) had been halted by court action. In the ensuing months the commercial dive industry and sport diving leaders struggled valiently against the government and its chief ally, labor unions, to avert imposition of the regulations. The unions were concerned with the safety of divers, but were also using the issue to organize the industry. Evidence surfaced suggesting commercial divers would indeed benefit from enforced safety standards, but none produced data showing the need for standards in the sport industry. Still, sport diving remained under the scope of the regulations.

If adopted, the OSHA proposal would have required that any person or business employing scuba divers be subject to strict federal safety standards. For example, a two-way communications system to summon emergency aid would have to be available at any place where training is undertaken; a resuscitator and trained operator would have to be present at all times. Such requirements would have forced small shops out of business and perhaps even would have closed down a training agency or two. But the issue, said OSHA, was not the economics or politics of the dive industry, but employee safety. So the dive industry served up data showing that no instructor had been killed on the job in the 1970's. "Interesting," sniffed OSHA, "but it's not enough."

Indeed, the issue was deeper than employee safety. Unions were out to organize commercial divers (they had some interest in organizing sport diving but did not push it) and unless standards without loopholes could be created for commercial diving, they were willing to let sport diving suffer. Moreover, OSHA, which had been pummeled in the press during the last couple of years for regulating the little guy and forgetting the big guy, was afraid to exclude sport divers for fear that the oil barons or the open ocean would slip through the loophole as well. So a law aimed at commercial divers in the depths of the frigid and turbid North Sea would pick up sport diving along the way because of bureaucratic bafflement only understood by students of Parkinson's Law and the Peter Principle.

Well, to make a long story short, sport diving was saved from the jaws of the Potomac moray and several people deserve credit: Jon Hardy, Lee Somers, Jay Wenzel and Art Bachrach to name but a few. But for our money the real stroke developed in a clandestine hallway meeting between Glen Egstrom, Professor Emeritis of Sport Diving, and Ralph Shamlian, President of Tekna. Shamlian said that there they hit upon the notion that commercial divers nearly always work under conditions that require decompression, while sport divers seldom do. Other attempts to distinguish between sport diving and commercial diving had been unacceptable either to the government or the unions, but this distinction might work.

Back in the smoke-filled rooms the argument did work, however slowly, and later forceful presentations by Glen Egstrom saved the day. The July 22 regulations exclude employers and employees using scuba gear for *instruction* who do not exceed no-decompression limits. "Instruction" is a key word. Scuba diving for a commercial rather than instructional purpose is covered by the standards regardless of whether no-decompression limits are observed.

To some the regulations may not be perfect, but anyone who understands administrative politics recognizes the clear victory for sport diving. The university community, however, may have troubles. So far as we can tell, the regulations will apply to university or other research teams engaged in any scientific work other than human factor studies regardless of whether decompression is employed. Shamlian noted that no

oceanographers, marine biologists, or related scientists were active in lobbying for their cases, and without advocates their cause suffered. An OSHA memo states that the record does not adequately support a conclusion that the work conditions and risk exposure of scientific divers differ measurably from those of commercial divers. "They are covered generally . . . [unless] such operations involve research and development of related scientific activities requiring human subjects and receive HEW grants or control." This could mean that once the costs are determined, many universities may have to eliminate underwater research programs employing faculty or graduate students.

Another Problem

The safety problem in training is not the safety of the instructor so there is no need for regulation by OSHA. But that's not to say the industry is without its safety problems.

Too many students die in training and too many die on their first few unsupervised dives. (See *Undercurrent*, July, 1976, "Why Divers Die") Training safety procedures need to be improved and people who are not physically fit for training should not be enrolled in a class. This spring, for example, a student in basic certification who was "very overweight" and had been diagnosed as having a hypersensitive heart condition became exhausted in a checkout dive in Lake Tahoe and died of a heart attack. He should not have been allowed to take scuba lessons at all.

Because it is the ultimate responsibility of the individual instructor to admit students and then ensure their safety, training agencies are working hard to better manage their instructors. Diving instruction will never be without accidents. But the record can be improved. Divers who are not ready to dive in open water without a guide or an instructor present should not be certified. The instructor who boasts: "None of my students ever fail to get certified" may be more a part of the problem than the solution.

Undercurrent Subscriber's Contest #1:

Are there limerick lovers among us?

Undercurrent, being the somber publication it is, needs a little humor, we determined while at 250 feet with a tank of nitrogen on our backs. So, as we giggled our way to the surface, it occurred to us that the readers are ripe for a contest of some sort. In fact, why not continuing contests?

Enter the Occasional Undercurrent Contest, to test the great wit and intellect of our readers. We will reward the winner well.

From time to time we'll run a contest in which subscribers can participate. Whoever wins will receive $50 in equipment from his local dive shop. The runner-up will receive $25 and for however many honorable mentions we award, we'll extend subscriptions for a year.

You can submit as many entries as you wish, but be sure to include your name, address and the name and address of the shop of your choice. We'll send your cash directly to the shop.

Contest #1

A classic form of verse, the limerick goes back to the 17th century. Today, most limericks we hear are a bit smutty, often relying on the double entendre for effect. The sexism of the 17th century is prevalent in today's limericks, so at the risk of being labeled "sexist" (it's really no risk because we will definitely get letters), consider this contemporary limerick which has roots both in 17th century classic verse and 20th century bumper sticker-ese:

When asked if she'd ever gone down
She gave the instructor a frown
So he gave her a lesson
She found it a blessin'
And now she goes down and won't drown.

Yet limericks don't have to be ribald to be witty, particularly if a fine three-word rhyme can be employed in the last line:

Diver Jack always toted a spear
And 78 pounds of new gear
He was so overloaded
When his tank exploded
His gear flew from here to the pier.

Some might offer a subtle lesson to the reader, while using humor as the vehicle:

Should you ever dive with no vest?
Consider Mary, who thought she knew best
Waves hid her from sight
She treaded all night
And became Davy Jones' latest guest.

And then, one might use the limerick to poke fun at friends or the famous, at least the relatively famous:

U.S. Divers is headed by Cronin
Scubapro's run by Dick Bonin
Since they dive on the job
Don't commiserate or sob
When their profits are low and they're moanin'.

Or, one more for the famous:

The fuzzy-faced premier of Cuba
Went diving last year off Aruba
But he got in a fix
An unfortunate mix
Of cigar smoke clogged in his scuba.

Now if our readers can't perform better than our writers, our contest will be in deep trouble. Let us hear from you by **Sept. 20.** Send as many limericks as you wish. It's all for a good cause: your dive bag and your dive shop's cash register. Send to Undercurrent, PO box 1658, Sausalito, CA 94965. Only subscribers and their extended families may enter. One prize per person and there *is* a limit to the nastiness we'll print.