

Providenciales, Turks And Caicos, B.W.I.

--Worth A One-Week Stand

I think some of the better Caribbean diving can be found off the Turks and Caicos Islands, about 500 miles southeast of Miami.

This nine-island British Crown colony has but 7,000 residents on this little cluster. The word has never been out about T&C because no operation is sufficiently well heeled to cough up the cash required for an advertising campaign. Providenciales, the most developed of this undeveloped archipelago, has three hotels and a Club Med (which may offer diving sometime this year). I wrote about the Third Turtle Inn in February, 1983. Our new review shows not much has changed, although the Turtle has recently changed hands and the divemaster is new. The small Erebus perches on the neighboring hillside, above the marina cove which is the home of Art Pickering's Turtle Divers. Adjacent to the Third Turtle, he gets most of the diving action on the island, including guests from the Island Princess several miles down the beach. Here is our report

G.C., travel editor

Providenciales has the look of a land long forgotten by the Queen. About the only vestiges of the Crown are driving on the left and a Barclays Bank. Not only are U.S. greenbacks and Amex cards the only convenient currencies, there's nary an Oxford accent to be heard -- more like Creole among the natives and relaxed drawl from the sunbelt expatriates. The few rolling hills make for less monotony than many of the Bahamas islets, but the scrubby vegetation hardly sent me searching out postcards or dusting off my land camera. The most advanced of the sleepy Turks and Caicos group, Provo is neat and tidy, but its buildings are neither tropical nor quaintly European. It's one of those islands that only a diver could love.

Did this diver come to love Provo? Well, there are friendly fish, nice folks, fine beaches, nifty food and adequate accommodations. And the diving? Not bad. Not bad at all.

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With the charming Third Turtle in between owners (our 1983 article still holds up) I opted for the Island Princess, smack on a powdery beach. My 727 directly from Miami had been full to the gunwales (in fact, a few folks had been bumped), and the luggage scene at the airport was too bizarre to describe. But after a cross-island taxi trip, I was soon sipping an ale at the Island Princess with Art Pickering, who was patiently waiting in the bar for the week's contingent of divers to drift in for a welcoming drink. The bearded Pickering had been diving honcho for a dozen years at the Third Turtle, before cutting loose to set up his own shop a hundred yards further down the cove. But the Island Princess was several miles away, so he explained that cabs and vans would be at the hotel each morning for shuttle service; after the first day, we could store our stuff at the shed at his dock.

The next morning I and several other divers piled into the Crazy Baby Taxi for a 10-minute run to Art's shop, right at the marina dock, with plenty of space on the shady porch for gearing up. We had to rig out our own tanks (aluminum 80's, filled to almost 3000 psi) and tote them a few feet to one of the boats in his funny little fleet: a 23-foot Mako, a 22-foot Aquasport, a Whaler or two, and a rather nice Bertram cabin cruiser. Not all of the boats went out at once, except when all 25 or so divers who were "on the floor" that week showed up. So many guests created an unusual situation for Art; the average is more like half that crowd.

With Art's boat in the lead, the convoy meandered slowly through a twisting channel into the shallow water of the cove -- and then came the surprise: Like jets on a runway they took off, hitting 18-knot speed. Hold onto your hat! And hang on with both hands! At first exhilarating, the trip soon became uncomfortable -- the lickety-splash pace became knee-jolting, especially as Art found his way through five-foot waves edging the fringing reef and into open water. For some, it was an anxiety-laden journey.

The west wall, the best diving, is half an hour from the dock. Pickering proved time and again that he is an absolute master of the dive sites in those parts. None of the reefs is marked, yet each time he unerringly found just the site he intended. One might expect that Pickering, usually chewing a toothpick and clad in an R-rated tee shirt, would be on an ego trip in showing off his reef knowledge, but I found him to be quite laconic. "What's the depth here?" "Oh, 'bout what you want to make it." "Any currents?" "Doubt it." "Anything special to look for?" "Oh, the usual -- fish and stuff." And most of the sites didn't seem to even have names.

The western wall, always the morning destination, started at 50 to 60 feet, and didn't feature many of the spectacular grottos, holes and crevices that I'd seen in Cayman and Cozumel, for instance. But the visibility was excellent, the wall dropped to nowhere most places, and was covered by a good array of gorgonians, whips and hard corals. Healthy black coral could be found at 70 feet, while pretty sponges were rare. Plump, steely-black barracuda cruised by

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frequently, and once in a while an eagle ray hung off in the distance. On one dive, a stunning large manta flapped on past.

Because of the distance to the reefs and the lack of nearby pretty shallow dives, Art usually offers only a single-tank morning dive. Afternoon dives varied in quality. Except for one day when the hotel packed picnics and we stayed at the west wall all day, the trips were always to the nearer north side. The sites were gently sloping 50-footers; a few better than others. Coral was often broken and sand covered and fans were tattered, perhaps a remnant of the 1985 hurricane that dealt Provo one helluva whallop.

But, here were the friendliest fish I had ever met up with. Elegant and relaxed queen triggers, very skittish elsewhere, curiously circled round. Banquet-size groupers, who weren't looking for handouts, zoomed in to stare me down, eyeball-to-mask. At one site, where Pickering often feeds the groupers, he was set upon by dozens right after arriving. He caught one by hand directly at the jaw (I wish I had such leathered forceps) and it didn't even seem perturbed. (But what did perturb me was that while Pickering was diving with us, no one was aboard the boat to lend a hand to anyone who might have needed to surface early.)

Star Chart:

Diving for Experienced Divers:

Mornings ★ ★ ★ ★

Afternoons ★ ★ ★

Diving for Beginners ★ ★

Beach Snorkeling ★ ★ ★ ½

Hotel ★ ★ ★ ★

Money's Worth ★ ★ ★ ★

★ poor, ★★ fair, ★★★ average, ★★★★ good, ★★★★★ excellent

A couple of afternoon dives were real ho-hummers and I wondered if Pickering really intended to set us there or if he just didn't care to go that extra mile to a better site. After all, hadn't he been diving here for well over a decade? Should I give him the benefit of the doubt and call it the luck of the draw? On one P.M. dive I landed at a dull place with much broken, dead, sanded-over staghorn. Yet when the reef recovered from the shock of two dozen divers descending the denizens crept out: a brave lobster, flamingo tongues, several crabs, some pretty french and queen angels, a petite eel garden. Even a junior manta dropped by, and I happened on a large green moray out in the open. On another afternoon my sharp-eyed buddy found several juvenile spotted drums, an inch-long trumpet, a covey of tiny banded cardinal fish, a lettuce nudibranch and purple-tipped anemones. Because I had my macro nose in the reef, I missed the turtle and the small shark my boat mates saw. Provo diving has a great deal to offer, but you have to have a bit of luck and be a patient searcher. But, isn't that true for every good place in the Caribbean?

About Pickering's dive operation I had mixed feelings. The unshaded boats were less than comfortable for those long and rugged trips, especially with 10 or more divers packed sardine-like -- six or eight should be the max. Briefings were non-existent and regulations were relaxed -- fine for smart, experienced divers, but not for tyros (though Pickering did offer some assistance to a new diver when called to his attention). Although two tanks is often the norm for land-based operations, I like more. Overall, the operation lacked the panache of those big Caribbean resorts -- which made it more exciting, more of a test, and, I suppose, easier to criticize. But I do like to escape from the cattle-boat tours in heavier traveled places.

Such were the topics of conversation when we gathered apres-dive in the cozy bar at the Island Princess, once in a while raising steins with Paul Hudson, a delightful guy, who had left Provo for the Kittina on Grank Turk, but has since

returned to help Pickering with diving services such as E6 processing and the watersports activities at the hotel. Friendly Vernitia Piper, who, with husband Kal, daughter and son-in-law, built the 80-room inn eight years ago. Vernitia seemed to be on duty from 7 A.M. to midnight, minding every sort of detail at what is an above-average-for-comfort divers' hotel. It's an unpretentious place, yet its folder mentions that it's been visited by an infamous fugitive financier (Robert Vesco, no doubt), a Watergate plumber (one of dozens) a presidential speech writer (let's exile Pat Buchanan there) and a deposed Third World president (one of hundreds).

Rooms are arranged in two-story wings, set back at 90-degree angles so that each has a sea view. Furnishings are simple but adequate, and there are good bathrooms with reliable solar-powered hot water. Tap water, though, was less than tasty. Good cross-ventilation and the ceiling fans compensated for the lack of air conditioning. The grounds have nice tropical plantings surrounding a sizable hole in the sand that's hankering to become a swimming pool -- maybe summer '87. A few hundred yards down the lovely, powdery sand beach, lies a small but interesting shallow reef (which I dubbed the "Kindergarten") ideal for a late afternoon snorkel. It's home to infants and toddlers who will later join their parents on the prime-time offshore reefs. Stingrays a few inches across, barracudas the size of bananas.

Food at the Island Princess was definitely above average for Caribbean Bahamian inns in out-of-the-way places. Buffet breakfast menus changed regularly and offered several hot dishes -- pancakes, French toast, scrambled or fried eggs, bacon or ham, corned-beef hash, juice (but no fruit) and grits. Lunches were casual -- spicy conch chowder, conch burgers, tuna, ham and cheese or chicken sandwiches. Dinners leaned heavily on sea fare -- cracked conch, curried seafood, grouper creatively prepared, turtle steak, with cakes and pies for dessert -- all nicely served up in the breezy, sea-view dining room, with a guitarist strumming in the corner. After dinner I'd repair for a rum punch to the homey bar, which had such curious touches as a television, a

Warm Water Certification, Cold Water Death

A diver who gets certified in the warm and clear tropical waters can too easily put his life at risk if he returns to cold Atlantic or Pacific waters and tries to dive without further training or supervision.

Californian Ronald Ford got certified last December at Jamaica's Hedonism II, a Club-Med type operation. The waters were warm and calm, the visibility often approaching 100 feet. In early January he made his first dive in the Pacific, at Abalone Cove, south of Carmel, with two other divers. The temperature of the water hovered near 50°F, the visibility less than 40 feet.

When Ford and the two buddies began the dive, the sea appeared calm, but they were soon dragged past the cove's mouth by an ocean surge. They tried to pull themselves back into the calm water by tugging on kelp, but a piece broke loose, carrying Ford and one other man back out. The other diver eventually made his way back. Ford inflated his BCD, which brought him to the surface, where he was swept against rocks along the shoreline.

At one point, one of the divers who had climbed up on the rocks at the mouth of the cove was able to grasp Ford as he floated by. But he lost his grip on the 6'4", 220 lb. victim, who appeared unconscious and not breathing. Fearing he too would be swept away again, the man released Ford, whose body was later pulled from the sea by a U.S. Army helicopter.

Near Carmel, there are several excellent dive sites visited every weekend by hundreds of divers. But the seas are difficult and change rapidly and more divers die in this coastal area than at any other place in the United States, with the exception of Florida's caves. A person who hasn't been trained off the California coast has no business diving there.

There is no comparison to being trained in diveskins with 4 lbs. of lead in 80°F water with 100 foot visibility, and diving in 50°F water with a full wet suit, a weight belt with 10% or more of your body weight in lead, and the surge of the Pacific Ocean.

Such a tragic death raises some serious questions about the certification cards as a universal license to purchase and rent equipment. We'll address those in a forthcoming issue.

disco ball, a steeple clock and a couple each dart boards and slot machines. My only complaint was that I couldn't find good enough light to read by, the result of Provo's 35 cents a kilowatt hour electricity costs.

One afternoon rather than risk a possibly boring reef, I climbed the hill behind Pickering's operation to the charming little Erebus Inn for a fine lobster salad on their terrace overlooking the beautiful marina and bay. I tried shopping, but found nothing but a quaint bookstore, and some souvenir shops with goods made mainly in Hawaii and France. So, I lazed into the nearly-deserted Third Turtle for a rum punch (pricey, at \$4.50, compared to Erebus' and Island Princess' \$3.50 tabs) on their dock at the marina. It's a pretty place; hope it's back on the class diving circuit soon.

As I sipped my rum, I asked myself if I loved Provo. Would I make a commitment from the heart? Would I have a long term affair with it? No, but it's indeed worthy of a one-week stand, for a one-time visit for a diver who wants a relaxed week of two-tank-a-day dives, with a fair to middlin' chance of diving excitement, and a little time and mental space to enjoy the bougainvillea, curled up on a beach lounge with a beer and a good book. It offers nothing more. And nothing less.

Divers Compass: Book through any travel agent or call direct: Island Princess Hotel (809)946-4260; Provo Turtle Divers (809)946-4232 ... Current air fair by Pan Am is \$228 round trip for 3-21 day stay . . . Complete 7-night package including room, all meals, six 2-tank days with Pickering and all transfers \$760 per diver, non-divers \$270 less ... No night life; bring a significant other or even a mid-sized group ... Water is 76°-78° in the winter, you'll need at least a wet suit top; ... No-see-ums can be pesky on beach walks at dusk ... Wonder of wonders: There's a recompression chamber on Provo.

The Harvard Diving Report: Part I

--A Suppressed Report Comes To Light

Last year, graduate students at the Harvard Business School conducted a study of the diving industry, with the full cooperation of the manufacturers, retailers and training agencies. When the report was completed, it was distributed to DEMA (Diving Equipment Manufacturers Association) Board and subsequently to the members of DEMA.

But it was to go no further. Bob Gray, Executive Director of DEMA, told *Undercurrent* that distribution was stopped on the advice of legal counsel. "Portions of the report, if implemented by anyone, could be construed as restraint of trade," he said.

Indeed, the report does call attention to the enormous success that foreign suppliers and distributors are having in the American diving market, and suggests strategies that the American industry might consider if it is to keep foreign competition from taking over the market. Some of the suggestions are legally questionable, especially if companies were to act in collusion with one another. So, DEMA may have a valid reason for not wanting to authorize

distribution.

There are other people in the industry who believe that the real reason for squelching the report is that it describes how scuba diving is not a growth industry, how the American manufacturers are in serious trouble, and how the industry is rife with competition and conflict. Certainly, that may have come into play. We have always found the industry to be thin-skinned and highly resistant to criticism. One DEMA member told *Undercurrent*, "Look, the report is not good news. DEMA only releases good news."

We got our hands on a copy and found it to be a good read, shedding light on aspects of the diving industry that no one has been able to penetrate before. It provides the diving consumer with an in-depth look at the industry, from the retail store to the training agencies and the manufacturers. There are plenty of good insights into how an industry, to protect its own profits, can screw the consumer. Certainly, DEMA can't authorize the distribution of such crass and illegal anticonsumerism, but remember -- the DEMA

members have all read the report.

So that we consumers can know what's going on, we'll serialize our edited version of the report in the next few issues. Here's part one of the Harvard Report:

U.S. Market Characteristics

The first scuba diving equipment was sold in the United States in the mid-1940s. A formal industry has grown, but it has remained small. In 1985, wholesale revenue generated from the sale of diving equipment approximated \$120 to \$140 million, and retail revenue ran between \$200 to \$300 million. Additional retail revenues of approximately \$100 million were generated through diving instruction, equipment rental and repairs, and sales of products such as bathing suits and T-shirts. Dive travel revenues are not included in these figures.

The real inflation adjusted compound growth rate of wholesale sales from 1980-1985 was flat at zero percent, but over the period 1982-1985 the growth rate was approximately 5 to 6 percent. This is a lower rate than the rate of growth of the overall U.S. wholesale trade, but on an overall par with the sporting goods industry, (however faster in the past four years).

This slow rate of growth is a major problem facing the industry. An important question is whether this low growth rate is an indication that this is a mature industry, or that industry has tended to gather the "easy" sales.

"The U.S. diving equipment manufacturers can most accurately be referred to as "assemblers."

Diving equipment is purchased by students and by recently certified or active divers. According to many industry sources, the most important factor in generating retail sales is the number of students who enter classes. The number of divers being certified each year has grown from 200,000 in 1981 to 400,000 in 1985, a compound annual rate of 19 percent. However, industry sources claim that these figures contain substantial double-counting due to multiple certifications by individuals, and secondary and advanced courses taken by previously-certified divers. Estimates of the number of new individuals who received basic certification in 1985 average 240,000.

Manufacturers

The U.S. diving equipment manufacturers can most accurately be referred to as "assemblers." They get the majority of the components for their products from OEMs (original equipment manufacturers) in

the U.S., Japan, Taiwan and other countries. Most masks, fins, snorkels (rubber goods) are actually produced overseas and are brought into the U.S. for final assembly, packaging and distribution. Components for regulators and valves (hard goods) are made primarily in the U.S. and are assembled in the U.S. diving equipment manufacturers facilities.

In the past, foreign suppliers were under contract to U.S. manufacturers who invested money in research and development, finalized the product design, then had the equipment produced overseas at a cost lower than possible in the U.S. In the past few years, some foreign firms have begun reproducing product designs, doing their own manufacturing, and approaching the retailers directly.

More than 40 manufacturers supply diving equipment to the U.S. retailers, making overcapacity a serious problem. It has led to highly competitive business practices to gain retail distribution and price competition. Contributing to this overcapacity are the entrance of new competitors and the expansion of product lines by existing manufacturers.

Following is a discussion of each of the major manufacturers, based upon a combination of quantitative data and qualitative opinions gathered in interviews.

Fish Food

The most unappealing product at the DEMA show was Aqua Worms (yes, that's the real name), some sort of plastic looking stuff that was actually formulated by people who specialize in making food for cattle. To attract and feed fish, a diver releases worm-like substance from an aerosol can, much like shaving cream. A single can, at \$5.95, supposedly provides enough formulated worms for a single dive.

Multi Systems International, which is trying to market this stuff to dive shops, writes in its sales brochure: "Our experience, from worldwide dive testing has shown that once a diver has tried Aqua Worms he will usually become a devoted user of the product."

Frankly, we'd prefer rice and beans.

Full-line manufacturers with U.S. facilities

Dacor Corporation

Privately-held Dacor Corporation, the company with the largest gross revenue, was founded in 1954. It is a full-line manufacturer, with over 400 products which compete at three price points. Dacor's products have a reputation for quality. Although Dacor is very guarded about its financial results, industry experts believe that it is among the most profitable

manufacturers. Its estimated market share in 1985 was 13 to 16 percent.

The foundation of Dacor's strategy is to use in-house engineers and designers to design products, which are then manufactured in low-cost facilities overseas, primarily in Taiwan, Japan and Italy. In its relationships with overseas manufacturers, Dacor seems to place a strong emphasis on efficient production techniques and thorough testing of equipment.

Dacor sells its products to approximately 1100 U.S. and 600 foreign retailers and distributors, using commissioned sales representatives who carry primarily Dacor products. Dacor provides its retailers with many services including equipment repair seminars, selling seminars and a toll-free number for placing orders.

In terms of its competitive positioning, Dacor is considered to have a very broad product line, an above-average breadth of distribution, and provide a high level of service to its retailers.

USD Corporation (U.S. Divers)

U.S. Divers dates back to Jacques Cousteau's development of the original Aqua-Lung. Until 1980, U.S. Divers was recognized as the industry leader and the largest manufacturer. According to industry sources, U.S. Divers has lost market share and has apparently experienced low and erratic profitability.

U.S. Divers is still one of the largest manufacturers, with their 1985 market share estimated at 10 to 15 percent. Owned by Alusa, Inc., it derives approximately 50 percent of its total revenues from a profit center that sells fire fighting and emergency life support equipment.

U.S. Divers strategy is based upon broad distribution. The company's products are sold by a commissioned sales force. U.S. Divers is the most aggressive user of inventory "dating," loading the retail channel with inventory and absorbing the financing cost, which gets the retailer to take the product in a competitive environment of excess supply and homogeneous products. Due to U.S. Diver's broad market coverage, some competitors have been forced to offer similar inventory terms.

U.S. Divers manufactures many of its products, producing and fabricating rubber in a plant located in Southern California. In addition, U.S. Divers has relations with manufacturing facilities in Japan, Europe and Taiwan.

U.S. Divers appears to be attempting a product strategy based upon brand identification. They advertise heavily in diving consumer magazines, and chairman of the board, Jacques Cousteau is a visible company representative.

In terms of competitive positioning, U.S. Divers is considered to have the broadest retail distribution, and among the broadest product lines. According to interviews with retailers, the level of service provided

to retailers is apparently lower than that of its largest competitors.

Scubapro

Scubapro is one of the traditional leaders in the diving industry, having built its reputation on high-quality, premium-priced equipment. A subsidiary of the S.C. Johnson Corp., Scubapro has an estimated market share of 10 to 12 percent.

Until the last few years, Scubapro pursued an "exclusive distribution" strategy, identifying well-run dive shops and providing them with territorial protection and a high level of support and service. In return, retailers would not carry products that competed directly with Scubapro. It appears that this distribution strategy has not been pursued as rigidly in recent years. Scubapro currently sells to approximately 600 retailers.

Scubapro produces products in the U.S. as well as in foreign countries including Italy and Germany. In addition, Scubapro purchases some products from foreign manufacturers, and plans to manufacture its own products in the Far East. In the U.S., Scubapro is backward integrated into rubber fabrication and plastic injection molding. Most assembly operations, product testing, and packaging and shipping are done in the U.S.

Scubapro views itself as a leader in research and high-quality product development. For many products, Scubapro will design the product, have the tooling and molds for the product manufactured overseas, and then manufacture the product.

Scubapro is positioned with a broad product line, a high level of service to its retailers, and more narrow distribution than the other industry leaders.

Tekna

Having entered the market much later than the industry founders, Tekna has become a technological and design leader. It is estimated that in 1985 Tekna had a market share of 3 to 5 percent.

"Unfortunately for Tekna, many of their innovations are quickly copied by competitors."

Tekna started as a niche player emphasizing design innovations and modern manufacturing techniques to produce innovative products like a diver propulsion vehicle. Tekna has expanded its product line to include regulators, masks, snorkels, knives, gauges and lights. At the time they are introduced, most of these products are innovative and have design advantages over existing products. Unfortunately for Tekna, many of their innovations are quickly copied by competitors.

Tekna believes its competitive advantage is based upon engineering and design ability, and its advanced assembly operation in the U.S.

Tekna places a heavy emphasis on sales to foreign markets. In addition, some of Tekna's products, such as knives and lights, are sold to non-divers through other distribution channels, including mail order in specialty catalogs such as "The Sharper Image."

Tekna is positioned as having a narrow but expanding product line, relatively narrow distribution, and providing an average level of service to retailers.

Foreign manufacturers

Tabata

One of the most aggressive foreign manufacturers is Tabata, headquartered in Japan. Since the early 1950s, Tabata has sold diving equipment under the Tabata brand name in many countries around the world, excluding the U.S. Prior to 1979, Tabata was an OEM for the major U.S. manufacturers, including U.S. Divers, Scubapro and Dacor. In 1979, Tabata formed Tabata USA, an assembly and marketing subsidiary in the U.S. Ending its OEM relationship with U.S. manufacturers, Tabata made the strategic decision to build the Tabata (TUSA) brand name in the U.S.

Over the past few years, Tabata has been gaining market share at an impressive rate. In 1985 Tabata had an estimated market share of 2 to 4 percent. Proving to be an aggressive marketing organization, Tabata has advertised extensively in diving trade magazines, and has pursued retail distribution with a group of independent sales representatives selected

and trained by the management of Tabata USA.

"Before Tabata, most diving equipment was black."

Tabata is also a design innovator. Before Tabata, most diving equipment was black. They introduced the first pastel colors, starting a trend which has grown to other manufacturers. It is now easy to find products in pink, purple and orange throughout the industry. Tabata's strategy is that new divers, especially young professional men and women, will be attracted to these colors.

I.S.T. Sports Corp. (Irene Enterprises)

I.S.T. is a low-cost producer of rubber goods, including masks, fins, snorkels and wet suits. Located in Taiwan, I.S.T. maintains a warehousing and shipping organization in California. It uses independent representatives to make sales calls on retailers, as well as selling through catalogs. I.S.T. acts as an importer, transferring goods from Taiwan to the retailers. The products I.S.T. carries are of similar quality to that of the U.S. manufacturers, but are much lower in price.

I.S.T. is positioned as providing a low level of service to retailers, having a narrow product line, and narrow distribution. However, I.S.T. and similar companies have become very popular with retailers, and are gaining a market share in rubber goods products.

(Next Issue: The Training Agencies.)

Do Divers Need Special Doctors?

--If They Expect to Get The Right Answers

Historically, the medical consumer has gone to his family doctor for whatever ails him, taken his advice and gone home. In an age when more and more medical specialists are evolving to treat more and more specialized diseases and medical problems, a good family doctor is not so much one who offers advice and sends you home, but instead one who understands the symptoms sufficiently to recommend the right specialist.

If someone who has been diving comes up with an ache or a pain, he ought to be smart enough to seek out a doctor who understands the special problems of divers. But if the pain appears a couple of days after the dive, the diver may forget about the dive as a way to subconsciously deny that he might have gotten bent, and never get the right treatment. His family

physician might not have a clue to the source of the problem.

Few divers experience dive related injuries or problems. However, every diver -- and anyone about to take up the sport -- should be concerned about whether his body is suited to the hyperbaric environment. Heart, inner ear and respiratory problems can prevent someone from ever diving. And there are a host of more subtle conditions which should keep someone from diving. If one of your offspring were about to take up the sport, would you consider a physical in order? Would you select your family physician or internist to perform that physical?

We doubt whether some physicians, even though not specialists in hyperbaric medicine or diving problems, know enough about diving maladies to perform

a physical or make the right referrals -- or at least answer the questions right. We've often discussed that with doctor friends, but never had any data to support any sort of conclusions.

Recently, the *Journal of the South Pacific Underwater Medicine Society (SPUMS)* reported on a survey conducted by a young diving physician, Mark Marshall, in Queensland, Australia. Australia has good medical schools and with the high incidence of diving and diving awareness, whatever results were garnered there should have some relevancy in the United States and Canada.

"The advice doctors gave to divers about medical problems was exceptionally disconcerting -- 6.3% advised the use of ear plugs, 40.7% advised the use of decongestants, 25% advised pregnant women to continue diving and 16.5% advised women to stop diving during menstruation."

Marshall randomly sent out 1000 questionnaires to physicians in the coastal province of Queensland, and 364 respondents acknowledged that they administered to divers: 62.4% indicated they had received no training in diving medicine and 52.5% indicated they had no training in marine animal injuries (which meant that they had not even read a book or an article on the subject).

Australia has an official diving medical examination format for people considering taking up diving. 10.7% of the doctors used it, 69.2% used a form from the instructor and 17.4% followed no format at all.

Australia has specialized diving medical centers to examine potential amateur divers; 10% of those who submit themselves to examination fail and 15% need restrictions on their diving. However, of the physicians who responded to the survey, 41% found all their patients fit and 35% failed less than 10%.

Carl Edmonds, M.D., the past president of SPUMS, writes that the extraordinary finding from this survey is that "based on the doctors' own claims, 87% did not perform an audiogram, 61% did not request chest x-rays, 56% did not do spirometry, 42% did not test the urine, 37% did not check middle ear autoinflations, 13% did not perform any respiratory examination, 8% did not do a cardiovascular examination and 4% did not examine the ears, nose or throat."

Doctors who were also divers performed better, as did the younger doctors, who tended to have more training.

The advice doctors gave to divers about medical problems was exceptionally disconcerting -- 6.3% advised the use of ear plugs, 40.7% advised the use of decongestants, 25% advised pregnant women to continue diving and 16.5% advised women to stop diving during menstruation.

Of the 26.9% who allowed asthmatics to dive, 85% specified a depth limitation. Only 7.7% felt that diving was permissible with epilepsy, but more than 50% felt that people with a resting diastolic blood pressure in excess of 100mm Hg could continue diving.

The doctors were asked to match each of eight common diving accidents with its major treatment: e.g., decompression sickness -- recompression; pneumothorax -- surgical or 100% oxygen.

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Equipment Problems Questionnaire

So that *Undercurrent* can continue to remain on top of problems occurring with diving equipment, we are including this brief questionnaire to help you inform us about any problem with your diving gear that might need attention by the manufacturer.

Too often individual problems go unreported. Your assistance will help us see that we can uncover any shortcomings in specific pieces of equipment before they create problems for others.

1. What piece of equipment has had a problem: _____
2. Brand _____ Model # _____
3. Year purchased _____ Bought new [] used []
4. Number of dives using that piece of equipment _____

OVER PLEASE

Edmonds reports that "it may not come as a great surprise to find that the likelihood of being given the correct treatment modality (to say nothing of the finer details) hovered around the 50% mark. One shudders to think of what forms of 'surgical treatment' were being contemplated for decompression sickness, air embolism, nitrogen narcosis or contaminated air poisoning."

To what degree American doctors will be found equally ignorant about the problems of divers is anybody's guess, but our guess would be that the results would *not* be much different.

The conclusion, then, is that if one needs a pre-dive physical, has any medical problem that might be diving related or has a diving accident, then he should team up with a physician who understands the effect of diving on the body.

The one best way to locate a specialist in diving

medicine is to call the *Underwater Medical Society* in Bethesda, Maryland, at 301/530-9225 for a referral. They have an updated computer listing and will be pleased to suggest trained physicians in your area. They expect to make this list available shortly to the Diver's Alert Network.

Occasionally a local medical association can locate a diving physician, but a call to a university teaching hospital might be more successful. The best bet locally might be to call a dive shop, where one might find a list of doctors who have treated problems, have provided physicals or who just might join up for local dives.

If you have a diving-related medical problem or need a physical, get a doctor trained or experienced in underwater medicine to handle it. If you don't, and if the Australian experience has any relevancy here, you might be just as well off treating yourself.

Why Divers Die: Part III

--The Mystery Of The Sudden Drowning Syndrome

This is the third part of a series on why divers die. We are presenting the data from 1983 and 1984, as developed and analyzed by John McAniff, Director of the National Underwater Data Center at the University of Rhode Island.

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Causes Of Underwater Diving Fatalities

Table 8 lists the probable starting causes of nonoc-

cupational underwater diving fatalities for 1970 through 1984. When the starting cause is impossible to determine, no witness was present or the body had not been recovered. In many instances the local law enforcement department had little or no knowledge of diving accidents, and therefore failed to do a thorough investigation.

The percentage of cases on which autopsies are performed continues to increase as medical examiners and coroners become more familiar with this

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5. What was the problem? (Be as specific as possible)

6. Were you or anyone else injured because of the problem? Yes [] No []

7. If so, please describe the injury

Name _____ Business phone _____ Home phone _____

Address _____

Return to: Ben Davison, *Undercurrent*, P.O. Box 1658, Sausalito, CA 94966

Probable Starting Causes of Sport Diving Fatalities

Estimated Cause	Number of Cases									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	
(A) Medical and Injury Causes										
1. Possible exhaustion, embolism, or panic	24	25	24	33	28	12	13	20	11	
2. Diagnosed air embolism	10	16	12	14	10	8	11	19	7	
3. Cardiovascular event	8	4	4	5	6	3	4	5	4	
4. Nitrogen narcosis	1	0	0	2	3	2	0	0	0	
5. Hit by boat, extensive injuries	2	2	2	3	1	0	2	0	1	
6. Aspiration of vomitus, etc.	1	2	1	2	2	0	0	0	0	
7. Intoxication	1	1	0	0	3	1	0	1	0	
8. Possible choking, wad of gum	1	0	0	0	0	0	0	0	0	
9. Decompression sickness	1	0	1	1	0	0	1	0	1	
10. Cramps at depth/cold	0	1	0	0	0	0	0	0	0	
11. Ruptured eardrum	0	0	1	0	1	0	0	0	0	
12. Ruptured stomach blood vessel	0	0	0	1	0	0	0	0	0	
13. Gunshot	0	0	0	1	0	0	0	0	0	
14. Epileptic seizure	0	0	0	0	0	0	0	0	0	
15. Asphyxia/regurgitated food	0	0	0	0	0	0	1	0	0	
16. Possible suicide	0	0	0	0	0	0	1	0	0	
17. Asthmatic attack	0	0	0	0	0	0	0	1	0	
18. Struck head on ledge	0	0	0	0	0	0	0	1	0	
19. Brain seizure	0	0	0	0	0	0	0	0	1	
Total Medical Causes	49	51	45	62	54	27	33	47	25	
(B) Environmental Causes										
1. Lost or out of air in cave	21	7	11	12	10	17	3	16	7	
2. High waves or surf	3	4	3	7	1	7	4	3	2	
3. Strong current	7	2	3	0	1	1	7	0	2	
4. Entangled in kelp or weeds	6	2	2	3	4	5	1	0	2	
5. Lost under ice	3	1	3	3	2	6	0	2	2	
6. Suspected shark attack	1	0	0	0	2	1	1	0	0	
7. Entangled in external lines/ropes, etc.	3	3	3	3	1	3	0	1	1	
8. Night dive, lost sight of shore lights or lost buddy	1	0	1	1	0	0	0	0	0	
9. Foot wedged in rocks	0	0	0	0	1	0	0	0	0	
10. Sucked into dam gate	0	0	0	0	0	2	0	0	0	
11. Lost in wreck (silt)	0	0	0	0	0	1	0	0	0	
12. Lost at sea, boat drifted away	0	0	0	0	0	0	0	1	0	
Total Environmental Causes	45	19	26	29	28	43	16	33	16	

effort. Some areas have nothing more than a politically appointed coroner who looks at the body and, if it is blue, pronounces the victim dead and signs the death certificate. In some other jurisdictions we have had difficulty in obtaining police reports since they cite privacy of information. In a few states, the law prevents the access of autopsies by third parties. In an effort to overcome this stumbling block the Chief Medical Examiner of the State of Rhode Island has appointed the Director of the NUADC as a special consultant with "authority to secure records from other jurisdictions."

The category of possible exhaustion, embolism, or panic, may include cases which have exhibited panicky behavior, confusion, disorientation, etc. Also included in this category is the condition described as "sudden drowning syndrome" (SDS).

SDS was first noted by the NUADC several years ago and a number of cases appear each year. Typi-

ly, they involve a diver who had been to a depth of 50 feet or more in considerably cold water. Upon returning to the surface, he is apparently all right, though he might be shivering. He gives his buddy the okay sign and they start returning either to their boat or to shore. After a few strokes, the buddy turns and looks, only to find that the victim is lying face down, dead, on the surface. There has been no outcry, no splashing, no panic.

"Sudden Drowning Syndrome was first noticed by the NUADC several years ago and a number of cases appear each year."

To get to the bottom of this syndrome, the NUADC has consulted several medical experts. At best, we can still only guess at the cause of SDS. One

hypothesis is that it may begin with a slight hypothermic condition and, when coupled with the slowing of the heart rate upon immersion of the face in cold water (the well-known mammalian diving reflex), the result is cardiac arrhythmia and sudden unconsciousness, followed by drowning.

For 1983 the NUADC has 20 cases which fall under the category of possible exhaustion, embolism or panic, while 19 cases were recorded as diagnosed air embolism.

One death can be attributed to acute alcoholic intoxication and in another an asthmatic attack was the starting cause.

Possible exhaustion, embolism or panic were the contributing starting causes of at least 11 cases in 1984. Seven of the 1984 underwater diving fatalities were the result of a diagnosed air embolism and an additional four deaths were attributed to a cardiovascular event.

Medical and injury causes in 1983 represented 43% of the caseload, and in 1984 such causes were identified in 36% of the cases reviewed.

One underwater diving fatality in 1983 was the result of the victim being left at sea when his boat drifted miles away with an inexperienced individual sitting in the boat. After several hours, authorities were notified and made an extensive air and sea

search over several days, but were not able to find the victim.

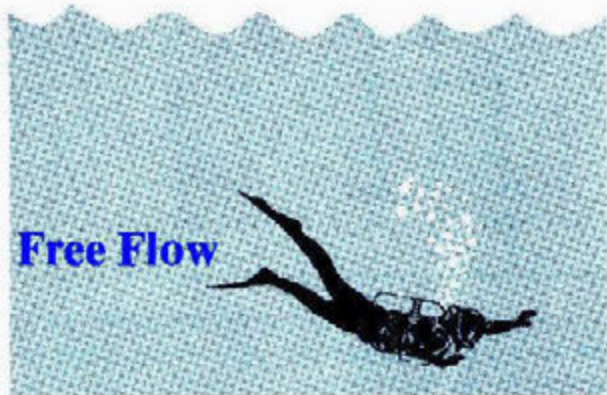
Under equipment-related causes, the NUADC recorded three deaths that could be attributed to out of air at depth in 1983. One fatality was caused by the victim being very much overweight and another the result of a poorly maintained regulator. In the latter case, the regulator hose burst at the point at which it leaves the first stage. This occurred while the diver was at a depth of about 60 feet.

One additional cause of an equipment-related death was added in 1983 when it was discovered that one victim died because the inflator to his dry suit became detached and he was unable to locate the hose and reattach it.

During 1984 the NUADC located only one case attributable to being out of air at depth. Another victim died as a result of an attempt to drop his weight belt, which became entangled in his tank strap.

One additional underwater diving fatality in 1984 was the result of an extremely badly-maintained regulator. A second stage diaphragm was severely dried up and broke its seat, causing a free flow.

The NUADC did not discover a malfunction of a personal flotation device or buoyancy compensator during either 1983 or 1984, although several occurred in prior years.



We found this letter to the editor of the *Marathon, Florida, Keynote*, from David Holm of Big Pine Key: "I am a member of a dying breed of commercial fishermen, trying to hold on. I fished 1800 lobster traps this season, of which 400 were molested and 107 lids were missing. . . . Divers are robbing and destroying my traps. They are tearing the throats out of the traps and are pulling off the side boards and throwing the lids away. . . . It's not right for them to come to the Keys, pay for their vacation, plus make hundreds of dollars at the fisherman's expense. I've tried to get help from the Florida Marine Patrol, but they cannot patrol the areas effectively with their limited manpower. . . . I have almost \$100,000 invested and a lot of mortgage payments. I also have a

wife and two children to provide for and I can't tolerate the divers robbing them. . . ."

More than once master diver Lee Tepley has ventured underwater during a volcanic eruption in Hawaii to produce dramatic footage of lava pouring into the Pacific. He did it once again in December on the big island of Hawaii, but got more than he had bargained for, reports Tim Ryan, a writer for the *Honolulu Star Bulletin*. As he was photographing the molten rock above him -- a wall 120 feet long and 20 feet high -- it broke away, creating a massive underwater land slide. Tepley was trapped under the volcanic material and the mass of volume sucked him down 250 feet before he regained consciousness. As cool as ever, he surfaced as slowly as he could, took another tank, then returned to the depths to decompress.

A while back, we sent \$25 to join The International Skin Diving Association, ISDA, which promised all sorts of benefits, including a publication, discounts, etc. A long, long time after we sent our money, we received a cheesy little xeroxed pamphlet with recycled stories and a list of stores and trips which give 5-10% off to ISDA members. Few seemed particularly noteworthy, especially since most were Florida-based. A few months ago, we wrote again, asking if there shouldn't be something else forthcoming -- like the publication. We haven't heard a word.