undercurrent®
THE PRIVATE, EXCLUSIVE GUIDE FOR SERIOUS DIVERS

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The Ultimate Underwater Wilderness

The Red Sea Part II

Water as clear as the smogless air. The best diving in less than 60 feet of water. Myriad marine life. Reefs within a stone's throw from the shore. Why, the Red Sea at Sharm-el-Shiekh must be a novice's delight.

Hardly.

In fact, the Red Sea is for people who have quite a few dives under their belts. It is no place for the faint-hearted. On several dives I sighted sharks. On one dive I took 24 shark pictures in 20 minutes. At Ras Muhammad, 110 feet down, at the so-called "shark observatory," sharks visit with the frequency of in-laws. Simply find a comfortable spot, relax (if the current isn't too strong), and wait. Soon the sharks--mainly white-tips and reef sharks, but occasionally a hammerhead or a tiger shark--will cruise in--close enough, if you're lucky, for you to get fine shots with a 35-mm. lens. I also photographed an odd-looking animal, perhaps a carpet shark, which I'm still trying to identify.

But one need not drop to 110 feet to view sharks. In a small cave in 15 feet of water my buddy and I inadvertently trapped a 5-foot shark, who permitted us a few pictures before he became excited and forced on us a backwards retreat. Obviously, any of these creatures must be shown the best of respect, which means no harassment and no cornering.

Remember the much-publicized sleeping sharks of the Yucatan Peninsula, discovered a few years ago by marine biologist Eugenie Clark? Sleeping sharks can just as well be found in the Red Sea, especially off Shark Point at Ras Um Sid. And on one dive at Ras Muhammed I found a pregnant shark under table coral. I presume the lady was pregnant -- but the lump was about exactly the size of a small diver.

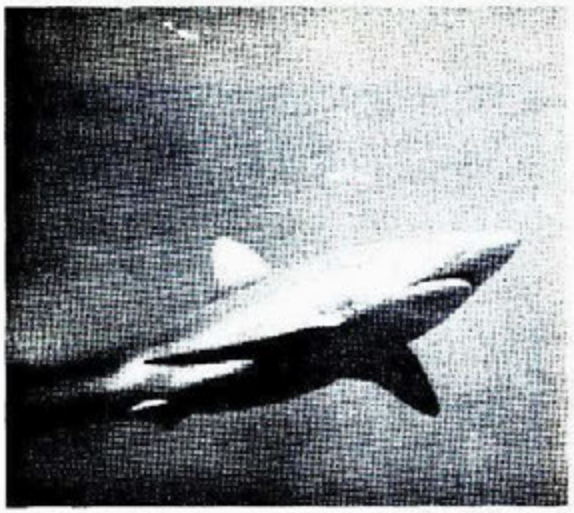
INSIDE UNDERCURRENT

Venomous but unaggressive fish are plentiful. On nearly every dive I saw red, black, brown, or off-white lion fish, which I could not resist photographing. During the day they reside in recessed areas, but at night they free-swim, which means a diver must wear pants or wet-suit bottoms for protection in the event of an inadvertent bump. Stone fish, scorpion fish, and lump fish, which can be deadly, are so well camouflaged that I found them almost impossible to detect. Surely there is no end to the caution one must exercise in touching coral and rocks.

Currents were rare and usually mild, except at a couple of Ras Muhammad spots -- where I noted no current on one dive, but on the next I faced a current so strong that I had to pull myself along the bottom and struggle to the boat. For the out-of-condition diver, this tough current can be embarrassing; for the inexperienced, terrifying. On one of two tough current dives we had to rescue two companions who had exhausted their air supplies returning to the boat and were waiting for us atop a shallow coral head. We also rescued two shore-entry divers who could not make it back to the beach and were unwittingly en route to Egypt. You realize, of course, that we may have prevented another international skirmish by finding these frogmen.

Five of the most experienced divers joined in one 225-foot dive. We used spare tanks and took 28 minutes of decompression. It was well-planned and spectacular. We felt comfortable, knowing that a full recompression chamber, manned 24 hours a day, can be found at the Ophira Navy Base, just six miles from Sharm.

Sharks, currents, stone fish--these make diving exciting. The uninitiated --those who have not developed full confidence underwater in all circumstances --don't belong in the Red Sea. There are other places to earn water wings.



Sea Life Discovery: As many divers are inclined to do, I selected Sea Life Discovery as my tour guide not because of their reputation, but because their offering fit my busy schedule. Prior to my journey, they provided me with complete and accurate information about all elements of the trip, including the diving equipment I would need and what to expect at the destination. The tour was complicated, but it came off relatively well. Before diving we spent two days touring Tel-Aviv and Jaffa, and after diving we spent one day touring Jerusalem and Bethlehem. I was anxious to begin diving and reluctant to leave off diving, but it would have been a grave error to miss touring Israel. We were led by Express Tours, a group with which Sea Life Discovery had contracted, and, although they displayed unnecessary disorganization initially, they did get their act together and provide us with excellent tours and commentary. Jerusalem particularly, in the deep golden sunlight, is a glorious city, with winding streets, beautiful museums, and exciting Arab bazaars. The ancient walls, the people, the names, the places, were overwhelming. For me the tour of this ancient Biblical land was an awesome experience, the perfect beginning and ending for an equally awesome under-

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water experience.

Out of a sense of duty to Undercurrent readers, I should report a few annoyances. Because no specific place for our airport rendezvous had been arranged, finding divers at JFK was a hassle. Waiting in Tel-Aviv for a couple of hours for divers arriving on other flights was annoying, and that was complicated by long immigration lines. Our trip coincided with Yom Kippur, the most solemn of Jewish holy days, so the scheduled flight to Sharm was canceled and we had to spend an extra day in Tel-Aviv. Because it is considered disrespectful even to drive a car on this day, and all the restaurants were closed anyway, we entertained ourselves by eating cold cuts in the hotel room all day. But, as a seasoned traveler, I've learned to always expect complications. This trip was smoother than most.

Red Sea Divers: Owners Howard Rosenstein, a professional underwater photographer and American ex-patriot, and Yossi, a former Israeli Navy underwater commando, were our hosts and frequent diving companions. They picked us up at the airport and drove us to the hotel and dive center. The Dive Center at Sharm (the owners of which also have a major shop at Eilat) sports 100 80-cu.-ft., 3000-psi tanks, plenty of rental gear, 4-wheel-drive vehicles, and two primary dive boats (and a stand-in). Up to 16 divers can be transported in either the 44-ft. or the 50-ft. craft, but the deck space is so limited that dressing is difficult. With an acetylene torch and a little imagination, both boats could be modified to increase diver convenience and comfort--and they should be. Both boats have ship-to-shore radios, small kitchen units, and deck coverings to protect divers from the blistering sun. Both have stinking heads--unsanitary and donwright gross.

Engine problems are common with both crafts, and Yossi frequently burned the midnight oil to keep the boats running. Despite the maintenance required, we never missed a dive or switched a site to accommodate a craft. Nevertheless, the boats could use a good overhaul, since the band-aid approach cannot work for ever. I should note that a friend of mine who just returned from a Christmas trip to the Red Sea has informed me taht the mechanical and hygienic conditions of the crafts are now being improved.

Prior to our first dive, Howard briefed us thoroughly on the operation of the Dive Center, then showed us a beautiful set of slides that he accompanied with an informative lecture. Slides were shown on other evenings as well, with lectures by an Israeli marine biologist named Ayal. While emphasizing reef conservation, he also explained the behavior of reef inhabitants and pointed out dangerous creatures endemic to the Red Sea. On a night dive I touched a beautiful red urchin, only to find my finger in severe pain for ten minutes. I reported this to Ayal, who explained that I was getting too far ahead--that that urchin, the only poisonous urchin in the Red Sea, would be featured in tomorrow night's lecture. Ayal occasionally dived with us, and after a dive he pointed out secrets of what we had seen. He noted, for example, that morays grow larger in the Red Sea than anywhere else, and that they also seem a bit more aggressive. Although I witnessed no aggression, I did indeed see enormous morays rivaling in size the star of The Deep.

The Dive Center employs two full-time people and thirteen part-time people; the part-timers made no contribution to efficiency or professionalism. They offered little help in loading tanks or gear onto the trucks and boats, and often just watched the divers do the employees' work. The boat dock, which had been torn up when the crew failed to heave the lines of a departing craft, was hazardous to negotiate. A large fresh-water tank is provided for washing gear, but one can occasionally find someone washing dishes in it, a Bedouin filling a water

container from it, or a beach camper bathing in it. And the toilets? Yekh.

The day's diving frequently lasted from 9 a.m. to 5 or 6 p.m., because some dive sites are as much as two hours distant. The boats should depart earlier so that divers can take advantage of the high sun for the second dive. A lunch of cold cuts, rolls, yogurt, tomatoes, olives, cheese, egg salad, fruit, coffee, tea, beer, and soft drinks was served for $5, a tab too stiff for the offering. When the day's dive site was less than thirty minutes away we returned to the hotel for lunch. When a night dive was scheduled, no morning dive was offered. I often snorkeled.

In general, Howard and Yossi were attentive, good-natured, and eager to please. Simone, a permanent employee, was a constant source of assistance, information, and humor. Yet, considering the prices one must pay for these safaris half way around the world, I must urge the Dive Center to make many improvements. For there is an alternative to their services. About a mile down the beach is the Aqua Marine Dive Center, which charges but $10/day (breakfast included) for a rustic yet clean room with a community bath. Gert, the divemaster, formerly worked for Red Sea Divers. He now uses two outboard runabouts, but he says he will be getting a larger dive boat in February. Divers on budgets, who have selected to forego tours and instead put together their own trips, might consider this hostel.

Diver's Compass: You will be expected to produce a c-card ... Dive gear can be left at the dive center, saving you the difficulty of carting it between hotel and shop ... Many Red Sea photographers tend to underexpose their shots by roughly one stop; adjust by bracketing ... Careful gear and camera maintenance is essential because the desert air dries out lubricated o-rings, and tiny grains of sand seem ever-present ... Take plenty of film; it is not readily available ... I needed a wet-suit top for warmth, and I used pants for protection ... Even with a top I normally wear no weights, but I needed 6 lbs. to combat the high salinity ... The Red Sea Diver's Guide is an extraordinary book with maps, descriptions of dive sites, and photographs and descriptions of local fish; it can be ordered from Seapen Books (9200 Sunset Blvd., Suite 9, Los Angeles, CA 90069) for $15.95.

The U.S. representative for the Red Sea Divers is Oren N. Most; he may be reached at 9200 Sunset Boulevard, Penthouse 9, Los Angeles, CA 90069, (213) 930-0137. The following organizations offer tours to the Red Sea in conjunction with the Red Sea Divers:

Air-Sea Explorers
Robert Abrams
41 East 42nd St.
New York, NY 10017
(212) 687-7250

Atlantis Safari
Lee Turcotte
P.O.B. 530344
Miami, FL 33153
(305) 754-7480

Diving Locker
Chuck Nicklin
1020 Grand Avenue
San Diego, CA 92109
(714) 272-1120

Poseidon Ventures
Art Travers
359 San Miguel Drive
Newport Beach, CA 92660
(714) 644-5373

Sea Life Discovery
Kent Schellenger
19915 Oakmont Drive
Los Gatos, CA 95030
(408) 353-1766

See and Sea Travel
Car Roessler
680 Beach Street
San Francisco, CA 94109
(415) 771-0077

The BC As A Personal Octopus

—An important new technique to save your own life

You're at 100 feet, exploring a new wreck. You're working hard, excited by the discovery. Suddenly you experience great resistance when you inhale. You're out of air. At first you curse yourself for not checking your gauge and for not remembering that you use air four times as fast as you do on the surface. But this is no time for recriminations. What should you do?

You look for your buddy. He is too far away and he, too, should be nearly out of air. The only answer seems to be an emergency swimming ascent, exhaling all the way. It is risky; it is dangerous. It seems like the only way out.

Yet there is an alternative. It's seldom taught and seldom discussed. But it merits consideration because it has saved lives. These are two actual cases:

Gary Howe, at a meeting of the Philadelphia Sea Horses, said he ran out of air at 80 feet. Instead of making an emergency ascent, he remembered he had partially inflated his BC with tank air to compensate for wet-suit compression. He was able to get eight breaths of fresh air from his BC and make it safely to the surface.

Dr. Robert Leahy told me he ran out of air at 60 feet. He blew his last breath into his BC and then re-breathed that air back and forth until he reached the surface.

Both cases illustrate creative life-saving techniques that should be part of every diver's repertoire. But, the skeptic might immediately ask, what about carbon dioxide? If I have been inflating my BC orally, how can I rebreathe my own air?

The Quality Of Air

Of course, if you have inflated your BC from a CO_2 cartridge no re-breathing is possible. But if you have inflated it from your tank or from your lungs, re-breathing is indeed possible and practical.

Obviously, air from your tank will be as fresh from your BC as from your regulator. Air from your lungs exhaled into the BC will not be fresh, but it can be re-breathed one or more times. It will contain less oxygen and certainly some carbon dioxide, but it is reusable. Note that rescuers use their exhaled air to perform mouth-to-mouth resuscitation on drowning victims.

If you continue to re-breathe the same air, inhaling and exhaling into your BC, each breath will contain less oxygen and more carbon dioxide, until you reach a point where it will no longer satisfy your increasing hunger for fresh air. By inflating and deflating your lungs, however, you are stimulating stretch receptors in your chest and thereby partially relieving your fresh-air hunger. You are also using the oxygen that is in the dead space of your airway and is not normally in contact with the alveoli—the places in your lungs that absorb oxygen.

Depending upon your circumstances, you will probably find that you can re-breathe the air in your BC eight to ten times without becoming fresh-air hungry. After that—as the carbon dioxide builds up—you'll breathe faster and faster. From a moderate amount of air in my BC, I've been able to re-breathe it about forty times. You can test your own response by sitting in your living room with a slightly filled BC and seeing how many breaths you can get. You may be surprised.

The Technique

The deeper you are at the start of your ascent, the more air you'll have available to breathe. From 100 feet the air will expand to four times its original volume. As you rise, and the air expands, your buoyancy will increase, especially near the surface, so *you may need to exhale through your nose to control your ascent.* A large purge valve in your mask will make exhaling easy.

Partially inflated, the BC acts as a second-stage regulator diaphragm, allowing you to breathe air at the pressure of the surrounding water. However, fully inflated the BC will no longer flex. It will act as a rigid container and allow pressure to increase beyond ambient water pressure. The result could be ruptured

FIGURE 1

THE BC AS AN OCTOPUS

lungs. Therefore, always vent air from a full bag through the dump valve or oral inflator, or exhale through your nose to prevent overfilling.

If you have an inflator hose from your air tank, you can use your BC as an extra second-stage regulator. It is, in effect, a poor man's octopus. You can give your regulator to your breathless buddy and breathe the fresh air you feed into your BC, exhaling each breath through your nose. (See Fig. 1.) Dave Woodward, in a letter to the *NAUI News* a few years ago, described this technique as it was actually used in an emergency at 100 feet. The technique can also serve an individual diver if the second stage of his regulator fails.

If your BC uses a small air bottle for inflation, that too can be used to fill your BC for breathing. It has the advantage of providing an extra air supply after your tank runs dry or if your regulator malfunctions.

Air-bottle inflator BC's are considered standard equipment by serious European divers. For example, the German Diving Federation instructors teach and practice emergency-ascent breathing from the bottle to a depth of 130 feet. In the United Kingdom, training in both emergency breathing and emergency ascent employs the technique of breathing from the small bottle through the BC.

With either a tank inflator hose or a small bottle inflator, you have a way of conserving air if you are caught in a wreck or a cave with an insufficient air supply to get you out. You can make your air last longer by re-breathing batches intermittently fed from your bottle or tank. At NAUI's recent IQ10 gathering, Mike Busuttili reported that an English diver, lost in a cave, kept himself alive until rescue by rebreathing each breath twice from his small air-bottle-inflated BC.

Having air to breathe is the obvious advantage of BC re-breathing. But just as important, by breathing in and out you are not holding your breath. Your airway stays open and any pressure differences between air in your lungs and the surrounding water will automatically equalize, thereby nearly eliminating the possibility of embolism in your ascent.

Practice

BC breathing can be tricky. It ought to be practiced thoroughly in a pool. For example, a small amount of water collects in most inflator mouthpieces and that should be either purged or drained into the vest where it will drop to the bottom and cause no further problems.

Many BC's have a number of small holes in the tip end of the mouthpiece under the filler button. The water can be cleared by aiming that end downward so the water will run out as you blow. If you continue blowing while you push the button to open the hose, these holes will be sealed and the water will not return. (See fig. 2.) With this type of mouthpiece,

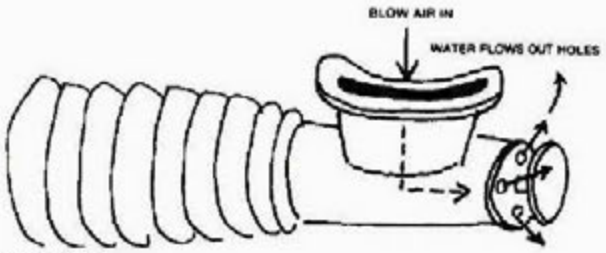

FIGURE 2

THIS BC MOUTHPIECE REQUIRES A SPECIAL TECHNIQUE TO CLEAR

you must keep the filler button pressed down tightly to prevent water from leaking back in through the holes. This mouthpiece can also be cleared by the following method, which works for most other mouthpieces:

1. Seal your lips over the mouthpiece. Look down as you push the valve open. Any water in the mouthpiece should drain into the hose. If it does not, you will have enough air in your lungs for at least one puff to blow the water into the hose.

2. Rotate your body in the direction in which the hose end is pointing, so the water will roll from the hose into the bottom of the BC. You should be looking toward the surface as you complete this roll. Divers familiar with using a two-hose regulator will recognize this technique as similar to the roll used to clear water from the exhaust hose. Blowing as you roll will help clear small water drops from the hose corrugations. (See, fig. 3.)

3. Inhale cautiously at first, to be sure you are not getting water, then inhale more fully.

4. Keep your mouth sealed, the valve open, and your head up as you ascend. If you remove the inflator hose from your mouth you'll have to clear it again. You can't let go of the inflator valve without shutting off your air. If you release the button of some BC mouthpieces (the kind with the holes in the end) you may find yourself inhaling water. Firm pressure is required to prevent leakage.

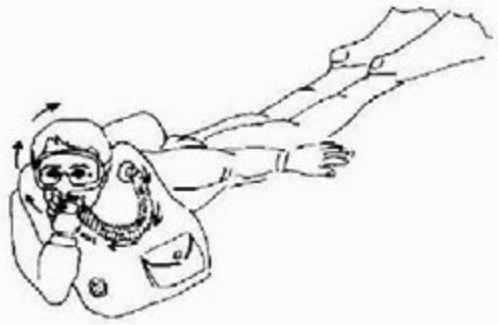

FIGURE 3

THE ROLLING TECHNIQUE FOR CLEARING THE HOSE

In practice—or in an emergency—remember that the BC is affected by ambient pressure. You are breathing compressed air. You must exhale if you reject your mouthpiece and head for the surface. While

breathing in and out, however, you're not going to hold your breath.

Remember also to take the first breath after you've cleared the mouthpiece with caution, to avoid choking on stray water droplets. If you have a coughing spell while breathing from your BC, *don't* take the mouthpiece away. Cough into it. While coughing, you may not be able to get air back into your lungs, but if you have coughed into your BC rather than into open water, the air will be there to breathe when you have cleared your throat.

Objections to the Process

Many divers object to the idea of breathing from a buoyancy compensator. They argue that too many problems can arise. Those problems, however, can be avoided.

•A diver might forget to clear the BC of all CO_2 after inflating it with a cartridge—and one full breath of 100% carbon dioxide might do him in. One should develop the habit of flushing all CO_2 from a BC after each inflation. A diver will recognize pure CO_2 upon the first taste. It is stingingly pungent.

•Controlling buoyancy can be a problem. You are likely to use BC breathing only when you're very deep, so you should have time to control your ascent before reaching shallow depths where buoyancy increases rapidly as the air expands. You can control your ascent by exhaling through your nose or by flaring out. Your speed can be increased by dropping your weight belt, although it might be difficult with one hand holding open the inflator valve.

•If you are filling your BC from your tank or a bottle, you can control buoyancy by intermittently feeding air into the BC and exhaling through the nose. The balance may be difficult to achieve, especially if your small air bottle requires two hands to operate. Pool practice is essential.

•Some critics claim that a diver will black out while rising because of the lower percentage of oxygen in re-breathed air. Overall, however, you are inhaling more oxygen than you would be by not re-breathing because you are using all available oxygen rather than expelling it into the open water. It is possible to black out while practicing in the pool, so obviously a buddy should be present and he should be instructed to pull you out if you stay under more than two minutes while re-breathing.

•During an emergency swimming ascent executed with the regulator in the mouth, some residual tank air may become available as one approaches the surface and the air expands. Using the BC, one might overlook that additional air, so one can either switch back to the regulator or let the fresh air flow from the tank into the BC.

•Air and sea water can produce infecting bacteria or fungi in a BC. A diver in an emergency can't worry about an infection, but one practicing re-breathing ought to be using a clean BC. Rinsing a BC with well-chlorinated pool water, followed by clean tap water, may be sufficient. A 1:750 solution of Zephiran chloride (available in most drugstores), applied to a BC and allowed to stand for 30 minutes, and then rinsed off with fresh water, will kill bacteria and fungi and not harm the bladder.

Conclusion

A diver who presumes he is out of air should recognize these other sources as potential air supplies. The additional air should give him enough confidence to overcome the temptation to rush unnecessarily for the surface in a moment of panic. In most out-of-air circumstances, the diver will be able to breathe from his BC, relax, and swim leisurely to the surface at sixty feet per minute—and thereby avoid the bends and a ruptured lung.

With a bit of practice it is easy to become proficient at BC breathing. It is a skill which, if perfected, is more valuable than buddy breathing or octopus breathing—because it permits you to save your *own* life.

Addendum and update from the author:

On January 4, 1979, I conducted additional tests of this technique at the YMCA Center for Underwater Activities at Key West, Florida. Scuba instructors Tom Halford and John Lombard of the Florida Keys Marine Institute joined me.

In tests from 50 feet, divers began with empty BC's. Each blew in one medium-sized breath, and then headed toward the surface. The ascents took from 51 seconds to 65 seconds, and each diver re-breathed his or her one medium-sized breath from ten to thirteen times. None became particularly air-hungry. Buoyancy was no problem. Excess air was exhaled through the nose.

We did note that a lack of sufficient volume of air to breathe greatly increased air hunger. Therefore, if only a small amount of air is available, BC re-breathing may not be advisable.

We used U.S. Divers and Healthways BC's and found it easy to clear water from the mouthpieces. The U.S. Divers BC also worked well as a substitute octopus rig, even though both hands were required—one to hold the mouthpiece valve open and the other to operate the button for tank inflation. We found it easy to breathe fresh air from the BC, fed intermittently from the tank, and exhale through the nose, while the other diver, as if out of air, breathed from the regulator attached to the same tank. We did not perform a similar test with the Healthways BC.

As evidence that a diver must practice the technique with his or her own equipment, we found it difficult to clear water from the one Dacor BC we tried, although we presume that if we had had more time we would have discovered the best technique. Fur-

thermore, because a fair amount of pressure was required to depress the inflator button, the BC filled too quickly and the diver became too buoyant for a controlled ascent.

* * * * * *

The author, Al Pierce, a NAUI and PADI Instructor and a Red Cross Water Safety Instructor and Instructor Trainer, developed and perfected the technique from bits of research he collected during the last several years and in consultation with a number of experts. He would like to acknowledge the critical review and assistance of: Dr. Charles V. Brown, Medical Editor of *Skin Diver* and *NAUI News;* Dr. Bruce Bassett, USAF Hyperbaric Center, San Antonio; Dr. Albert A. Bove, Institute of Environmental Medicine, University of Pennsylvania; Dr. Robert Meckelnbur, Department of Nuclear Medicine, Wilmington, Delaware; Dr. Harry Heinitish, Diving Medical Officer, National YMCA Center for Underwater Activities, Key West; and D. Lee Kvalnes, Ph.D., former NAUI, mid-Atlantic Branch.

Undercurrent believes that Pierce's effort makes a unique and important contribution to diver safety—one of the most important in recent years.

Teaching Yourself Underwater Photography

—Several books that make a difference

How annoying it can be to spend a Saturday evening in the den of a fellow diver viewing a tray of 140 slides from his *first* underwater photographic foray. One must suffer through underexposures and overexposures. One must tolerate endless pictures of common reefs, where the host must leave his station at the projector to point to a tiny fish in the corner and explain that it was the subject of the shot. Hopefully, a dozen or so shots will be sufficiently aesthetic to rescue the novice photographer from final embarrassment.

Let us hope you're not one of those folks who presumes just because your shutters operated underwater you must display your photo-art to your hydrophobic friends. But let's also not be too hard on the beginner, who, as those of us understand who have suffered through scores of our own bad rolls, can, with practice, patience, and study, produce intelligent and aesthetic underwater shots.

One can move quickly to high-quality photography under the tutelage of a good instructor. A number of dive shops offer week-night lectures and weekend photography dives for nominal sums. The fortunate few trek off to Grand Cayman and study for a week at Spanish Bay Reef with Jim and Cathy Church, or attend the Paul Tzimoulis' courses at the Riding Rock Inn on San Salvador, Bahamas.

Being realists, however, we realize that few divers will engage in formal study to improve their photos; most opt for the method of clicking away, developing, and clicking again. That's a common and primitive response, not unlike that of the one-celled animals, that keep bumping their heads into the wall until they sooner or later find a passageway.

Some of us with more than one cell do refer to books for information, and for would-be underwater photographers there are a few books on the market which, if the techniques they offer are studied and practiced, will quickly return the price to the reader in unspoiled film. Books cannot substitute for practice, but they can provide information which will indeed help the novice make rapid strides toward taking photos worthy of display in almost-public places like offices or dens.

"How-to" books can be of service to the underwater photographer in two essential ways. First, they can enhance the photographer's understanding of his or her equipment: differences among cameras and accessories, limitations of design, specific purposes of different pieces of equipment, maintenance and repair, and so forth.

Second, "how-to" books can contribute to the quality of a diver's photography on a "finer" level comprising a technical side, which involves the selection of f-stops, shutter speeds, strobe powers, etc., and a judgment side, which involves selection and placement of the subject, background selection, lighting techniques, etc.

Writers of "how-to" underwater-photography books underemphasize the *technique* required to take first-rate shots. This aesthetic side is not only the most difficult to write about, it is also the trait most necessary for the amateur to develop. An artist can explain why he chooses a sable brush over a bristle brush, but he can't explain why he puts the tree in the corner rather than in the center, other than to say his artistic judgement dictated the placement. The amateur photographer will himself have to learn in what corner of the frame the coral head looks best; even though these books, in varying degrees, will help him produce more professional-quality photographs, none will tell him all he needs to know.

Joe Strykowski, *Divers and Cameras*. Dacor Corporation, 1979. 212 pp. Hardbound, $7.95.

The Churches:
A Photography Course At Spanish Bay Reef

Sure, divers expect to suffer a little, but last night's classroom lecture didn't end until 10:30 and here I am, at 7 a.m., before breakfast, having the photos I shot underwater yesterday reviewed and criticized. Who would have guessed that engineers (like me) automatically compose their pictures either horizontally or vertically? Reluctantly I agreed that the flamingo tongue on the sea fan would have looked better if I had turned my Nikonos a bit.

As readers of *Skin Diver* know, Jim and Cathy Church have been publishing underwater photography articles for many years. But they also teach concentrated photography courses on Grand Cayman Island at the Spanish Bay Reef Resort, which *Undercurrent* (February, 1978) reviewed as the best all-around dive resort on that island. I decided to sign up for their course, even though I've used a 35-mm. land camera for several decades and a Nikonos since 1970. Underwater I make mistakes I would never make on land and the results are often humiliating. I was an eager student.

Jim and Cathy are experienced, knowledgeable, and dedicated teachers. Three of my fellow students had never taken an underwater picture, one was a full-time professional photographer with a national magazine, one was back for the course a second time, and the others had, like me, been taking underwater photos for a few years. The nineteen students agreed universally that during the five and a half days of instruction, which included ten dives, we received an extraordinary amount of information and practice. And our pictures proved it.

The Churches emphasize practical techniques rather than theory and they're personally involved with the students a full sixteen hours a day. Subject matters range from using natural light and flash to silhouette and macro techniques. The Churches provide straight-from-the-shoulder appraisals of film, cameras, strobes, and accessories—analyses more critical and helpful than those which make publication.

They have just about every piece of underwater photographic gear manufactured, and most are available for loan or rental. If you bring your own gear, they'll check shutter speeds and calibrate your exposure meter and strobe. On site—and even on the boat—they make instant repairs. Watching Jim save a flooded Nikonos was indeed heart-warming.

The dive boat is reserved solely for class members, whom the boatmen are trained to aid. Underwater, Jim and Cathy, without their cameras, help with calibration tests, point out subjects, bring critters to the trainees, and, with gestures, even lecture. Christy, their assistant, who develops the Ektachrome overnight, is likely to be along, as is the divemaster. Since the only divers are those who are with the photo class, no one is zipping around chasing fish, bugging you to keep moving, or mucking up the bottom.

Room (double occupancy) and three fine meals a day for six days, and the course, will run $710 in the summer of 1979. For a descriptive brochure write the Churches at P.O. Box 80, Gilroy, CA 95020.

Joe Strykowski, *Divers and Cameras*. Dacor Corporation, 1979. 212 pp. Hardbound, $7.95.

Joe Strykowski, a past television-series producer, a professional photographer, and a mechanical engineer, calls his book "a complete textbook for students, instructors, and advanced underwater photographers." Advanced underwater photographers will find it useful occasionally for reference, but the book best serves the beginner and intermediate. Strykowski takes the classic well-organized textbook approach. He begins with a chapter on the elements of diving, and follows it with chapters on light, camera basics, camera housings, lenses, exposure, film, flash, close-ups, and movies. There is a chapter on the *art* of picture-taking which ought to be read before a first roll is shot. It's a balanced book—no surprises, but it accomplishes what a text must accomplish: complete coverage of its topic in a manner understandable to the student. A beginner engaged in independent study will find the book readable and will get the information he or she needs to capture fish on film.

Flip Schulke, *Underwater Photography for Everyone*. Prentice Hall, 1978. 220 pp. Hardbound, $14.95.

Schulke's book, published in late 1978, is the most current and complete book on the subject on the market. Although the novice will certainly benefit from the book, it is best suited for the person who understands the basics of photography and has already spent a few rolls. One who needs a systematic and organized treatment of photographic basics will find Strykowski's book more satisfying.

While not everyone will wish to read about using a Hassleblad, or about the limitations of battery-powered movie lights, Schulke's

broad discussion of equipment considerations—he names the brands—will aid the beginner or serious amateur. Especially useful are his discussions about accessories—dome ports, fish-eye lenses, viewfinders—and how they can enhance the results of your photography.

Schulke, of course, covers the technical basics of photography, and throughout the book he scatters scores of tips that a serious amateur will appreciate. For example, he describes a hand signal formed by turning the palm downward and wiggling the fingers like spider legs—that enables one diver to tell another that he or she is mucking up the bottom. Rather than continue to shoot standard silhouettes toward the surface, he suggests shooting divers hitting the water as they enter. And, try taking extension-tube photographs in natural light in shallow water—Schulke claims the subjects will have a far different appearance than they do in artificial light.

The book concludes with a useful glossary, in which Schulke defines "concentric dome lens," "diopter," "solid-state triggering system," and other phrases that the serious amateur will need to at least sound professional.

Schulke's extensive experience (he was Photographic Mission Leader for Tektite II, in which capacity he lived underwater for seven days, and he has been published in *Newsweek*—a 1976 cover, *Time, National Geographic, et al.*) contributes heartily to the value of this book for the experienced photographer. Much of the book is written in the first person—there is a story-like, non-textbook quality to the narrative—so when he comments candidly about problems with equipment he is recounting his own difficulties. Perhaps the only liability is that he tends to throw in a few advertisements for himself (and for equipment he has developed, which is no longer on the market), but then, with his credentials, he's perhaps entitled.

Recognizing that each book reviewed here has a different purpose, we still like this one best of all. It belongs on the nightstand of every serious amateur.

Herb Taylor, *Underwater with the Nikonos and Nikon Systems*. Amphoto, Garden City, New York. 169 pp. Hardbound, $9.95.

Although Taylor covers the basics of underwater photography, the book is mainly a catalogue of

U-Boat 352—Look But Don't Touch

In 110 feet of water, 26 miles off the coast of Morehead City, North Carolina, rests U-352, a German submarine sunk during W.W. II. U-352 lies in clear (50+ ft.), warm (60° minimum) gulfstream waters, making it an attractive wreck for North Carolina and traveling East Coast divers. There is some coral beginning to grow, and sizeable amberjack and grouper are frequently spotted.

Salvage divers have taken most of the valuable articles, but one sport diver who has visited frequently has a number of artifacts, including two large brass sextants and a swastika-bearing propeller shield. Divers aboard tour boats still manage to pry loose a few things for themselves, and a few divers even bring back bones and skulls, some of which have been displayed in at least one local dive shop. That has aroused the ire of some people, including U.S. government officials concerned about the desecration of German war dead.

But now the U.S. Navy wants to blow up the wreck. They have found six unexploded torpedoes and six live 88-mm. shells, which they believe imperil divers below and fishermen above. And with that proposal, the fight is on—the divers want the Navy to steer clear.

Divers offer plenty of arguments. Some call the U-352 an important hunk of history. Others call it simply great recreation. Others say it is necessary to the local economy—although there are a number of other nearby wrecks, this is among the best. Visiting divers pay for the charters, stay in the motels, and eat and shop locally.

The Navy, however, calls the sub damned dangerous, perhaps too dangerous to even attempt disarming the torpedoes. They see the danger to sport divers increasing as more and more descend to the wreck, although local divers believe, as one told *Undercurrent*, that "if anything were going to happen it would have happened by now." The Navy retorts that increasing corrosion continues to heighten the sensitivity of the explosives to shock.

No one is certain what will happen, but it appears that the Navy has the upper hand. U.S. Senator Lowell Weicker has himself dived to the wreck and branded the pilfering by divers a "national disgrace." And recognizing the potential hazard, he called for the destruction of the submarine—only to change his position after divers inundated him with telephone calls and mail. Recently the *Baltimore Sun* quoted the Senator as saying, "...whatever is done should be done with respect."

Meanwhile, shops still run trips to U-352. One to contact is EJW Sport Shop, 2204 Arendell St., Morehead City, NC 28557, (919) 726-4725. The boat charter, with guide, costs $225, and up to six divers may go.

And remember: Look, but don't touch.

equipment compatible with the Nikonos and Nikon cameras. He provides more complete equipment specifications than Schulke, but without candid personal evaluation. The book is suitable as a basic operating manual for the Nikonos or as a reference.

Writers of photography books often receive free equipment, which they evaluate and then write about. Some of the equipment is kept and some of it is returned. The author's income is determined by the contract with the publisher; it generally relies on the number of books sold. This book, however, gives the impression of having been paid for by Nikon, Inc.—if for no other reason than the discussion of Nikon's single-lens reflex and no other. What about the Canon? The author does nothing to dispel that impression, and, in fact, he thanks various people at the Nikon parent company, Ehrenreich Photo Optical Industries, for their "help," "encouragement," "assistance," and "support." Whatever the case, the author's relationship ought to be stated clearly so that purchasers know just who is paying the piper.

Fred Roberts, *Nikonos Photography—the Camera and System*. fm Roberts Enterprises. 158 pp. Paperback, $4.25.

Roberts' is the most technical of the books reviewed here. Much of his treatise will interest only the photographer who wants to know the mathematics of calculating image sizes of supplemental lenses or the guide numbers of major brands of flashbulbs. But beyond the technical information that chases away a lot of potential readers is a wealth of information that, for our money, makes this *the* handbook for Nikonos users. Roberts' comparison of strobes and his discussion of the variations of close-up lenses and attachments are useful both to the beginner and to the diver who has already shot up scores of rolls. Especially valuable is the section on trouble-shooting a Nikonos, which enables the diver to solve many mystifying problems himself. But no space at all is given to the subject of aesthetics.

Jim and Cathy Church, *Beginning Underwater Photography*, The Churches, Gilroy, CA 1975. 56 pp. softbound, $4.95; *Underwater Strobe Photography*, 1976. 64 pp., softbound, 14.95.

These are two readable and concise handbooks useful to beginners and experienced amateurs alike. *Beginning Underwater Photography* covers the basics without extraneous material, and has brief sections on lenses, lightmeters, techniques, and strobes. The chapter on saving a flooded Nikonos has no doubt saved the cameras of many divers with the foresight to pack the book in their traveling camera cases.

Strobe Photography can get a beginner going or help refresh the experienced photographer who has been away from the water for awhile. The authors discuss in detail the use of Subsea and Oceanic strobes and the housed Vivatar 292. The discussions of basic exposures, determining guide numbers, automatic exposure control, close-up exposures, and single and multiple strobe techniques are brief yet complete enough to guide the new strobe user to successful shots. The section on trouble shooting has doubtless aided many divers with field repairs when they otherwise wouldn't have been able to get that sensitive strobe to fire.

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For $6/year, one can receive six issues of *Underwater Photographer*, a magazine published by Fred M. Roberts. The 24-page issues are devoted essentially to the technical side of photography, but occasionally they include travel articles that emphasize photographic dives. For a subscription send your check to *Underwater Photographer Magazine*, Drawer 608, Dana Point, CA 92629.

The Dacor Dive Computer

The most important innovation ever introduced?

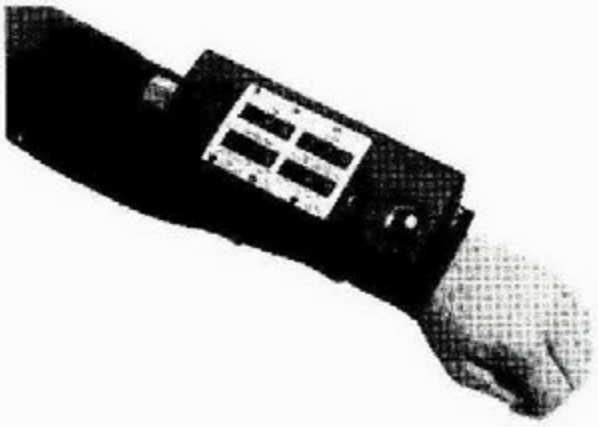
In January we attended a New Orleans convention sponsored by the Diving Equipment Manufacturers' Association (DEMA). The annual affair provides manufacturers with the chance to show off their new wares to retailers, to training organizations, and to one another. A number of products were displayed for the first time, but none attracted as much attention as the Dacor Dive Computer, a device Dacor claims to be "the most important innovation in diving instrumentation ever introduced." If it works, it might very well live up to the company's claims.

The device, about 7 inches long, 3 inches thick, and weighing 2½ lbs., is worn on the forearm. It gives L.E.D. readouts on four display faces and six additional red lights provide other information. Dacor says the mini-computer has ten functions:

1. *Depth gauge:* constantly displays in num-

bers the diver's depth.

2. *Dive timer:* gives the diver a constant reading of the time spent underwater on a single dive, up to 4 hours per dive.
3. *Surface interval timer:* the dive timer automatically switches to monitor surface time after the first dive, up to 12 hours.
4. *Decompression meter:* automatically calculates decompression stops and time required for decompression according to the U.S. Navy tables.
5. *Maximum depth indicator:* informs the diver of the deepest point of his dive.
6. *Repetitive dive timer:* automatically carries over information from previous dives to calculate decompression if needed on repetitive dives.
7. *Rate of ascent indicator:* warns the diver if he exceeds 60 feet per minute.
8. *Decompression warning light:* tells the diver five minutes before decompression is required.
9. *Decompression light:* tells the diver that decompression is required.
10. *Decompression depth:* tells the diver at what depth he must stop for decompression.



The Dacor Dive Computer

The device, which Dacor expects will retail for $395, gives three hours of service when fully illuminated and twelve hours of service when unlit. It can be recharged in 4-6 hours from an auto cigarette lighter or from the plugged-in recharger unit.

According to Chief Engineer William A. Bowdon, Dacor has been working on a decompression meter for six years. About four years ago they decided to build a meter which would take time and depth into consideration and constantly reflect the diver's position with regard to the U.S. Navy tables. The result: a meter programed like a computer onto chips, which actually "leafs through the Navy tables," as Bowden explained.

Ten people have been involved nearly full-time for two years, and now, after 1600 hours of chamber testing, several prototypes have been made. We observed one prototype at the DEMA show and it responded accurately to a range of simulated conditions. Whether the final meter is reliable will be determined only after the meter has been on the market awhile, but Dacor expects no problems; they say the internal mechanism has been designed to withstand a repeated impact of 20 g's and the case has been tested to 300 feet. As with the Navy tables, the meter presumes the diver to be in good shape; it cannot, of course, factor in the diver's age, condition, or fatigue, or the water temperature—variables which may contribute to the bends.

Before the assembly line starts, Dacor divers expect to spend more than 1000 hours underwater with the meter. Although it is not uncommon for products heralded at DEMA to never reach final production, Dacor personnel expect the first models to be ready by June. They believe the major problems are licked and it is only a matter of final testing before they begin production. They already have displayed their confidence by devoting two full pages to the Dive Computer in their 1979 catalogue. Whether the device has the same spread in the 1980 catalogue will be determined by their tests, their quality control, the meter's reliability and, most important, diver acceptance. We wish them luck.

IT'S NICE TO KNOW WHO YOUR FRIENDS ARE

From *Newsweek* magazine, we have taken this brief report of President Jimmy Carter's Guadeloupe summit meeting:

The recreational high point came when the Carters and daughter Amy decided to try scuba diving. "Does the President know how to scuba?" asked a worried reporter. "God, I hope so," answered Press Secretary Jody Powell.

In fact, Jimmy managed to stay under for a respectable 35 minutes. "Did you bring anything back?" he was asked. "Sunburn," said the President succinctly.

As for why Carter took the plunge, one wag suggested that the idea for the President's scuba-diving expedition had come from Vice-President Walter Mondale.