

## Travel Reports From Our Readers: Part II

### -- Junk Food, French Food, And Afternoon Tea

As I review the travel questionnaires this month, a number of people who wrote about their first tropical dive got certified on the very same trip, after completing pool work at home. Ten years ago, of course, such a practice was sheer folly, most training experts would claim. After all, any U.S.A.-based instructor "knew" that whatever training one got in the tropics could never qualify him for diving off the coast of California or on the wrecks of New York. It took quite a while for the industry to recognize that not every one cared to make those kinds of dives and, besides, the big bucks were in selling gear to all comers--as well as charging a novice for two different instructors.

I, too, used to scoff at the kind of training one might get at Wiki-Wiki, being a hard-nosed California-certified diver. Now I wonder what kind of training one gets in California? A couple of weeks ago I sat myself down on the beach at Monterey's Cannery Row, then I tripped over to Lover's Point at Pacific Grove to watch several dozen divers enter and leave through a 1-3 foot surf. It was quite a circus. About half knew something about entering the surf, while the rest made idiots of themselves. Several got knocked over and shouldn't have. For a time when the surf was sufficiently silent so one could walk right in, sit down, and slip his fins on, most divers strapped on their fins twenty yards from the water, waddled like a duck, sometimes stumbling, then grasped the arms of their buddy and worked their way in, as if they were facing ten foot breakers. These people hadn't been taught to think. They had been given a technique and they used it, whether it applied or not. And, of course, there were those certified divers who, while they fiddled around with their gear, the waves washed their fins away. Nice work. Many divers didn't sport knives. In fact, of the couple three dozen I saw enter the water, only one had a blade. Only one. Yet the entire dive would be among the thick kelp beds. More than once I've had to cut away the kelp which get

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wrapped around my tank valve and more than once I've been inadvertently separated from my buddy in thick kelp forests. Now, one might presume these must be Caribbean-certified divers and, therefore, were not prepared for California diving. I think not. These were home-grown, home-certified California divers, ill-equipped to get into local water without problems. So the next time someone tells me that someone certified in California is good enough to dive anywhere, I'll suggest that the diploma mills here today mean that the California diver isn't any better trained than the Caribbean diver. So let's talk about the Caribbean and spots elsewhere, using our readers' eyes to focus:

Bonaire: I suppose Bonaire rates the highest marks from our readers of any major Caribbean destination. People just keep going back. It's impossible to get bad diving here because the reefs are well-marked, hotel beach diving is great, the weather is consistently good (see side bar) and everyone in business here delivers. So one must select his housing and guides on other criteria. Captain Don Stewart's Habitat (802/496-5067) is the least expensive and most rustic hotel on the island, where one can expect a somewhat spartan existence, no luxuries and home cookin' (kind of like aunt Matilda's, where I always made sure I had something to eat before I went to her house for dinner). Yet, as one reader wrote: "Some of the finest diving I've seen. For those willing to undergo a few rigors—no hot water, no water between 10 PM and 6 AM, very hard beds—it is a very warm environment." Another said, "a genuine community; it's unusual to note how great the people running the store are." Many divers overcome the mediocre food either by cooking their own (rooms are with kitchenettes) or eating out at Bonaire's many restaurants . . . The Flamingo Beach Hotel (801/847-7198; 607/277-3484) is the big operation on Bonaire and, although we get random complaints about grubby rooms or slow service, the ratings generally hold up. Some divers complain about the crowded boats, but those who don't mind crowds have a lot of glowing comments about Peter Hughes' operation (Peter was out for awhile and now back in). Probably the best news on Bonaire is the upgrading of the Hotel Bonaire—now the Bonaire Beach Hotel (800/223-9815; 212/840-6636), once the pits with unpalatable food, but now slowly rivaling the Flamingo. And nothing but kudos for the dive operation. As reader Ellen Jacobson (Littleton, CO) writes of her November stay: "Could not have been treated with more care and consideration; diving excellent and varied; divemasters always on the water, but left us on our own; dive operation very effecient; food good and plentiful; rooms somewhat shabby but clean and much construction underway; it was the beginning of a love affair with Bonaire and its people." . . . For those wanting to get away from the crowds, Bruce Bowker's operation out of the Carib Inn (direct dial 011-599-7-8819) continues getting the sound of two hands clapping. Bowker takes up to eight divers for personalized treatment; no meals at the Carib, so prepare to stock your in-room refrigerator or eat at the nearby Flamingo. We liken those who stay here to those who select a Bed and Breakfast over a Ramada.

Grenada: The island is beginning development and tourist ships are now slipping into the harbor. Several hundred hotel rooms are to be opened in the next few years, but local authorities are keeping control of the development, recognizing that neighboring St. Lucia and Barbados have high vacancy rates and laid off workers. There must be good diving off the island, but we have no definitive information. The Grenada Tourist Bureau suggests that Mosden Comberback at

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### Guarantee Diving 365 Days A Year?

That's what the Flamingo Beach Hotel and Peter Hughes did, announcing that guarantee with advertisements reading:

*Dive Bonaire Guarantee: The only Guarantee in the Industry that is offered 365 days a year. We guarantee your hotel reservation each day of your stay. We guarantee your dive boat will operated every day. We guarantee our weather the best in the Caribbean, permitting us to take you diving every day of the year. Or your entire package, minus air fare, is free.*

Then along about last November came The Storm, the worst in the past 15 years? Or maybe it was 24? Or 32. Every local had a different view. It wiped out the docks of all the dive operations, flooded hotel rooms, and created nothing but inconveniences and unpleasanties for tourists, workers, and management alike.

The seas were high. The visibility below 25 feet. People had to be trucked from their hotels to more quiet moorings for the boats and then the only available sites were on the lee side of Klein Bonaire. Yet, according to Captain Don Stewart, no one at his operation, the Habitat, missed a day of diving. And Bruce Bowker told us, "we went out every day. I got two boats over to the back side of the island and we had a great time."

But we got angry letter from three different readers who stayed at the Flamingo, complaining that the guarantee wasn't honored. To quote David L. Risciniti, who was with a group

of 20 divers, "if the weather is so exquisite in Bonaire, and our experience is such an odd occurrence, why didn't they live up to their guarantee?"

Well, Risciniti did admit that the dive boats went out every day; since boats from the other operations went out as well, the conditions were such that we must presume diving could be safely conducted. And his group *did* have hotel rooms, although they got moved around and in at least one case doubled up. No doubt the twenty felt they were on the butt end of a bad joke, but the guarantee doesn't provide sunny weather and unlimited visibility and any traveler has to realize that the forces of nature will occasionally prevail, guarantee or not.

The Risciniti group stayed their week and later received a somewhat gratuitous offer from the hotel to upgrade their accommodations and give them some free dives if they returned. Part of the loaf on the part of the hotel, but crumbs to Risciniti. Another reader, L.S. Von Ohlson, left during the storm and later received a \$250 refund.

Did the Flamingo and Peter Hughes live up to their guarantee. It seems so, although if we were there we probably wouldn't be been happy either.

Don't expect them, however, to provide any refunds the next time. Right after the storm the 365 day guarantee was cancelled.

Grenada Yacht Services may be able to take people diving, so, if your're in the neighborhood and want to stop in for tea and an afternoon dive, contact Mosden. And let us know how it turns out.

Guadaloupe: We haven't heard much for a long time, so we're pleased that long-time subscriber Dusty Rhodes from Penhook, VA provided us with an update. "I found dive shops at two hotels: Gosier-La Creole Beach Hotel and Callingo Beach Hotel; delighted to discover that my American regulator fit their French and American tanks; diving at Pidgeon Island was beautiful; large basket sponges (4 ft.) and alive and plentiful corals; plenty of fish, including tuna, hogfish and parrots; had to wade through deep surf to board boat; guides relied on j-valves and spoke only French; dive at Chinese Garden just about as good, with several caves and tunnels." Guadaloupe is a fine place to practice French, indulge in good meals at spiffy hotels with plenty of topless maidens, and lay back for a vacation with a bit of diving--not a diving vacation.

Haiti: We wrote about Baskin-in-the-Sun and the Kaliko Beach Hotel (312/952-1414) in July, 1983 and Claude Menard (Geneva, Switzerland) now sums it up: "I went in February and your report remains valid; this is like diving in an aquarium, perfect mostly for macro photography, but there are practically no fish of good size; food is still excellent." Cliff Boley (Des Moines, IA) says "we had the kind of vacation people make movies of; it was great; you were very accurate



in your 1983 critique." Haiti is fished out, but most everyone seems to like the undersea aquarium, overseen by Alan and Eva Baskin, and the ambience of Kaliko Beach (although now and then the staff seems either surly or under-trained)--except Greg Becvar (Pine City, MN) who says he'd go back, but "there wasn't any junk food available and supper is at 8 PM, so prepare to starve in the late afternoon."

## **Scilly And Scapa Flow, U.K.**

### ***-- Cold Water, Low Visibility, Great Diving***

It's cold, tough diving in the U.K., but it's incomparable. A diver with limited experience or only used to tropical waters would be out of place and beyond his skill limitations in these waters. An experienced wreck diver, properly equipped, would be in paradise. And a non-diving shopping companion would also be in paradise, given the strength of the dollar.

I got into United Kingdom diving with shipwreck enthusiast Mason Logie, who showed me a sheaf of old photographs and historical documents that described the 1919 scuttling of the entire German High Seas Fleet in Scapa Flow, off Northern Scotland, after the armistice was signed but before the Versailles treaty. Mason, who organizes tours to Scapa Flow, had just been down on one of the German battleships and found two brass sextants and a ship's compass. I decided to join him for an adventure which found me diving not only in the fabled Orkney Islands, off Scotland, but also at the extreme opposite end of Great Britain in the Scilly Isles off the Cornish coastal town of Penzance.

Mason, who's crazy about shipwrecks, is armed with little known wreck facts. Not a slick tour operator, he is a diver who works out of his home, using a tour operator to provide tickets, hotel and charter boat facilities. All basic gear, including dry suits (preferable), regulators, BC's, etc. must be brought by the divers. Tanks (including doubles or large volume steel singles) and weights are supplied. Mason takes the trips to enjoy the diving. When he embarked on a trip to explore the Scilly Isles for the first time, he told the divers going with him, "I've never been down there. I'm adding a little over cost to help with overhead, we're going to try it together and see what gives." Fair enough.

Scapa Flow diving is extraordinary. Seven German capital ships are left on the bottom. The rest of the fleet was salvaged in the twenties and thirties. Some of the shallower remaining wrecks have been blasted helter-skelter for salvage, but they are mostly intact and provide some of the most thrilling diving a shipwreck enthusiast can experience. The wreckage, overgrown with cold water marine life, is quite photogenic, especially shallower wrecks where kelp forests grow. Fishlife abounds: hake, cod and a wide variety of coldwater species.

Visibility in the Flow varies from twenty to fifty feet. In a rich plankton bottom, majestic pictures of a battleship are impossible. Three battleships are deep, roughly 120 feet, ninety feet to some parts, upside down, with their huge guns sticking down into the sand. Four cruisers in shallower water are on their sides. A German destroyer lies in 35' of water with a stern gun in place. I entered the destroyer's intact after-section to take pictures and found ample room to swim out where the ship was blasted open for salvage forward.

Cold? About fifty degrees Farenheit. The diving season is June to September and the sun can be out one minute and the next clouds appear and a cold wind



### A Cup Of Grog To Beat The Cold?

The recent case in which a two-year-old child, apparently "dead" from the effects of exposure was revived, brings forth recent advances in the treatment of hypothermia... advances which have resulted in many lives being saved. The breakthrough came with the realization that hypothermia victims should be warmed slowly from the *inside*. To do otherwise is to induce premature vasodilation as the body responds to rewarming of the exterior. If the vital organs have not yet returned to normal temperature when this induced vasodilation occurs, the result can be death.

I recently read an anecdotal account from World War II which drew attention from the medics. British doctors wondered why hypothermia victims (rescued from the water after a ship sinking) would seem to do well for a short time, then suddenly reverse and die. They wondered if there was a connection between these deaths and the British custom of treating their shivering patients to a cup of grog after being pulled from the waters. One half of a crew of German sailors, picked up after a successful British attack, died following their cup of cheer.

Alcohol apparently has the same effect that you ascribe to "capsicum," or Cayenne pepper (i.e. vasodilation and a resulting adverse effect on the body's core temperature) and, obviously, with the same catastrophic consequences to a person suffering from hypothermia.

I bring this up because your opening paragraph on page 5 (Vol. 10, #2) suggests that "a swig of brandy" is a good cure for an "uncomfortable chill." No doubt it is a good cure, so long as the consumer is able to distinguish between an uncomfortable chill and hypothermia. Unfortunately (as pointed out, for example, in the NOAA Diving Manual) the ability to think clearly may be seriously affected by cold.

This manual goes on to say (with regard to hypothermia) "it (drinking alcohol) increases circulation of blood to the skin, and speeds the loss of body heat... hot, nourishing liquids such as soup are (more) useful."

I hope that you can clarify for your readers that drinking and diving are not good companions.

Glenn A. Emigh  
Whittier, California

comes up. Warm clothes and light rain gear are a must. Many British divers dive in wet suits. I did the first trip and froze. Next time I glued myself inside a Henderson dry suit and never felt so happy.

The Scottish people living in the Orkneys are delightful. Surviving the Scot's whiskey, which they make on the island, may not be as easy as surviving the cold water. Orkney itself is beautiful; stone age ruins, cairns, history and enchantment. Mason usually uses the first day to take his divers on a tour bus ride to the island highlights to get them oriented while the six hour time difference from New York and the long flight wears off. Mason books his groups in the little village of Stromness at the Little Ferry Inn, built right on the flow.

Every boat operator and charter captain I've met has gone out of his way to be accommodating. Since the wrecks are deep and the American divers wanted full and long dives, the surface intervals were protracted. Boats came back to Stromness for shopping and lunch, or we might have sandwiches aboard and visit other islands to explore old British depots before afternoon dives.

Smith Foubister, who operates two dive boats in the Flow, keeps a fire going on a large stove in his main cabin, offering tea and coffee and cakes and cookies to wet divers. Wreck mavens keep the boat of Robert Swanney out until eight or even nine PM. Summers in Orkney, at the latitude of Norway, gets the midnight sun in June. Even at ten at night you can read a newspaper outside.

While diving in Orkney is a relatively recent tourist phenomenon, diving in the Scilly Isles has been well established for many years. A five hour train ride brings one from London to the southwestern tip of England near what is literally Land's End. From Penzance, a 20-minute helicopter ride or a two-and-a-half hour ferry ride, takes divers out to St. Mary's Island in the Scillies. Here we were met by Terry Foe, divemaster of the Isles of Scilly Underwater Centre.

A very short walk or van ride carries the new arrivals up to Warleggan, a large old stone house which has been converted into a diver's lodge. Rooms are small and divers are bunked in; there are separate rooms for couples.



Diving in Scilly is cold and tides and currents make it tricky. Terry Roe gives a thorough briefing before each dive. Divers who listen find artifacts. One chap in our group found two old English coins and a hundred musket balls, a diver from Wales found a Spanish Pillar Dollar and a British diver found a pure gold and emerald ring, which he had to turn over to Her Majesty's Customs for a year and a day, but will be able to bid on it when it comes up.

Shipwrecks in Scilly and wonderful old photos grace the walls of Scilly's pubs and taverns. There are old schooners and modern cargos, treasure ships like to Association and Eagle, the seven-masted American windship lost on her maiden voyage from Philadelphia. Great treasure finds abound. The operators of the Underwater Centre have exclusive salvage rights on some ships, but they do let divers keep the odd coins and bits that have turned a holiday into an experience of a lifetime for some lucky divers. And for divers who don't find treasures, the bountiful marine life—including goose fish, sharks and other unique cold water creatures—will provide plenty of excitement.

Two dives are scheduled in the morning with an interval for hot soup lunch, returning in time to shop or visit Scilly's other beautiful islands.

For information: Mason Logie at P.O. Box 6261, Plainfield, NJ 07062, telephone 201-668-1122, or by writing Mr. Josh Gourlay, Tourist Officer, Orkney Tourist Board, Kirkwall, Orkney KW15 1NX, Scotland, U.K. and from Isles of Scilly Underwater Center, Warleggan, St. Mary's, Isles of Scilly, U.K.

## The Undercurrent Limerick Contest

*-- From Bobby McGee To A Substitute B.C.*

"Hey you guys," writes Sidd Finch of New York, "where are the limericks you promised us. You called for the contest, we sent you our best, and we haven't seen a single line. What's up?"

Well, Sidd, I must accept full responsibility. Yes, we announced our contest, and indicated the results would be published in the November/December issue. It's now May. Why the delay?

Frankly, I could barely pull myself through the trash you readers sent our way. The limericks were so lousy that I decided to read one a night before bedtime to help me fall asleep, and since so many were downright raunchy I was instead kept awake.

It was I, Ben Davison, who issued the call for limericks and I have to live with the results. Here are some of them.

A diver I know, on a dare,  
mixed neon along with his air.  
Everything was ideal,  
'till an electric eel,  
lit him up like the Kansas State Fair.  
Bill Dignin, San Mateo, CA.

A diver who we shall call Ken,  
Encountered a critter which then,  
did sting him severely!  
Oh! It was weirdly!

A jellyfish, could it have been?

Ray Olson, Williamsville, NY

Romantics Mary and Pete,  
had a scuba wedding complete.

But the groom dropped the ring,  
so they finished the thing  
In rapture at 200 feet.

Laura Brown, Madison, WI

We're glad to see that the two lovers survived their leap to 200 feet. Others didn't fare so well on dangerous dives.

"Ice diving is fun," said McNummer,  
"But lifelines and such are a bummer."

Down he went through a hole,  
come back quick was his goal,  
he's down still and the season's now summer.

Charles P. Merhib, Wellesley, MA

There once was a diver named Kate,  
who used an abundance of weight.

There's no use pretending,  
she still is descending,  
at an overly-ponderous rate!

Gordon Shaw, East Arlington, VT

The dangers of diving, next to sex, produced the most responses. These show dumb divers as their own worst enemies.



The divers were poised on "THE TIDE."  
Then all back-entered but our friend Clyde.  
'Cause crotch straps don't fail,  
when hooked on the rail,  
(nothing was hurt but his pride).

Barbara Hunzicker, Lancaster, OH

A fearless young diver drank beer,  
then dove below with his spear.  
But when he took aim  
he also took blame,  
for shooting his pal in the rear.

Barbara Jones, La Hagra, CA

Now these are cute, albeit sophomoric little ditties.  
This reader comes a bit closer to what a good  
limerick is all about.

I have this peculiar impression,  
deep diving demands decompression.  
In a chamber I sit,  
writing this wit,  
undergoing my third recompression.

Joe Donovan, Madison, WI

One of Dave Woodward's diving pupils even wrote  
about him.

San Salvador, Dave Woodward once there...  
Photographer, (submerged) extraordinaire!  
Wife and I did from learn,

underwater, (and lectern),  
f-stops, exposure, and flair!

Ray Olson, Williamsville, NY

We think this limerick may help raise our stan-  
dards.

A Scotsman who dived in the sea  
Put a double reed on his B.C.  
Now the ocean resounds,  
With the hair-raising sounds,  
Of the pipes playing "Bobby McGee."

Bill Dignin, San Mateo, CA

And finally, to conclude our annual limerick con-  
test, run every five or six years, we offer this verse  
which one of our readers nicely anticipated the  
amount of raunchy material that traveled through  
our door. His sympathies are indeed ours.

Why are sex parts stressed in these ditties,  
with front-sides and back-sides and titties?  
Are divers so macho,  
so full of braggadacio  
they need sate their libidos with witties?

Charles P. Merhib, Wellesley, MA

So, so Charles Merhib, we send our \$50, thankful  
to get out of this. Second (\$25) goes to Bill Dignin for  
Bobby McGee. Third spot goes to Joe Donovan for  
his recompression ditty.

## Underwater Metal Detectors: Part I

### -- How To Differentiate Between Devices

With the increasing success of professional treasure hunters in discovering sunken treasure worth millions, we note that more and more divers have taken a fancy to poking around for artifacts and even treasures in their own local waters. A number of metal detecting devices are available which can be used underwater; some provide excellent detection while others are difficult to use and relatively ineffective. Few divers, it seems, know much about metal detectors, but as the interest develops we thought it time to report on how they work – and which devices to buy. We have asked Gerald Patee, Associate Editor of *Treasure* magazine and past Editor and Publisher of *Dig*, for this two part story on underwater detectors. In the first part he reports on the differences between detectors; in the second part he will list specific devices which are "best buys" and provide some practical tips for divers.

★ ★ ★ ★

It has been my experience that any time the conver-  
sation gets around to underwater metal detectors one

of the first questions asked is, "Do they really  
work?"

The answer is a simple "Yes." To one degree or  
another, they all do. But the *real* question has always  
been – do you, the operator, know enough about  
them to make them work?

Many divers have invested in an underwater metal  
detector and tried their hand at treasure hunting,  
then given up usually for one of several reasons: they  
did not fully understand how the device worked; the  
type of detector they purchased was not electronical-  
ly suitable for the intended purpose; or they were un-  
willing to spend the time it takes to learn how to use  
it.

The fantasy of every potential treasure hunting  
diver, myself included, is to own a piece of equip-  
ment that would lead us unerringly to the magic spot,  
where all that had to be done was scoop up handfuls  
of doubloons, gold bars or centuries-old artifacts.  
Well, there is no such device and that kind of think-  
ing should get filed right along with your chances to  
win the Irish sweepstakes.

Metal detectors are only tools. Like all tools, some



work better than others, but in any case, they only serve the diver who is using them. It is still the responsibility of the person whose hand is tightly wrapped around the handle to adjust the detector properly and guide it to where it can do its job. Recently, with the introduction of the new Pulse Induction detectors that job is a lot easier. Yet finding the treasure is still up to the diver.

My purpose in this article is to focus on the pros and cons of Pulse Induction detectors, but I'd like to begin with a brief description of the most common types in use today.

**BFO: Beat Frequency Oscillator:** A BFO is a metal detector at the most basic electronic level. In fact, BFOs could be considered close relatives to the common portable radio -- the major difference being, like most metal detectors, that the BFO uses both transmitted and received radio signals. From a user's viewpoint the most outstanding characteristic of the BFO is its sound. Beat Frequency Oscillators, as the name implies, change frequency or pitch when in use. When properly adjusted (a low motor-boat sound coming from the speaker) any nearby detectable material will produce a pitch change.

Even though I have found thousands of dollars worth of coins and rings with this type of detector in fresh water, I would rate the BFO as last choice for divers because of its overall instability and incompatibility with saltwater.

**TR: Transmitter/Receiver:** This detector uses a more complex type of circuitry. A signal is transmitted to a target (detectable object) and the returning signal is analyzed by the detector's electronics. The most obvious difference between the BFO and the TR, again from a user's standpoint, is the response time or sharpness of sound coming from the speaker. Unlike the BFO, the frequency or pitch of a TR does not change, at least not as noticeably. The TR sound is more an increase in volume.

A little better rating goes to the TR as far as stability, but operation in saltwater is still difficult.

**VLF: Very Low Frequency:** This detector's main attributes are purely electronic so an explanation is in order. One of the other major concerns of a detector user is "How deeply in the ground will a metal detector find a buried object?" It's a complex question. In brief, the depth of penetration of a metal detector depends on the detector type and size; the size and electrical conductivity of the object(s) being detected; the bottom conditions (concentration of salt and other conductive minerals in the area surrounding the target); and the amount of knowledge the diver has about all of the above. Most VLF detectors have the necessary electronics to penetrate into most non-conductive material (e.g. sand, rocks, and wood) to the maximum ability of the detector -- from a few inches to a few feet.

Many VLFs detectors are sold under different labels. There are differences, even to the point that

some electronic principals are patented. But from an operator's viewpoint it's the results that count, not the label.

VLFs get next-to-the-top billing next because of their advanced electronics which allow a greater range of adjustment: hence better stability.

**PI: Pulse Induction:** Relatively new to the American market, Pulse Induction detectors have a purpose and sound all their own. The sound is similar to a BFO -- an increase or decrease in pitch -- and their penetration is equal to, or better, than a VLF.

Taken at face value, you could easily be led to believe the pulse detector is the near perfect underwater metal detector. PI detectors are virtually unaffected by underwater treasure hunters most formidable opponents -- the unstabilizing effects of saltwater and iron mineralization. Although VLF detectors also can be adjusted to minimize the effects of saltwater and iron mineralization, PI detectors do it in a less complicated manner. However, the most intriguing attribute of a PI detector, and generally of the most interest to divers, is that it's one of the simplest to use.

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*"The most intriguing attribute of a pulse detector, and generally of the most interest to divers, is that it's one of the simplest to use."*

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Comparatively speaking, PI detectors are electronically very slow. As I previously mentioned, most metal detectors on the market today (BFOs & TRs) operate between 5-300KHz or 5 to 300 THOUSAND cycles per second. A PI detector operates down around 100Hz, one HUNDRED cycles per second. That's like comparing a jet plane to a turtle in a cross country race.

The word 'pulse' itself is an indication of how this detector works electronically. A pulse inductor detector sends out a series of strong magnetic pulses with a short pause between each pulse to compare the difference in returning signals. Although the time it takes between pauses is measured in fractions of a second, it is still comparatively slow as opposed to VLFs (Very Low Frequency) and TR (Transmitter Receiver) types that send out a steady stream of pulses so fast they merge as if they were one.

As I have already mentioned, pulse induction detectors are easy to use. Most have a minimum of controls and require a minimum of adjustment: What more could you ask for? Well there's always a rusty nail or two in the sand pile -- PI detectors are hot-on (that is, they readily find) ferrous metals. They love to find most iron objects. They respond equally as well to nails, screws, nuts, bolts and tin-cans as they do to lead, copper, brass, silver and gold.



Some PIs have discrimination: the ability to electronically differentiate between ferrous and non-ferrous metals. However when attempting to use any form of discrimination -- you must be prepared to pay the price.

In most cases, when you use discrimination you are effectively trying to separate the undesirable items from the acceptable ones (according to ones' own definition, of course). This is done by adjusting the detector's discriminating control (if so equipped) to be selective in its response to specific metals: find ferrous metals; find non-ferrous metals; find a combination of both. Although they can be adjusted to be selective, a metal detector has no particular preferences -- in other words, it cannot think for itself. A metal detector does not care if the object being detected is good or bad, valuable or worthless. The detector only knows how big the object is, how deeply buried it is and how conductive or non-conductive it is. If you use discrimination you will occasionally pass over something of value. How much you pass over depends on how much discrimination you use.

On the plus side, PI detectors, even without discrimination, are not readily responsive to small pieces of tinfoil and tiny nails like some VLF type detectors. There is a trade off, however. For the advantage of not finding these small low conductive items some small valuable objects can also be missed -- particularly white gold rings which have low conductivity. But, there is a brighter side of PI detectors.

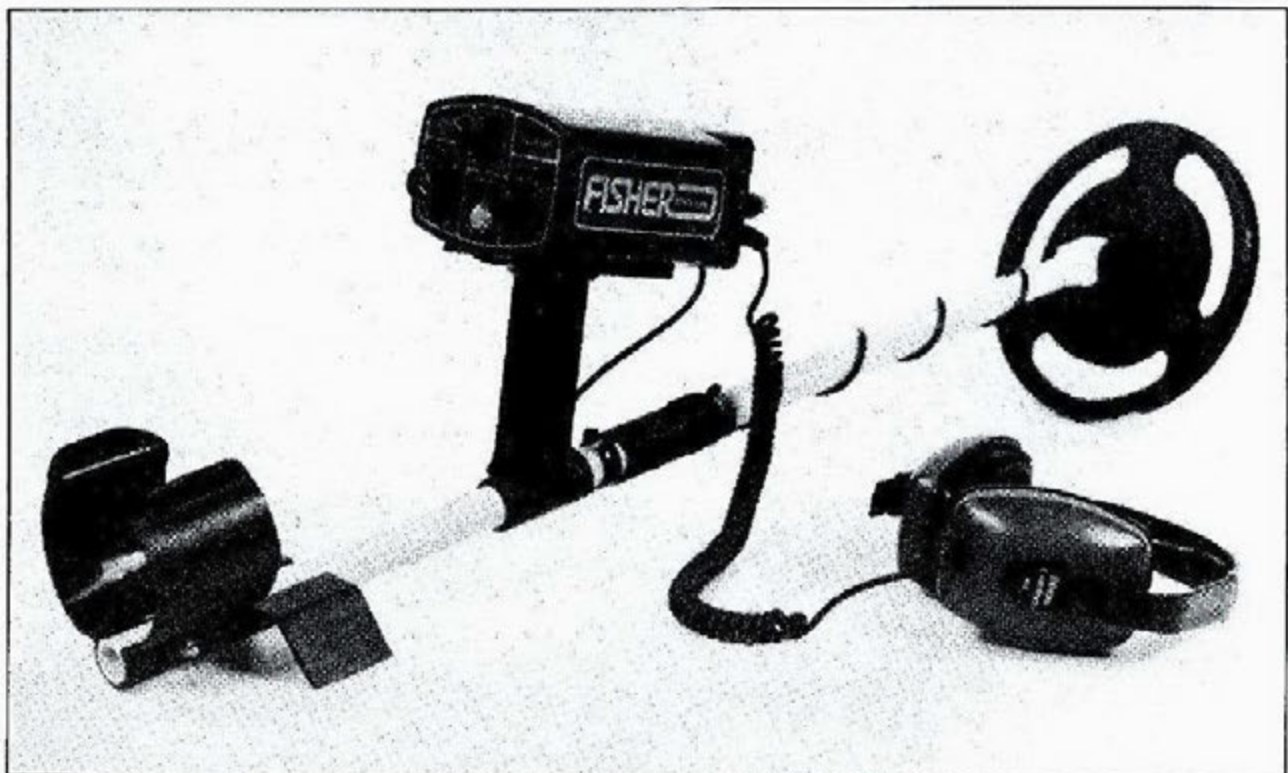
They cover a much broader area than most other type detectors under the same circumstances -- and they do it more efficiently. Being virtually unaffected by iron minerals and wet salt they are seldom out of adjustment, therefore very few detectable items are missed.

One notable difference between the way pulse detectors and other detectors discriminate is that PI's tend to ignore small low conductive items rather than reject them. For example, a TR/VLF detector adjusted to reject the same item as a PI, would detune itself (drop below the threshold of sound) -- when it does, you might also miss objects of value. A PI detector, on the other hand, ignores the small items in question, however it is not detuned. Therefore PIs are capable of detecting some targets while at the same time ignoring others.

With PIs run at a much slower frequency rate (they even sound slower than other detectors) the user must employ a slow deliberate sweep, otherwise he may pass right over a small target before the detector has a chance to respond.

All things considered, Pulse Induction detectors find more targets per hour of detecting -- and more targets per hour usually means finding more of what you're looking for. Although the perfect all around underwater detector hasn't been invented yet -- today's PI's come close.

**Next issue: The best buys in underwater metal detectors.**



**THE FISHER 1280-X AQUANAUT**



## Bang, Bang, You're Dead

Dear *Undercurrent*:

I have been a subscriber for several years. I feel *Undercurrent* has a role in the dive community along with other publications and associations that foster the safety and popularity of our sport.

In your November/December issue certain statements were made regarding the sincerity and efforts of some such organizations, calling them into question. I am referring to the article "Training Agencies and Equipment: What they Don't Tell the Teachers."

I feel you are grossly unjust and somewhat naive in expecting these agencies to be all things to all divers. What they intend to do is teach instructors to be the best they can given the state of technology and educational methodology that exists today. They don't intend to be perfect.

They do constantly try to improve and continue to function in a professional manner and enhance the future of the sport. I personally feel NAUI is the leader at resisting compromise of principle at the expense of popularity with the diving public.

Where does *Undercurrent* fit in this overall effort for safety and advancement of the sport? It stands in a unique position unencumbered by allegiance to advertisers, equipment manufacturers or otherwise.

How does it use this advantage. I have read some good critical equipment evaluations on regulators, depth gauges and wet suits. The information was gathered by surveys or from competent evaluators and *Undercurrent's* efforts are to be applauded in this regard.

Informative articles on emergency procedures such as "Sharing Air," appearing in the issue I mentioned earlier, are also of high caliber. Instead of becoming a publication of stature, to be a real prime mover in the efforts of safety in our sport, *Undercurrent* seemingly resorts to snide remarks about agencies and people whose intentions and ideals are to be congratulated.

*Undercurrent* should look closely at its role and examine its obligation to those people it serves to operate in a professional manner for the good of the sport. I feel this approach would definitely have a more positive impact on the diving community and then just possibility *Undercurrent* subscription would increase.

As far as the intelligence of NAUI Instructors, I feel that the quality and ideals of the

agency they represent substantiate their intelligence. Maybe the staff of *Undercurrent* might consider working more cooperatively with such an agency for the benefit of diving.

**William H. Miele, Ph.D.**  
NAUI Instructor  
Elm City, NC

Dear Bill:

Don't shoot the messenger who brings the bad news. Your effort to divert attention from the problem with agencies and direct it toward *Undercurrent* seems awfully shallow and self-protective.

Look, agencies simply do not report problems or shortcomings with equipment to instructors. They systematically ignore saying anything negative about any piece of equipment, regardless of the life threatening nature. Therefore, current and complete information is not imparted to students. You call that "professional behavior?" Can you imagine the medical profession not teaching or informing their doctors about the pros and cons of models of mechanical hearts? About respiration devices for operating rooms? Ignoring equipment shortcomings is patently *unprofessional*.

You say that agencies "teach instructors to be the best they can given the state of the technology..." They ignore certain technology. They do not say "teach your students that the SOS decompression meter give a readout that follows no known scientific theory about decompression or decompression sickness and therefore if you use it you are taking you like into our own hands." They do not tell students that some regulators do not perform well under adverse conditions - and they certainly do not name those that fail. You say that *Undercurrent* is in a "unique position unencumbered by allegiance to advertisers, equipment manufacturers or otherwise." The training agencies superficially claim to be in that same unique position. Obviously they are not.

It's interesting to note that NAUI NEWS printed the letter you sent us - but they didn't print our article! How fun it is to shoot the messenger. However, John Gaffney at NASDS thanked the messenger. He agreed that instructors should be kept up-to-date on problems and indicated that he would most likely carry relevant information in future NASDS publications. That's professional.

**Ben Davison, Ph.D.**



# Expert Calls Great Whites Slow, Clumsy

Consider the ominous great white shark -- incredibly swift, endlessly voracious, wondrously lithe and graceful as it cleaves the water in quest of prey.

Most of that image is wrong, says John McCosker, after an adventurous research voyage to the shark-infested waters off southern Australia.

Ominous, yes; the great white is the most dangerous fish in the world's oceans, and when it confuses California surfers and scuba divers with seals and sea lions, its preferred prey, its jaws can sever limbs and tear great chunks of human flesh.

"But it isn't fast and it isn't graceful," McCosker said. "It really is a big, slow, clumsy fish -- despite what people have thought until now."

McCosker is the director of the Steinhart Aquarium at the California Academy of Sciences in San Francisco's Golden Gate Park. With assistant curator John Hewitt and Al Giddings, a noted underwater photographer, he went to Australia to unravel some persistent scientific mysteries about the physiology and behavior of the huge sharks.

The sharks can weigh more than 7000 pounds, and along the Northern California coast they have severely injured more than 55 swimmers and killed at least seven in recent years.

The population of seals and sea lions is increasing dramatically along the coast, and because of the abundance of prey, the shark population is increasing as well, McCosker says.

McCosker now plans to apply his new findings to the shark problem in California, which he says may soon require population-control efforts.

On their Australian expedition, the San Francisco team sailed past Cape Catastrophe to Dangerous Reef, where sharks abound, and then south to Neptune Island for more research.

"It's a cold, lonely, desolate, windswept area, just like the Farallones," McCosker said.

In their scuba gear, protected by the steel bars of their shark cage, the researchers went face to face with the huge fish to observe, measure and photograph for hours on end. Giddings swam freely with the great whites, pushing them away with the butt end of his camera when they swam too near.

The researchers were primarily interested in answering some long-controversial questions about the life of sharks: how fast they can swim, how their body temperature varies hourly, raised only by the action of their muscles, how long they cruise the waters between meals.

To solve the speed puzzle, McCosker and his colleagues devised a tiny paddle wheel secured to a harpoon barely half an inch long that held the wheel atop the shark's back. The device was attached to a four-ounce electronic package that measured the spin

rate of the paddle wheel as the fish swam and relayed the data via an ultrasound transmitter across nearly a mile of open water to the scientists aboard their ship.

McCosker would lure a shark to the side of the ship with a chunk of fresh-killed tuna, snag the harpoon painlessly into the shark's thick skin, and then move underwater into the steel shark cage to track the fish as it swam away.

As they collected their data, the researchers were astonished to learn how slowly sharks swim. Even while attacking a chunk of bait -- an attack with huge jaws agape in the classic position of horror movies -- the fish rarely reached a speed of 138 centimeters a second, which is less than three miles an hour. And, at cruising speed, the sharks swam even slower: less than 50 centimeters a second, or less than a mile an hour.

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*"I just couldn't believe great whites are that slow."*

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"I just couldn't believe great whites are that slow," McCosker said, "but that's what our data points showed. It's apparent that their speed, grace and maneuverability have been greatly exaggerated."

As McCosker noted, a first-class human swimmer can cleave the water at around four miles an hour, which is certainly fast enough to elude even a vigorous, hungry great white -- assuming the human swimmer knows the shark is stalking him.

Stalking was another behavior pattern the researchers studied. McCosker says the sharks proved immensely skilled at stalking unobserved. For as long as half an hour at a time, the scientists would watch a

## Dinner

While the great white killed one diver and mauled another last fall off the California coast, humans have the final revenge. In late September fishermen landed a 2000 pound white, which they immediately sold to a wholesaler for \$3500 -- \$1.50/pound. Within a couple of days every restaurant in the San Francisco Bay area featured shark as the "catch of the day." A few years ago it was marketed as "whitefish," because shark was thought to be a scrap fish. Nowadays, it's high cuisine and diners devour it as if, indeed, they're getting revenge.



dummy, swimming from side-to-side, but not once did it move in front of the dummy or inside what would be the visual range of a fish or a seal.

Along the Northern California coast, researchers have long believed that sharks attack swimmers and surfers near the surface because the fish stalk their prey from beneath and confuse the silhouettes of humans -- particularly when arms and legs protrude from a long surfboard -- with the bodies of seals and sea lions.

McCosker and his colleagues confirmed that belief by careful experiments in the ocean off Australia. They stuffed rubber wetsuits with chunks of bone, aluminum, chunks of fish flesh and padding, and then towed the dummies atop surfboards or alone, as if they were swimming snorkelers.

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*"The shark would open its jaws wide -- just like the movie -- and smack! It would grab the dummy with one big bite, back off for a moment, then shake it like a dog with a bone and rip off a chunk."*

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"Sure enough," McCosker recalled, "a shark would trail a dummy for a half-hour, making figure-eights behind it, and then sniff from behind for several long minutes at a time. Finally the shark would open its jaws wide -- just like the movie -- and smack! It would grab the dummy with one big bite, back off for a moment, then shake it like a dog with a bone and rip off a chunk.

"It was a very sobering thing to see."

The attack pattern was identical to what scientists have postulated as typical of an attacking shark's behavior: a first huge bite to render the prey bloody and immobile, then a pause, retreating, in case the prey should strike back, and finally another lunge closing in for the kill.

Using a technique devised by Frank G. Carey, a shark expert at the Woods Hole Oceanographic Institute in Massachusetts, McCosker also rigged sharks with temperature-sensing devices. One would be attached by mini-harpoon to the shark's skin; another would be stuffed into a chunk of bait so it

would be swallowed to measure the creature's internal temperature.

The goal was to study the shark's eating habits and metabolism. As McCosker explained, in the open ocean a shark regulates its temperature by moving its muscles and consistently tries to keep its body about seven degrees warmer than the surrounding water.

But when a shark gobbles a mouthful of prey, it invariably swallows a gulp of sea water, too, so the intake of cold ocean water briefly cools its stomach. The temperature measurements, relayed to the shipboard researchers by ultra-sound transmitter as they tracked their sharks, could tell them when a shark was feeding and how it behaved after its meal.

The temperature measurements also enabled the researchers to learn more about the nocturnal habits of sharks -- how they move from warmer waters to cooler regions as evening comes, and how their body temperatures adjust to the waters around them.

Armed with all this data, McCosker now plans to feed temperature sensors hidden in chunks of bait to the sharks that concentrate around the Farallon Islands outside the Golden Gate. He will study their feeding habits, the prey they prefer and the shark's life cycles.

McCosker is worried about the shark problem here -- particularly in the areas off Point Reyes, Ano Nuevo Island and the Farallones -- because the abundance of sea otters, seals and sea lions is increasing, along with that of the shark population.

Sharks prey on large fish, too, and, as the shark population increases, McCosker is concerned that the livelihood of commercial fishermen may be threatened, as well as the safety of swimmers. He believes that some "management" plan will soon be needed to control the population growth of both marine mammals and sharks.

Surprisingly little is known about the biology of the great whites, so the data from the Australian expedition -- "only a part of the whole behavior puzzle," as McCosker puts it -- may be of practical value as well as increase the basic knowledge about the largest fish in the ocean.

-- San Francisco Chronicle

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## Free Flow

Accupressure has become the latest way to prevent seasickness, so claim many landlubbers who have tried a new device called the Sea-Band. By placing the elastic band around one's wrist, plastic buttons are pressed into specific accupressure points located three finger widths above the wrist. Order by calling 305/684-4508. The price is \$7.50.

Green turtles haven't been seen on the Cayman Islands for 80 years, thanks to the meat hunters, and only about 35 a year show up in Florida to lay eggs.

**They've been diminished in other parts of the world as well, so you can imagine the surprise and elation in Australia not long ago, when as many as 150,000 crawled ashore on a cluster of islands off the north-western tip of the Barrier Reef. It's the largest gathering ever documented. Christopher Columbus reported seeing a large concentration of green turtles when he landed on Grand Cayman Island; one researcher said that "what they're seeing in Australia is probably what Columbus saw on Cayman."**