

## Third Turtle Inn, Provo, Turks And Caicos

### *One Of Those Magical Moments*

A couple of years ago, not more than a boat load of divers knew of the splendors beneath the seas surrounding the Turks and Caicos Islands, that British West Indies archipelago 550 miles southeast of Miami. I've been fortunate enough to dive three of the four islands and report my experiences on these pages (see Grand Turk, April, 78; South Caicos, October, 78; North Caicos, July, 79) and with this issue I'll complete the circuit by reporting on the fourth island--Providenciales (called "Provo"). In the last issue, we reported that serious problems have developed on North Caicos at the Prospect of Whitby Hotel and I'll discuss that later. I found the diving on North Caicos excellent, just as I found the diving at Grand Turk. South Caicos, in my opinion, was good but surely did not measure up to the other two. Diving out of the Third Turtle Inn on Providenciales proved every bit as good as my other two favorites and, perhaps, even a notch better, if that were possible. But, I must issue one caution, aimed at those readers who expect to see underwater precisely what I have seen. When I have written of seeing sharks, mantas and turtles, some readers have written back, complaining that they saw none of these stately creatures, so I must have somehow bribed the boat jockey to take me to secret spots. The extent of my bribery is a strong urging of the dive-master to take me to the best places, just as any other self-serving diver would urge. I do not disclose my Undercurrent identity, but I do plead for good dives and ended up going wherever I and the other guests were taken. Please remember that mantas, sharks, and turtles are free swimmers; I have not known them to wait around for three months after my trips, waiting for a surge of Undercurrent readers to show. Fortunately, pelagic creatures are in some abundance in the virgin waters of the Turks and Caicos, so most divers get a few treats during a week's stay. I can't promise that you'll see whatever I see, but I can guarantee that I receive no special favors. If you happen to turn up on the same boat that I do, you'll know about it when you read about it in Undercurrent. My story will be your story. Unless you exaggerate.

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Now in the waters of Provo, I had one of those magical moments in diving that aren't repeated. We anchored at the wall and, as usual, I was the first to hit the water, knowing full well that the surprises below may not wait for the slowpokes. When my bubbles cleared, I was within spitting distance of an 8 foot bull shark, who wasted no time clearing the area. As I descended, and other divers joined, a large green turtle started to swim circles around us, while a school of friendly jacks were practically nuzzling our face masks. After several tours the turtle ambled away, but before I hit the bottom a trio of stately spotted eagle rays gracefully swept past. How's that for openers?

On one dive, along the wall, a 5 foot barracuda swam with me, at times only a foot from my shoulder. He didn't flinch when I fired my strobe. When we headed to the boat, he swam first with one diver, then with another. He seemed a bit sad when we exited. On another dive, six of us hovered motionless at 70 feet, observing a jewfish which appeared to be about 6 feet long. He stared back and then ventured within 10 feet of us. How, I asked myself, could anyone spear such a magnificent and gentle creature. Around the reef were plenty of other critters: all varieties of parrots and angels; trumpets, puffers, blue chromis, triggerfish, spanish mackerel and hogfish, filefish, black chubs, nurse sharks, stingrays, nudibranchs, lobster, feather stars, flamingo tongues, crabs, morays--you name it!

The divemaster was Art Pickering, owner of the diving facility at the Third Turtle. He proved an excellent boatman and, with nine years of experience diving Provo, a fine diver and first-rate guide. He does not regiment dives, but requires strict observance of the tables. Art patrols the area, warning divers if they're going too far or too deep. The wall, which encircles the island, starts at 40-50 feet, drops vertically to 200, then shallows out before dropping to more than 5,000 feet. Along the wall, ledges, caves, canyons and tunnels are common. At one spot, on the top of the wall, I entered a hole at 50 feet, swam vertically downward through a fantastic opening on a vertical plane at 100 feet, emerging through finger sponges, black coral and friendly jacks. Sponges of all shapes cling to the wall amidst lava-like flows of star coral. Healthy hard corals, fans and gorgonia are plentiful. At 75 feet, Art pointed out an enormous orange sponge, at least seven feet in diameter. And some of the pillar coral stood almost ten feet tall, resembling exotic turreted castles. The best diving is on the wall off the west end, which on windy days (2 out of 10 during my stay) is reached by trailering the boat across the island for launching. Visibility never dropped below 100 feet, and on good days reached 150. In summary, the wall is awesome, the diving super. Among the Caribbean's best.

Pickering's shop, 40 feet from the hotel, is built into a split in a coral bluff. He sports thirty 71 cubic ft. tanks, which he pumps to 2475 psi, and has a good supply of rental gear. His two 22 ft. (8 ft. beam) Aquasports have been modified to accommodate 10 divers and 20 tanks, comfortable enough for transportation as long as the divers keep their gear organized. The boats handle wind-whipped waves quite well, effectively deflecting spray. Both have ladders, making boarding easy after I removed my fins. On my first day, I arrived at the shop for the 9:30 dive and learned that Art, assistant Sharon Lumpkin, and his Provo local aide Fuller had trailered the boats, tanks and lunch to the south side of the island for launching. I and the other divers jumped into his military surplus weapons carrier for the ten minute trip, where we boarded the boats for the 40 minute journey to the south wall. After the first dive, we retreated to a beautiful white sand beach for lunch, shelling and sunning. After a second dive,

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following the tables, we returned to the hotel at 4 pm. For the north wall dives, we would take one tank in the morning, return for lunch, and a second tank in the afternoon. On special days we dived either West Caicos or French Cay, both an hour boat trip. Uninhabited, they offer good wall diving with plenty of pelagics, and relaxed lunches on their deserted beaches. On none of the Provo dives was current a significant factor.

I was appalled by the serious errors made by divers I observed on this trip. One, apparently enthralled by the reef, ran completely out of air at 70 feet and had to buddy breathe to the surface. Several divers inadvertently exceeded 180 feet on the wall and had to be signaled to come up by Art. Many did not note their time of entry into the water and subsequently had to guess at bottom time, and a couple of these had no idea how to compute their dive group for a second dive. Several violated the basic buddy procedures. Two divers severely overweighted themselves. They provided me with a visible indictment of American instruction and recognition of why so many resorts must apply rigid rules to all divers, thereby placing constraints on serious divers who pay attention to safety procedures. I'm all for agencies demanding greater skills from divers before awarding certificates.

Night diving is available, but was not requested during my stay because of the hotel's amenities at dinner hour. Beginning with a rum and tonic in the hotel bar (\$2), the decor of which reflects the aeronautical interest of the owners, I would dine outside, on the dining room dock, where service was a bit poky, as I have come to expect in the Caribbean, but surely genial. We might begin with a lobster cocktail or cevichi appetizer, sample homemade soup or chowder with fresh, kitchen-baked bread, then slip into veal Marsala, chicken Cordon Bleu, lobster or red snapper, and conclude the repast with a slice of Key Lime pie. The chef, a graduate of the New York Institute of Culinary Arts, is a rarity among dive resort chefs. Jack Walley lends his skill to uncommon breakfasts (spinach omelets, for example), and lunchtime cheeseburger, conchburger or Monte Cristo which are sumptuous. I've given high marks to other Turks and Caicos meals, but the kitchen standards here surpass them all.

Built in 1968 into the side of a coral cliff, in harmony with the environment, and overlooking the picturesque yacht harbor, the Third Turtle Inn is a comfortable and lovely hotel, certain to please all but the finicky. The fourteen guest rooms (more are being constructed) are spacious and modern, with two double beds, a hot-water shower, large mirrors, adequate closet space, and concrete or tiled floors. Louvered and screened walls offer no sound insulation, but provide plenty of ventilation with the aid of an overhead fan. Each room is equipped with repellent since mosquitoes appear when the wind dies. Sliding glass doors open to a view of the yacht harbor, fringing reef and the ocean beyond. Ospreys, pelicans and herons frequent the pleasant hotel beaches; about 200 yards east there is good snorkeling. Small whalers and a glass bottom boat may be rented from Art Pickering; a 43 foot sailboat is also available for charter; fishing boats and guides are available for day trips. Next to the hotel is a tennis court; rackets and balls are provided by the hotel. The only other island entertainment is eating out at one of three other restaurants. I ate at the Roadrunner, where I paid \$8 for a native seafood buffet of conch, grouper, lobster, turtles, and several vegetables prepared native style. I heartily recommend it for a night out.

Roundtrip air fare, aboard an Air Florida 737, from Miami to Grand Turk is \$144; Grand Turk to Provo, roundtrip aboard a nine passenger Turks and Caicos National Airlines plane, is \$62. Air Florida is undependable and has been known to cancel flights with less than a day's notice; before departing call their toll free number (800/327-2971) to check, and check again at the Miami airport desk. Never check baggage from your hometown to Grand Turk or farther; check it to Miami, reclaim it and check it

again. Otherwise you may never see it again. At Grand Turk, watch your baggage being loaded in your plane, and then watch it being unloaded at each intermediate airport. It is not unusual for baggage to be left off a plane, without notifying the owners, because the plane's weight load has been met. Air Florida permits 90 pounds and two bags; out of Grand Turk, there is a 25¢ charge for each pound over 44 pounds.

Until November 15th, double occupancy rates are \$100/day, all meals included (\$60 for single); add \$30/person for a two tank dive, \$40 for two, one tank dives. A 4 day/3 night package with two days of diving is \$225/person; 8 days/7 nights with six days of diving is \$525/person, with a refund for dives missed. There's barely a savings for the four day package, but two divers may save as much as \$130 over eight days. In computing your budget, don't forget to add another 15% to the full bill for service charge. The dive package runs from May 1 to September 15; the hotel is closed from September 15 to November 15. For reservations, call 305/276-7372.

Divers' Compass: Although diving is year-round, winds can keep people away from the best spots from mid-January well into February and from mid-August through September; the same applies to North Caicos; Grand Turk is the better choice during this period. . .credit cards are not accepted at the Third Turtle; greenbacks or traveler's checks only. . .taxi to the airport is \$5 for two, departure tax \$3/person. . .no doctor resides on the island; the nearest recompression chamber is in Miami. . .complete marina facilities are available. . .small planes needing fuel may pay as much as \$5/gallon in the Bahamas, but sometimes it is unavailable. . .a certification card is a must; no lessons are offered. . .strobes may be charged in your room. . .fresh water is available dockside.

### Airport Luggage Theft

We frequently hear reports of dive gear, obviously marked, being stolen during baggage handling, especially at the Miami Airport. A conversation with a Miami airport baggage employee confirmed these reports. Bags marked with the name of a dive shop or a diver's flag and metal and plastic photographic cases are easy marks for theft.

Traveling divers can reduce the possibility of theft by carrying their gear in duffel bags, standard luggage, or any other bag which does not reveal the contents. Photographic equipment cases can be placed in larger suitcases.

Better yet, hand carry your camera, strobes and regulator.

## *Update: Prospect Of Whitby, North Caicos*

Last month we urged readers to cancel their reservations at the Prospect of Whitby Hotel in North Caicos after receiving a number of disturbing reports from divers about serious problems with the management of both the hotel and dive operations. The hotel problems, according to recent visitors, have been cleared up, but some problems may linger in the dive operation. In January, partners Al Gardner and Mike Hoag split up; Hoag, who had spent a year searching out the best dive sites, has left the island and the replacements hired by Gardner were unable to find those good sites, according to many of our readers who wrote us to complain of lousy diving. We continue to get mixed information about the quality of diving. One diver, who returned March 3, says "all the diving was poor to fair. . .the biggest game I found was a five foot barracuda." A diver there the following week called to report virgin diving, a great array of fish, and sightings of several sharks. Our hunch is that the guides are beginning to learn the sites, but, in the process of experimentation, some divers end up with less-than-adequate diving. It will be sometime before we make another on-site inspection to review the problem and its resolution.

We are concerned about reports that the hotel management permits spearfishing by foreign guests. Gardner says he does not take out spearfishers on his boat, but acknowledged that the hotel has sent guests to native spearfishermen, even though Turks and Caicos law prohibits spearfishing. Some readers have reported that management itself leads spearfishing forays, and have complained that they are raping the reefs of lobster. We recommended the Prospect because of the virgin diving and fine services. Whether it remains that way and whether divers return is solely in the hands of the management.

## The Business Of Sport Diving: Part II

### *So You Take The Plunge Anyhow*

In the first article in this two part series (see February, 1980) I wrote about the general problems facing the dive industry and any individual or group of individuals about to undertake a diving business. Now, let's look at some specific dive businesses:

**Dive Stores:** These small retail establishments (most only grossing between \$50,000 to \$200,000) often provide serious examples of bad management. It is not uncommon to find a disregard for customer needs, sometimes to the point of driving customers away, poor financial and personnel management, business decisions based on personal bias, no facts or good business sense, ineffective advertising, and general clutter, excuses, idleness, lateness, rudeness, sloppiness, and waste.

While it is a wonder how so many dive stores survive, it is indeed a joy to observe a well-run store. It is possible to run a small retail store well, and the problems suggested here are not just maladies of dive stores. They run throughout the small business community to such an extent that more than 400,000 small businesses fail each year. Just opening a dive store is not an opportunity—the real opportunity is developing a well-managed business.

**Manufacturers:** Unless you have an extraordinary product idea plus experience in management and distribution, you would be better off recognizing that the diving business is already overcrowded with small manufacturers and suppliers of equipment, most of whom have little to offer other than variations on the same theme. In addition, there is substantial bickering in the industry. The small manufacturers often share sales representatives (many of whom are nondivers, inexperienced or both) and the reps themselves play musical chairs between the manufacturers they represent. Marginal manufacturers face bankruptcy, refinance to stay alive or change their names once their marginal situation becomes known. Indeed, it's a difficult business, but it can be ripe for entrepreneurs who offer real improvements in diving products and services.

**Dive Boats:** Costly to build or convert and very expensive to operate, dive boats have decreased in number while the demand for good boat diving has increased. Recently, the owners of both large and small

dive boats have gone bankrupt, with some unable to acquire the financing to complete construction, conversion or make improvements. Some who could not make improvements have operated their boats illegally, had accidents or been put out of business by the Coast Guard. Others have cut every possible corner, resulting in customer dissatisfaction and decreasing income. Still others have simply converted their boats to other uses, such as sport fishing, which has proven more profitable. Surely there is a need for good dive boats, but the future for those contemplating the venture is not optimistic.

**Dive Resorts:** Any diver who has taken trips to a dive resort, has encountered problems that can be attributed to poor management or to absentee ownership. At many resorts it is not uncommon to find indifference to customer needs, unprofessional staffs and a lack of *other* nondiving recreational activities; the kind of problems that may cause divers never to return. Of course, travelers often have unrealistic expectations of isolated dive resorts, although those expectations are frequently fueled by fancy advertising and puff pieces in national magazines.

Success in the dive resort business comes from repeat business; it costs a great deal in advertising, communications and travel agent commissions to attract a diver the first time, but those costs are greatly reduced on repeat business. Repeat business can be established by providing diving experiences for all ranges of divers, from the 20 year pro, to the instructor, to the novice, to the photographer, to the person who wants to become certified. Unfortunately, not enough of that is happening. With the ultimate diving service being to provide a top quality diving experience, resort investment can offer an excellent opportunity to a skilled operator. But one caveat: with inflation increasing and the recession deepening, divers will have less to spend and will travel shorter distances. Since there are few resorts in temperate waters—and most divers learn to dive in wet suits—untapped opportunities may exist in these areas for the wise entrepreneur.

**Diving Travel Agencies:** These businesses appear and disappear, faster than a skittish tube worm, and sometimes with the cash of their disappointed customers. With the exception of a firm like Sea and

See Travel, which specializes in package trips to otherwise inaccessible diving areas, those firms which have been most successful are normally full-service travel agencies which happen to also specialize in diving travel. Since many traveling divers have other than diving needs (for example, they may have a nondiving spouse) they often prefer to arrange their trips through a regular travel agency. Other divers prefer to make arrangements directly with the hotel and resort themselves. But remember: it is nearly impossible for a diver to arrange a successful trip with the assistance of a travel agent who does not understand diving. With a full-service travel agency, it can be possible to establish a solid, dive-related business.

**Business Combinations:** Tying several dive stores under the same name and ownership has been tried often. Many have failed. Efforts to link manufacturers and stores, stores and dive boats, and stores and resorts have also been attempted with varying degrees of success. Larger groupings to include, say, a manufacturer, several travel agencies, stores, boats and resorts, tied together by common ownership or franchising, have not yet been tried. These businesses could support each other, afford to do a better job, and be somewhat insulated against changes in the marketplace.

### Taking The Plunge

Regardless of all of the reasons not to enter the diving business—the difficulties, pitfalls and dangers—the lure of making money at a hobby we so dearly enjoy may be too much to avoid, no matter how hard we try. You may still take the plunge.

If that is the case, you need to be relentless in your research. Aside from engaging in the obvious fact-finding conversations with people involved in the business, there are many other sources of information. Surveys conducted by diving magazines and associations should be acquired and reviewed; recognizing, however, that people surveyed include those who drop out of diving, and businesses surveyed include those which have failed. Association information about divers trained is valuable, though sometimes difficult to acquire because associations are so busy competing and bickering with each other that they rarely publish the valuable information they have collected. Economic information about the community in which you intend to establish or purchase a business is essential. And if the business is on foreign soil, perhaps the most important information of all regards the political climate.

Financial research should be sophisticated. General financial data can be obtained from Robert Morris Associates, Dun and Bradstreet, and private business consultants. If you are investing in or purchasing an existing business, you need to have full access to the company records to perform a variety of analyses. Here are the most basic:

The *Inventory Turnover Ratio* is the ratio of the cost of goods sold for the year, divided by the average cost of the inventory, that is:

$$\text{I.T.R.} = \frac{\text{cost of goods sold}}{\text{average cost of inventory}}$$

For the most part, it is desirable to achieve the highest possible inventory turnover, rather than simply increase gross dollar volume. For dive stores this ratio ranges from 2:1 to 5:1 per year, with an average of 3.6:1.

The *Current Ratio* is defined as:

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

When lenders review loans, they look for a current ratio of at least 2:1. Some early surveys suggest (samples are too small to be certain of the results) that the range in the diving field may be 1:1 through 4:1, with an average of 2.8:1.

The *Quick or Acid Test Ratio* tells you: if a business stopped today, could it pay all its bills. The formula is:

$$\text{Acid Test Ratio} = \frac{\text{cash} + \text{accounts receivable}}{\text{current liabilities}}$$

If the ratio is less than one, the business is in trouble. If it is one or greater, the business is solvent.

Many other techniques of financial analysis are useful, with complete analysis of a business including research into the potential market, determining the good will of an existing business and assessing demand for the service. The analysis of a business or a business opportunity cannot be conducted in a void. One should seek professional assistance from accountants, lawyers and business consultants to ensure that all bases are being touched.

### Conclusion

If you are to be successful in the diving business, the business must become more important than the diving. You can play at the sport of diving, but you cannot play at the business of diving. The business must come first.

You must manage your business, not just operate it. Managing involves planning, controlling, organizing, coordinating, supervising and staffing. It is much more than teaching people underwater photography or leading boat dives.

To be successful, you need to look ahead one year, five years, even ten years. If you look back, today's prices are incredibly high. If you look ahead, today's prices, so it seems, will be incredibly low. That view is required to make business decisions today—and to plan for your business tomorrow.

If you are only an investor—a stockholder, a limited partner, a silent partner—your responsibility to yourself is to see that your money is being managed properly—to ask the right questions about business planning and management. For many investors in the dive industry, their purpose for investment is to seek tax deductions for their hobby. If they pay more atten-

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SUPPLEMENT TO: Undercurrent Newsletter for March, 1980.

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tion to the management of their investment, they might also make a profit—or forego a loss.

But whatever your position, there are still opportunities. No one has a crystal ball to predict what national and worldwide economics have in store for the 1980s. Or even what the dive business will look like. Anyone about to embark on an investment in the diving business needs to engage in sophisticated research to ensure that the wisest choice is made. But the opportunities exist. Those who wait because of today's high prices and high interest rates may only find more of the same tomorrow.

This is the last of a two part series by Jon Hardy, past executive director of NAUI. Hardy, who now lives in Avalon, on Santa Catalina Island, 26 miles across the sea from Los Angeles, currently consults to private businesses. His book, *The Business of Sport Diving: A Guide to Business Management for Customer Satisfaction at a Profit*, may be ordered from NAUI (POB 630, Colton, CA 92324) for \$15.75.

## The DEMA Convention

### *Good Business And An Emergency Bailout*

In New Orleans in late January, 165 exhibitors came together to strut their stuff to the dive industry. This year's extravaganza by the Diving Equipment Manufacturers Association, although larger than last year's show, seemed to offer fewer innovations. Where the rainbow of colors seemed so striking last year, this year they seemed commonplace. How soon we forget the basic black wet suit. During the day, attractive models promenaded through the aisles modeling wet suits and string bikinis, or carrying signs promoting PADI. But even these ladies could not hold the attention of the predominantly male crowd who, on Sunday, preferred to revel in exhibitors' hospitality rooms while watching the Steelers clash with the Rams.

The primary purpose of the show, we suppose, is to provide the manufacturers with a forum for selling gear. Many use the show for market research, displaying a prototype of a new product to determine if sufficient dealer interest exists to put the idea into production. A number of products which seemed at show time to be waiting to be shipped to customers are not off the drawing board. Last year we reported on the Dacor Dive Computer, which Dacor promised to begin shipping in June, 1979. Full page ads in *Skin Diver* and *Sport Diver* heralded the coming of a major new electronic decompression meter. A year later Dacor, still unable to overcome manufacturing problems, has yet to put the Dive Computer into production.

#### **Two Noteworthy Products**

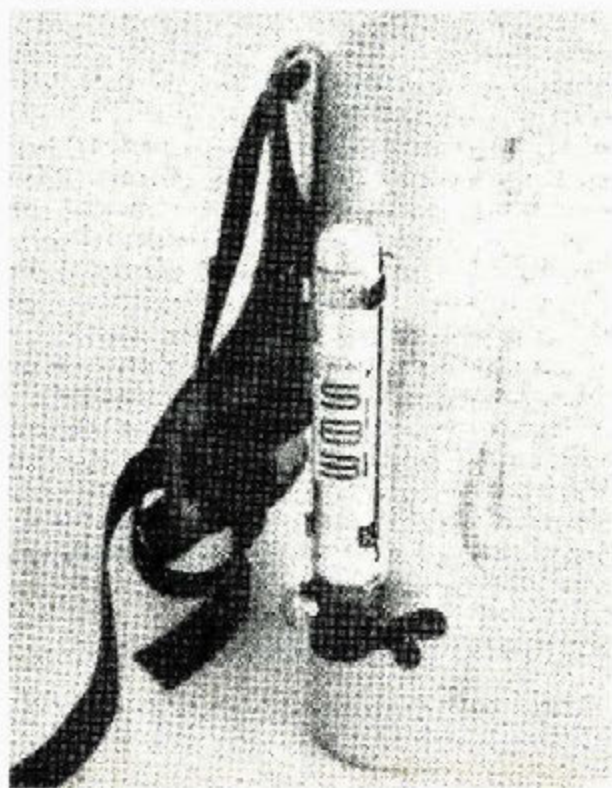
This year, two devices seem worth mentioning. In the January issue we reported that Bob Smith, YMCA National Scuba Training Director, wished for an effective bailout system to eliminate the need for emergency

### Sherwood 3100 Regulator

In the November/December issue the typo gremlin got us. We stated that the Sherwood 3100 regulator had not done well on Navy tests, when our intention was to say that the Sherwood 3000 had not done well.

The Sherwood 3100 is a new model and the preliminary Navy reports indicate it should be well-rated. The Sherwood 3000 is no longer being produced.

ascents. Today, he might be jumping for joy. Submersible Systems, Inc., (16442 Gothard St., Huntington Beach, CA 92647) introduced a 14-inch long, 2-inch diameter tube-like tank which holds 48 liters of air at 1800 psi, equivalent to six great big breaths at 100 feet. It is equipped with its own regulator. And, with its own adaptor may be pumped up by any compressor. About the size of a billy club, the device can be worn on a waist belt or strapped to the tank.



The Emergency Breathing System (EBS) as it is called, will be sold to dealers for \$84, which suggests a retail price between \$130-\$160. At first blush that seems quite high for such a wee thing, but when one imagines how far away the surface seems at 100 feet with no air, it will be a small price to pay for those people having to use it. Divers can expect to find the EBS in dive shops by late spring or early summer, the company claims.

SeaTronics (1220 West Coast Highway, Newport Beach, CA 92663) demonstrated its Digi-Range, an electronic, digital display, wrist-mounted sonar for divers. Good to 150 feet, the device can be used to locate a wreck or the top of a reef in murky water or at night, but its value to photographers may be more significant. Because the device reads out in tenths of feet, photographers can determine the precise distance between their camera and their subject. According to SeaTronics spokesman Jim Ford, the device will be available sometime in April.

## The Limitations Of Regulators

The purchase of a new regulator is damn serious business. After all, a regulator is a life sustaining device. Surely a consumer needs at least two assurances.

First, he needs to know that his regulator meets some minimum performance standards. One standard that would seem to make sense might be that any regulator on the market will at least deliver air at sixty feet, regardless of the conditions of use. Certainly, any regulator ought to be able to meet that standard.

Second, the consumer needs to know the limitations of the regulator. Are there depths or conditions under which the regulator will have difficulty delivering air? That seems to be essential information if a diver is to prevent himself from inadvertently getting into a situation that the regulator can't handle.

Incredible as it may seem, the industry has no standards for performance or safety of regulators. A consumer gets better information about a toaster than a regulator. No one, including the manufacturers and the training agencies, gets upset about the limitations of regulators being sold to sport divers and what seems to be collusive efforts to keep the information from the users.

### The Breathing Limitations Of Regulators

Although sport diving wisdom holds that divers should not exceed 130 feet, many divers frequently dive much deeper. In this issue, our North Caicos

### The Effect of Inflation

Though most participants were optimistic about the show, the impact of inflation tempered their views. New diver certifications appear to be increasing, which means more business for the shops and manufacturers, but the shortage of gasoline and petrochemicals means fewer dive trips and more expensive equipment components. Recent price increases concern the shop owners, not only because their costs are increasing, but because they fear "price resistance" from divers.

Some companies did more business this year than last, but many who wrote more orders said the dollar amounts were smaller. Overall, the show was well summed up by Wes Williams, representing Farallon Oceanic. "This show is good for both manufacturers and retailers, even if you don't write as much business as you would like. It is one of the few opportunities to meet face-to-face with a customer and have the customer meet the company president or a design engineer. Overall, it's good business."

### Why Silence Is Deadly

reviewer writes of sport divers descending to 185 feet, and a year ago our own travel editor reported on the over the wall dives at Small Hope Bay where tourist divers regularly descend to 170 feet.

As we indicated in the first part of this article (November/December, 1979), three variables affect the performance of a regulator regardless of its construction.

1. The deeper a regulator is taken, the more difficult it is for the regulator to deliver air. At some depth it will no longer operate.
2. The lower the tank pressure, the more difficult it is for the regulator to deliver air.
3. The greater the work load of a diver—i.e., the greater the diver's effort to draw air—the less effective a regulator becomes.

These three variables, in combination, can render some regulators ineffective at 60 or 70 feet, others at 100 feet, and the very best at 150 feet or deeper. *However, not one regulator manufacturer supplies this kind of information about their regulator to the consumer sport diver. Not one regulator manufacturer informs the users of their devices at what depth, tank pressure or work load the regulator might become dangerously ineffective.* So far as we could tell, only three manufacturers, Scubapro, Tekna, and Dacor, make any effort to discuss these concepts in their promotional or instructional literature. Scubapro's effort is the most diligent, but falls far short of the mark. They include flow charts for some regula-

tors in their instructional manual, but the charts, without sufficient written interpretation, are incomprehensible to all but the most technically inclined diver. Furthermore, the manual goes on to say that "the Scubapro balanced 1st stage utilizes a flow through piston to nearly eliminate the effect of tank supply pressure on the breathing characteristics of the regulator." The results of the Egstrom study do not support that claim. In looking at the Mark V, for example, at 131 feet the performance with 1200 psi was acceptable, but with 300 psi the results were, in Egstrom's words, "excessive," which we translate as "unacceptable."

We must admit some reservation about criticizing Scubapro, because none of the manufacturers are clear about the limitations of their regulators. Most say nothing. What's wrong with a simple regulator label like this:

*The Johnson 52 regulator was not designed to be used deeper than 150 feet. When the supply pressure drops to 800 psi, the regulator may have difficulty delivering the air a diver needs if he is deeper than 100 feet. At 500 psi supply pressure, a diver should not be deeper than 60 feet. If a diver is working hard and putting increased demand on the regulator (e.g., if he is in a current or engaged in physical labor), then he should reduce the recommended depths by one-third.*

Because the diving manufacturers don't include this kind of information with their regulators, we have a hard time indeed believing they have much concern about the safety of those who buy their products. There are a number of unsolved deaths in sport diving, many of which we suspect from a diver getting himself into a situation where his regulator does not work and the resulting panic leads to death from embolism or drowning. In many of these cases the investigator finds that the dead diver has a few hundred psi left and his regulator seems, at least on the surface, to work just fine. The deceased becomes just another drowning and, for the umpteenth consecutive year, equipment failure is never implicated as a contributing factor to the scores of mysterious deaths.

We wonder just how long the instructional agencies, the sport divers, the dive stores—and the government—will continue to award safety medals to those who make our life-giving devices and refuse to tell us about the implicit dangers lurking below sixty feet?

### **So What's The Excuse**

To find out why the manufacturers have elected to remain silent about their regulator limitations, we called a number of company executives. Ralph Shamlian, president of Tekna, illuminated the problem. "Most manufacturers," he said, "don't really know what their regulators can do. For sometime only Scubapro and U.S. Divers had a true breathing

machine. About a year-and-a-half ago Dacor added a machine. Because they cost between \$10,000 and \$15,000, most companies use a static flow machine, Shamlian said.

Shamlian, whose firm produces the Tekna 2100 regulator, said he tested his regulators in Glen Egstrom's UCLA labs. "We made three or four trips to Los Angeles for tests and between each test would modify the design. We spent about \$300 to test our regulators. Many of the companies are located in Los Angeles and it would cost them a lot less for the tests."

In 1978, Egstrom completed tests of thirty-nine regulators. Those test results were reported in *Undercurrent*, but never mentioned in *Skin Diver* or *Sport Diver*. With the exception of some limited data reported by Shamlian, whose Tekna regulator finished first out of 39, none of that information has so far appeared in advertising copy or in information given the consumer. Nevertheless, many manufacturers still hide under the cloak of ignorance, claiming that the Egstrom test is only a single test. More information is needed. But no one is collecting it. For the consumer, Egstrom's information would seem essential.

Many manufacturers fall back on the U.S. Navy specifications for regulators. As Paul Chesney of Sportsways told us: "We have all felt that if we met the Navy specs that would be enough for sport divers." Frank Sanger, president of Parkways, whose firm markets the Swedish-made Poseidon Cyklon regulator, echoed those thoughts when he told us: "We have tried to meet military standards and felt that if our regulator met those, then the customer would have some idea of how we would perform."

Surely, meeting U.S. Navy standards is one measure of a regulator's ability to perform, but one must also recognize that sport divers put regulators to more severe tests than U.S. Navy divers. *The 1979 U.S. Navy Diving Manual states that divers using scuba are restricted to a maximum depth of 130 feet, a maximum time of ten minutes, and a maximum current of one knot.* If these conditions are to be exceeded, divers must switch to full face masks or hard hats. Furthermore, divers using scuba must dive in groups of four or more. Navy divers are highly trained, in much better physical shape than an average sport diver, and have access to a full range of underwater and surface support systems.

Navy regulations for scuba diving are established with the limitations of regulators clearly in mind. As we have belabored, sport divers have no idea of the limitations of their regulators. If the Navy or another independent body were to establish regulations for sport divers—sport divers who were poorly trained, are out of shape, dive in pairs, have never performed an emergency ascent, and have no surface support systems—we wouldn't be a bit surprised to see the maximum depth set at sixty feet.

We should also add that Navy specifications are relatively unknown to sport divers. For example, the

Poseidon Cyklon has passed Navy specifications, although its performance is nearly unacceptable at a high work rate and low supply pressure at depths below 66 feet. But, unless one has studied the Navy report or read the results in *Undercurrent*, a Poseidon user would have no means to know about those limitations. Certainly, the people who market the Poseidon don't broadcast it.

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*"...the decision not to publish specific information about the limitations is a decision made to sell regulators—not to enhance the safety of divers."*

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Another widespread argument posed for not publishing the data was offered by Paul Chesney of Sportways. He explained to *Undercurrent* that if "only one manufacturer put out his specs it would not mean much to the consumer because he couldn't compare them with anything." Perhaps, although Scubapro, Tekna, and Dacor publish some technical data, and in that light the Sportways argument pales somewhat. Our point, however, is that one ought to know the limitations of his own regulator. If we buy a Sportways regulator, we should know whether the tests indicate that the regulator, at 100 feet with a low supply pressure and high work load, doesn't work well, if that's the case. Although Dacor publishes some information from the U.S. Navy tests in marketing its regulators, Sam Davison of Dacor acknowledges that "the industry as a whole has not published this kind of information. I suppose that we didn't want to get into a numbers game."

Call it what you will, the decision *not* to publish specific information about the limitations is a decision made to *sell* regulators—not to enhance the safety of divers. We infer that manufacturers believe they will have a competitive disadvantage compared to other companies if they disclose to the public the limitations of their product. By remaining quiet, the companies seem to believe, they protect their position in the market. By announcing that there are limitations to their regulators, they will lose out to other companies which do not acknowledge the limitations of their own devices. The Gen. Mgr. of the Diving Equipment Manufacturers Association, Bob Grey, told *Undercurrent* that even if DEMA developed such information about regulators, "the release of the information would be up to the manufacturers. It would be a marketing decision," he told us. And marketing decisions, as anyone knows, are decisions about how to sell a product.

Many of the company personnel we spoke to claimed that they disseminated technical information to the dive stores where that information was to be conveyed to the consumer. John Canna of Sherwood Selpac told us that "we furnish our representatives with all pertinent data and the reps disseminate this data to the dive shop." In our experience with dive shops, however, we have yet to hear of pertinent data reaching a consumer.

Just recently, for example, an *Undercurrent* associate ventured into two different dive shops to purchase a regulator. In the first shop, the fellow behind the counter pulled a regulator from the shelf (a pretty average regulator according to the Egstrom study) and told us that it would satisfactorily meet all of our needs (we had not yet stated what our needs were) and, best of all, it *was better than most other regulators because it could be repaired easily just about anywhere in the world.*

At the second shop, the salesman asked how much we dive (oh, 30 maybe 40 tanks a year, we replied), and with our answer he pulled a very average regulator from beneath the counter and explained that was quite suitable for someone who doesn't dive much. If we took our 30 dives a year to 150 feet or more, that regulator could mean trouble. *Somehow, the salesman believed that the number of dives is more important than the depth or work load during the dive—if he considered those factors at all.*

Obviously, our two shop sample is not scientific, but we consider ourselves on safe grounds when we state that a great majority of divers who purchase a regulator do so without receiving any of the important information required to put that regulator to safe use. Aside from reading *Undercurrent*, consumers have no way to learn about the limitations of regulators. Most dive shop personnel have no solid information about regulator performance and base their sales pitch on misinformation and assumptions. And, if the regulator manufacturers know anything about their regulator limitations, they keep it to themselves in the name of "successful marketing."

## Regulator Standards

Standards differ from limitations. Standards establish minimum performance characteristics which, for example, might mean that a regulator should be able to perform under all adverse circumstances at a depth, say, of sixty feet. Of course, no regulator standards suitable for sport divers exist. The U.S. Navy specifications are, in fact, standards involving a number of variables. Although a regulator can perform quite poorly on some tests, it can still receive overall Navy approval. The Poseidon Cyklon 300 is a case in point.

Until recently most of the regulator models tested by the Navy were submitted by the manufacturers who wanted to sell their products to the government. A manufacturer who believed his regulator could not meet Navy specs simply would not submit it for testing. Last year, however, the Navy selected a number of regulators for testing and *Undercurrent* will publish the results as soon as they become available. We have learned that the Navy tests reveal that half-dozen or so regulators are, in not so technical parlance, "real dogs."

DEMA is developing standards for regulator per-

## Before You Dive: A Simple Surface Check Of Your Regulator

### *And Submersible Pressure Gauge*

Just before you jump overboard—or better yet, before you pack your gear for your next trip—make these simple safety tests of your most important pieces of equipment—your regulator and your pressure gauge.

Hook your first stage up to your tank, turn on the air, and take a couple of tokes from the second stage to verify that everything seems to be working normally, then turn off the tank valve and continue breathing until you get no air.

Now check your submersible pressure gauge. It should register zero psi. If it doesn't, it is inaccurate. If, for example, it registers 100 psi, then next time you were diving and you presumed that you had roughly 100 psi left, you would in fact be on your last breath. You could indeed compensate for the error, but unless you run your gauge through tests at varying psi's, you'll have no way to judge accuracy at any other readings. Most likely, you'll need a new gauge.

Once the accuracy of your gauge is determined, continue to inhale through your regulator. You should feel a slight suction on your tongue at the air entry point. If you do not feel the suction—that is if you can still draw some air into the regulator—then there is most likely a problem with the diaphragm and the regulator needs overhauling. Underwater, the effect of this leakage can be anywhere between a nearly imperceptible mist from the ambient water to a substantial spray mixed with the air being breathed.

Although your regulator may pass this test, there can be other problems. Nevertheless, if your regulator fails an overhaul is indeed due.

formance, but the process will be long and arduous and once the standards are developed there will be no requirement that manufacturers comply. DEMA Gen. Mgr. Bob Grey told *Undercurrent* that first consensus must be achieved among the manufacturers and then the standards will be submitted to the American National Standards Institute, an organization which accepts and ratifies standards for a wide range of businesses. A Secretariat of 41 organizations which allegedly have an interest in diving (the membership ranges from compressed gas associations to insurance companies) must reach consensus and then the regulations are promulgated to the public for response. If any alteration is made in the proposed standards, the process must begin again. DEMA will have no control over the members who elect not to comply; there will be no sanctions for noncompliance.

### What Can Be Done?

It's too much to ask of the manufacturers of regulators to provide specific information about the limitations of their regulators to consumers as long as they believe they'll lose their position in the marketplace. So far, the safety of divers has been given short shrift in light of the need to maintain a market and profits.

At some point, we suppose, the United States Consumer Product Safety Commission will march in with instructions to the industry about what kind of information they should provide divers. We would welcome that. In the meantime, we might expect three groups of people to raise a little hell.

First, training agencies should disseminate factual

information about regulator performance to their instructors and students. While they fill their magazines with articles on safety, never do they write about the differences between specific regulator models. Never are they critical. By withholding this information they ignore a major component of safe diver training. They must give higher priority to student safety than to maintaining their fellowship with manufacturers.

Shops offer greater hope. They can provide the information they receive in the pages of *Undercurrent* and from other noncaptive sources directly to the consumer. That would be a big start. They can also refuse to carry regulators which don't stack up well on the Egstrom tests. They can also report to regulator manufacturers their concern about the lack of information about the products.

And then there's the sport diver. If he carefully selects his product, researches the facts for himself, and specifies the reason for his choices to the dive shops, his safety might become more significant to the industry. If he refuses to buy low ranking regulators, if he refuses to purchase a regulator which does not contain complete information about its operation, then the industry will get the message through its cash register.

Wishful thinking? Probably. In the diving industry the centuries' old law still prevails.

*Caveat Emptor.* Let the buyer beware.

This story completes a series of four articles; the first appeared in the October issue, the next two in the November/December issue. For a copy of Egstrom's regulator tests, send \$2.50 for the April, 1979, issue to *Undercurrent*, POB 1658, Sausalito, CA 94965.

## Dear Undercurrent:

### *My Tank Fell Off My Backpack*

*Dear Undercurrent:*

*I recently wrote Scubapro concerning the detachable tank band on the backpack which came with my Scubapro Stabilizing Jacket. I'm a subscriber and an experienced diver (20+ years) and think this is a serious product defect. Here is a copy of my letter:*

*Dear Scubapro:*

*I am writing with reference to my Scubapro Stabilizing Jacket purchased at Underwater Unlimited a year ago. The failure of the detachable tank band hooks resulted in the loss of the band on a recent dive. On several previous occasions I have had the band jarred loose by very slight bumps resulting in the entire tank/regulator assembly falling free from the backpack. On the dive mentioned, the unit came apart during a normal back-roll entry from a dive boat on the Cayman Wall. The tank and regulator were retained only because of the power inflator hose, but the tank band was lost to the depths.*

*Underwater Unlimited wants \$40 for a replacement band and I feel the loss should be compensated for under the conditions of your warranty. I think this is a serious defect which could result in a tragic diving accident.*

*Sincerely,*

*Donald G. Arneson  
Jamaica, New York*

Undercurrent called Scubapro President Dick Bonin to discuss the problem. Bonin said that they had received a half-dozen complaints about the band and therefore redesigned the band, which they announced to their dealers in an engineering bulletin dated September 29, 1979. He said that Scubapro would send Arneson a free replacement.

Bonin said that in reviewing the problem they learned that if a diver mounted the tank slightly askew—if he did not fit it carefully into the molded groove in the backpack—then there would be invisible slack in the band that would become apparent if the tank were jarred. In rare cases the tank band could pop out or the tank could slip from its mount. The instructions indicate that the entire unit, once the tank has been attached, should be picked up and shaken to ensure that the tank is secure. According to Bonin, the new band design makes it nearly impossible for the diver to lose his tank or the tank band.

Undercurrent comments: Scubapro is one of the few manufacturers which conscientiously publishes instructions with the equipment they sell. In this case, however, they would have helped themselves by giving divers specific instructions about fitting the tank into the backpack groove. Because Arneson has 20 years diving experience, we can only presume that he knows how to insert a tank into a backpack properly. Because Scubapro redesigned the band, we suspect the problem extended a bit beyond diver carelessness and there was indeed a design problem. We'd like to thank Don Arneson for calling our attention to the problem.

In our travels, we have noticed that many divers fail to mount their tank properly. Some wear it so low in the harness the weight nearly keeps them over backwards. And, we've seen some low-mounted tanks slip from a backpack while the diver is underwater. We've seen other divers mount their tanks so high that they don't fit firmly in the backpack groove, increasing the chance of the tank falling out. When a tank is mounted too high, a diver will find his head movement impaired by the first stage of the regulator. In fact, once we saw a diver with an improperly mounted tank jerk his head back to look up at the surface and almost knock himself silly. It's utterly amazing to see all these certified divers who still don't know how to mount a tank properly. Kind of makes you wonder what went on in their classes.

On the other hand, by now the manufacturers ought to know that their clientele are not composed of hot-shot professionals. When designing equipment, manufacturers need to keep the novice- and the nervous-diver in mind. When gear is being tested, it is often the skilled divers on the company payroll who do the experimenting. We're pleased they take the risks, but that means they may not learn of the real problems until the novices begin writing letters.

When we suggested to Dick Bonin that Scubapro might be a step ahead if they let beginning divers test their gear, he only chuckled. "We've got a couple of divers around here," he said, "who can't do anything right, but the problem even escaped them."

So much for our good idea.