Tech Diving Mag

Research - Development - Exploration

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Diving Pioneers & Innovators: A Series of In Depth Interviews (Peter Benchley)

Issue 16 – September 2014

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Front cover image © Peter Buzzacott.

Editorial

Welcome to the 16th issue of Tech Diving Mag.

I mentioned before (particularly in the editorial of the fourteenth issue of Tech Diving Mag) that a new book on decompression titled *Deep Into Deco* should be on the shelves in a couple of months. That's what I was been told last February. Now the publisher says it would be available this October. Let's keep our fingers crossed!

The contributors for this issue are world renowned industry professional Bret Gilliam, hyperbaric medicine expert and technical instructor Derek Covington, cave explorers André Shirley and Daniel Karlsson, along with decompression scientist and cave diving guru Peter Buzzacott. Get to know more about them by reading their bio at www.techdivingmag.com/contributors.html.

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Asser Salama
Editor, Tech Diving Mag

The Body – Ascending

By Derek Covington

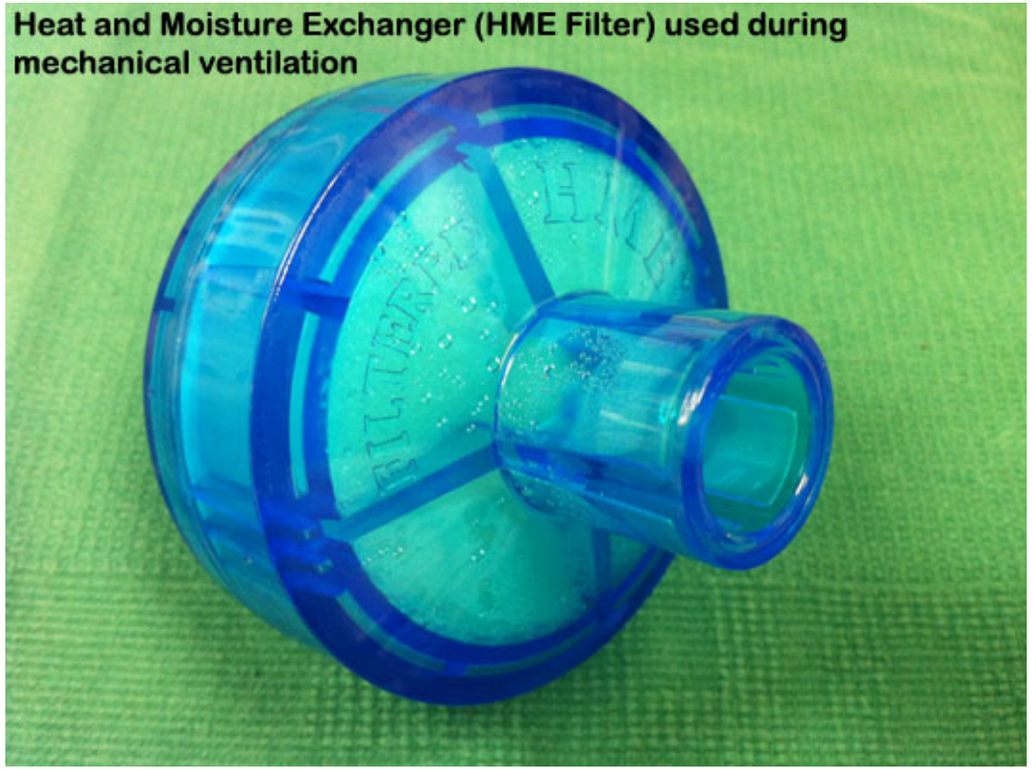
Forty-five minutes. Our planned bottom time.We signal to eachother and drift slowly off of the stern.As the shadows of the HMC *Yukon* slowly fade, the ambient pressure surrounding the human body begins to decrease. With continued ascent, the physiologic derangements induced by the hyperbaric environment begin to relinquish their influences on the body.

As a consequence of ascent, the partial pressures of breathing gases decrease, which reverse the gradient of fast loading tissues and slowthe influx of inert gas into the slow tissues. Inert gas flows down concentration gradients from saturated tissues into miniscule venules, which then join small veins leading to larger veins, which finally lead the dissolved gas back to the heart. Once in the heart, the inert gas is pumped into the pulmonary circulation. Here in the pulmonary circulation, the bloodstream makes a delicate contact with the lungs, known as the alveolar-capillary membrane. This extremely thin structure (0.2 micrometers, or approximately 50 times thinner than a sheet of paper) allows the inert gas to diffuse across the blood vessel and into tiny lung sacs, known as alveoli. Simple respiration then removes the gas from the body with each exhalation.However, if a diver has a patent foramen ovale, or PFO, her body does not filter this gas as efficiently. Rather than traveling from the right side of the heart to the lungs, a fraction of the blood is shuntedacross the right atrium directly to the left atrium (thus, bypassing the pulmonary circulation and failing to eliminate the inert gas via the lungs). This is not a rare occurrence. Thirty percent of adults are estimated to have PFO's.[1] Similarly, this is why pregnant women are advised not to SCUBA dive. The pulmonary circulation of the developing fetus largely bypasses the lungs and is unable to filter the dissolved bubbles. As a result, the unborn baby is theoretically at an increased risk of decompression sickness.[2] However, no studies show definitive associations between diving activities and harm to mother or to unborn child. In addition, the Ama divers in Japan continue to dive during their pregnancies and regularly bear healthy children.

As the ascent continues, the increased air pressure within the equalized middle ear attempts to make its escape just like its counterpart in the body's soft tissues. With clear Eustachian tubes, this air easily travels down these passages, into the oral cavity, and into the water column with each exhalation. However, the Eustachian tubes can become clogged with secretions during the dive. They can also be anatomically asymmetric leading to trapping of this expanding air in the more tortuous or narrow lumen. What happens now? Often times nothing. The air still manages to escape nearly as well as the other side. If it doesn't? Alternobaric vertigo. Because one middle ear has increased pressure due to a lack of gas escape compared to the other, the body senses a difference in pressure. As a result of different middle ear pressures, the brain is fooled into vertigo. It is intense and immediate. As a result, the diver suffers severe disequilibrium, pain, and nausea. In challenging diving conditions, such as current, limited visibility, extended decompression obligations, this can lead to serious consequences for even the most accomplished diver. Fortunately, a small descent will temporize the problem and give the gas additional time to escape. Otherwise, additional ascent risks worsening vertigo and rupture of the tympanic membrane.

With a benign inert gas load and clearing ears, the ascent continues. As does the degree of dehydration. In addition to the immersion diuresis, each breath of cold, dry inspired air robs the body of moisture and heat. Over the course of a dive, this is significant. In medicine, this is called an insensible loss because one is unaware of it. During general anesthesia, this is accounted for by delivering an increased rate of intravenous fluid to the patient. In addition, a specialized filter, known as a heat-moisture exchanger or an "artificial nose," is placed

in the closed anesthesia loop to limit water loss with respiration. Divers utilizing closed circuit rebreathers (CCRs) similarly limit their insensible losses secondary to respiration because they breathe warm, humid gas.Adequate moisture and heat is vital for the function of cilia in the respiratory tract. These microscopic, hair-like projections act to clear mucous and filter particulates in the airway. Smoking, cold temperatures, and inadequate humidity impair their function and increase the risk of infection and lung injury.



As the neoprene of your hood breaks the surface of the Pacific Ocean and you look back at the crowds on Mission Beach, you have safely returned to your normobaric environment. However, your body continues to quietly re-establish your inert gas balance, equilibrium, and state of hydration required for physiologic homeostasis of topside life. Some processes reverse immediately, while others dwell for minutes, hours, or even days upon surfacing. Fortunately, the human body almost always adapts to and defies these physiologic assaults, which allows us to visit the underwater world that intrigues so many of us.

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Remote Dive Site Contingencies

when evacuation is not an option

By Bret Gilliam

As secret agent James Bond once sagely observed to Q, who supplied his special equipment and was complaining that he was bringing it back damaged, "It's hell out there in the field."

Divers aren't dealing with jet-packs, ejection seats in Aston-Martin sports cars, or the best way to use the strangling wire released from the stem of a Rolex. But it can get a bit dicey in the field for us as well. I'm talking about the hard and grim reality of dealing with medical injuries in the middle of nowhere when facilities are not available and evacuation is not an option. If you are on a live-aboard, expedition vessel, or remote island when emergencies arise, you will have to be prepared to deal with them on-site and with the equipment on hand.

There are scores of scenarios that may present, from tropical viruses and severe stinging organisms, to lethal bites from sea snakes. But the most prevalent danger over the years has been decompression illness (DCI). If you pick up just about any diving text, medical reference, or even read DAN's protocol for what to do when DCI manifests in a diver, the first directive will be to administer 100% oxygen by demand mask and transport the patient to a recompression chamber. Great advice. Good luck if you happen to be anchored in Chatham Bay at Cocos Island… 380 miles offshore. In Costa Rica there are no helicopters or seaplanes that can travel the distance, let alone do it round-trip, without refueling. And there is no fuel on Cocos Island. No Starbucks either, for that matter. The same is true in the Komodo Islands, Raja Ampat, or the Banda Sea in Indonesia. Think you can get to a chamber in the Solomon Islands? Oh yeah, it's right next to the IMAX theater on Guadalcanal.

Reality is a bitch. If you or a member of your team gets bent in a remote area you will have to deal with the treatment yourself. This not only takes special training, it requires onboard-specific special equipment and trained support staff. A couple of D-cylinders in your nice little oxygen case aren't going to get the job done.

Let's take a quick review of DCI and what must take place to get a satisfactory outcome. First and foremost, you need oxygen. And lots of it. Secondly, you need pressure. That what's going to crush the inert gas bubbles and let them be absorbed back into blood and tissue without occlusions and permanent physiological deficits. Time is the critical issue: the window for the most effective treatment is about one hour from the first presentation of symptoms. Tick, tock…

It must be ingrained in divers to recognize and report DCI symptoms as early as possible. Unless you are dealing with extreme exposures and incomplete decompression, symptoms will usually not present while the diver is still underwater. But upon surfacing the clock is running. This article does not have the space for a treatise on symptomatology but DCI will present as pain in the limbs or joints, or as more subtle neurological deficits initially; but central nervous system (CNS) issues will progress and can include paralysis.

Many texts distinguish DCI symptomatology into Type I (pain only) or Type II (serious symptoms, CNS involvement). To the layman or diver in the field, this distinction is not of great importance and requires special training in many instances to classify presentations. Most importantly, we want our readers to be able to recognize any symptoms or signs of DCI quickly and take immediate action.

At the first sign or symptom, the patient should immediately be placed on 100% oxygen… via demand mask. Don't waste your time even putting a free flow mask in your gear package. You need to get the patient oxygenated. Free flow masks are wasteful of the gas, inefficient in their delivery, and you only have so much inventory of oxygen


Get bent in a remote area like this and you will have to deal with the treatment yourself.

available. The therapeutic effects of 100% oxygen to a DCI victim cannot be overstated. In a significant number of cases, immediate oxygen breathing will arrest symptom progression and achieve relief without the need for recompression. But the key word here is "immediate". Every minute lost allows for more inert gas bubbles to form and aggregate. By flooding the victim with 100% oxygen and eliminating any further intake of nitrogen from atmospheric air, you are creating a gradient for bubble size reduction and elimination. Cross your fingers and hope the victim begins recovery. You should be trained in field neurological exams and go through the checklist as soon as the diver suggests they may have DCI. Do a re-exam after the first hour of O2 breathing. If the patient's symptoms have stabilized or improved, continue O2 administration with hourly reassessments. If you're lucky, they may have dodged a bullet.

But you have to have an available inventory of oxygen onboard. I recommend a minimum of three H cylinders and a transfer method to the smaller cylinders commonly used with DAN O2 kits and to O2-cleaned scuba tanks because you're going to need a lot of gas. If you're getting results with demand mask oxygen, continue the patient's breathing for two hours, then a 10-15 minute air break, then back on for two more hours. Follow this regimen for 12 hours and then make a complete assessment. If the patient is symptom-free, it's probably okay to take them off O2 and confine them to a bunk for another 12 hours or so. Check urine output as well for volume and color. Cease all diving activity for 72 hours, or completely, unless they have a specific skill necessary to the project.

Now comes the tricky part: if the victim does not get better within the first hour on oxygen they probably need to be recompressed. The only way to do this is to get them in the water. This requires an in-water oxygen delivery system. Ideally, there should be an oxygen clean full-face mask available but an oxygen clean scuba regulator will do. (Full-face masks are preferred since the patient is less likely to lose their airway in the event that an oxygen induced convulsion event occurs.) Obviously, it is not desirable to attempt to place an unconscious unresponsive patient underwater. But as long as they can breathe on their own, I'd even risk this since the alternative is so dire.

In-water recompression has been around for five decades but it requires very specific training and equipment. You cannot attempt such a treatment without training. There are a variety of treatment tables that work extremely well. Some have evolved over years of experimentation and commence at shallower depths than conventional tables used in dry chambers. Other experienced contingency experts like to proceed with Table 5 that begins with a direct descent to 60 feet. But all this is predicated on oxygen supply, an oxygen clean delivery system, a conscious patient that is aware of what is happening, and several divers to rotate as underwater tenders with the patient. Most treatments will run two hours or more.

Ideally, a surface supply hose system to the patient is safest and most efficient. Air breaks also have to be factored in since a patient cannot breathe oxygen exclusively at depth. So the supply system underwater must allow for gas switches either from the surface supply hose or by changing scuba cylinders underwater.

You're going to be underwater for a while. Proper thermal insulation for the patient is necessary as well as a fresh water hydration delivery bag or bottle. Most DCI cases manifest toward the end of the diving day and so it's likely that a good portion of the treatment will be conducted in the dark… after sundown. Lights need to be available and the tender may also have to deal with patient anxiety. You also need to be prepared for marine life encounters. It's unlikely that a

shark will decide to chow down but the presence of predators is also a reality and the team should be prepared to ward off aggressive threats.

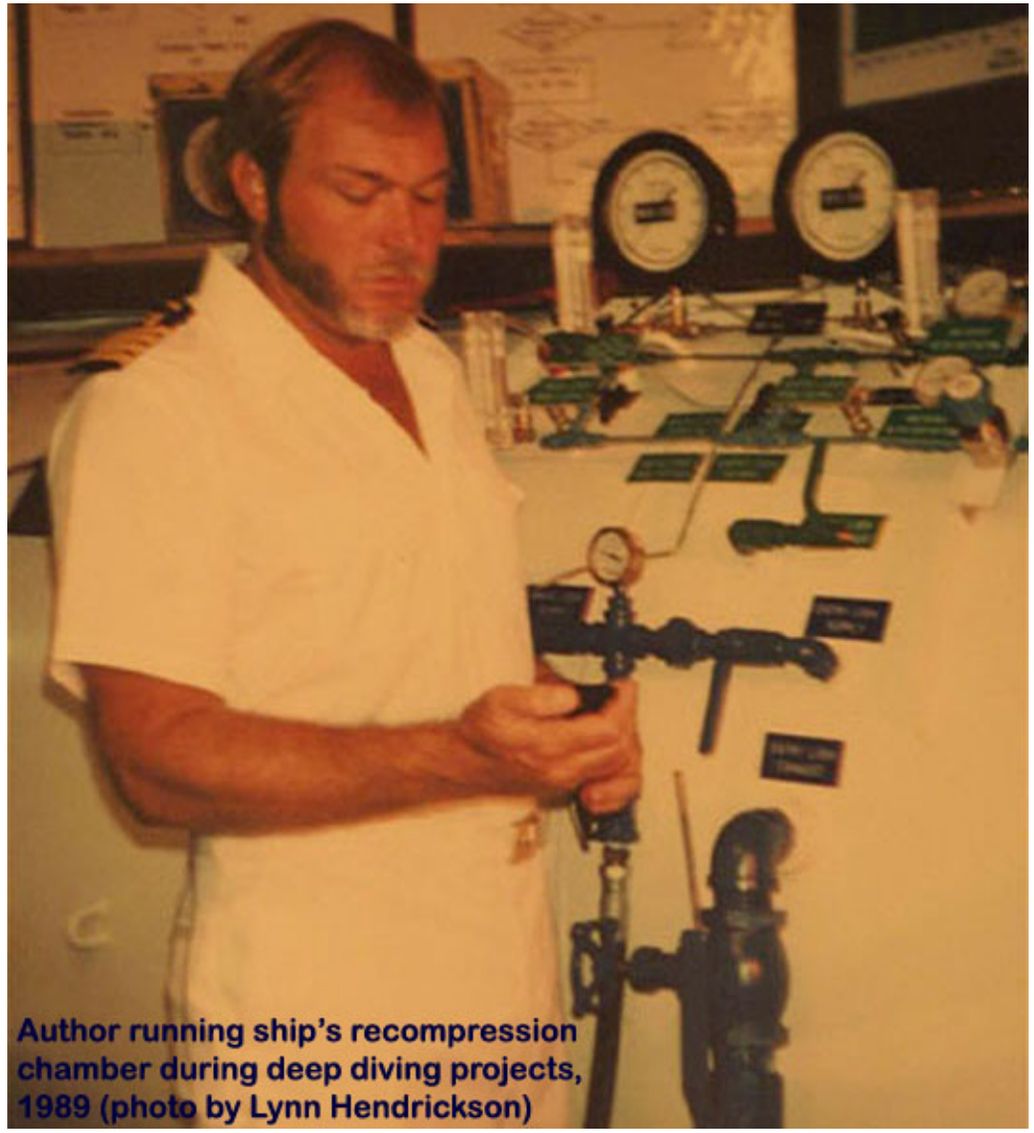
It all sounds more than a bit daunting. And it should. But the alternative is almost certain serious physiological damage including paralysis and death. You have to plan well in advance to have the necessary support equipment onboard and this is not easy in most third world countries. First and foremost, you have to have enough oxygen and the average live-aboard barely carries enough O2 for more than about a four-hour surface breathing period. If the operator cannot provide the other breathing delivery equipment, you may have to bring it with you. For the vessel operators that I provide operations consulting to, I recommend that they be fully prepared with all gear and staff trained to do the treatments if necessary. But these operators are few and far between. Do your advance due diligence, get proper training in field treatment contingencies, and expect to be called on to perform.

Remember: Evacuation is not an option. Without sufficient oxygen the patient has no chance. And if they don't respond to surface oxygen breathing, there is no choice but to proceed with in-water protocols since you have to get the hyperbaric effect of pressure for inert gas bubble compression.

That's the straight talk. Now you decide to what level you want to be prepared. There are no short cuts. TDI Headquarters can refer you to proper training professionals. This is not a dumbed-down meaningless dive specialty card. This is dead serious. I intend no pun with that last sentence…

AUTHOR BIO

Bret Gilliam is the founder of TDI, SDI and ERDI. He is credentialed as a Recompression Chamber Supervisor and an Instructor Trainer for Diving Medical Technicians and Physicians. He has been widely published on diving emergency medical procedures including in-water recompression. Professionally diving since 1971, he authored the diving medicine section of the reference text "Pre-Hospital Trauma Life Support" and has treated or consulted on over 200 diver treatments in his career.



Author running ship's recompression chamber during deep diving projects, 1989 (photo by Lynn Hendrickson)

Line Marking Systems In Use Around The World - Part III

By André Shirley, Daniel Karlsson and Peter Buzzacott

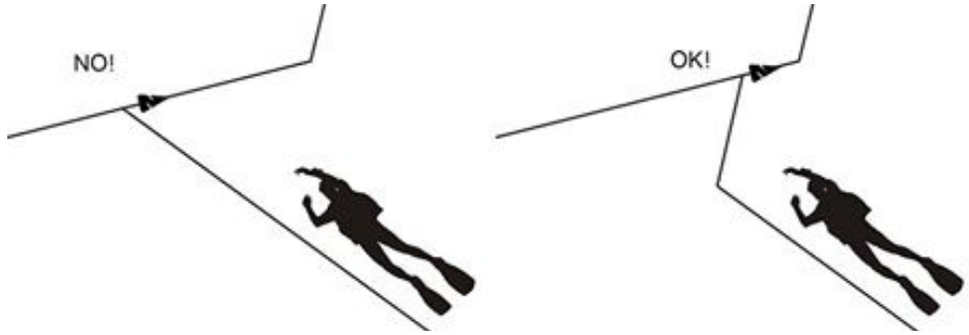
Sweden (By Daniel Karlsson and Peter Buzzacott)

Cave diving in Sweden is a rather cool affair. Waterfalls frozen for a hundred years hang in abandoned mine passages on the way to the water, which is commonly only 4°C or even 2°C. Therefore, dry gloves are standard which makes T-ing into a line slower than when wearing fingerless gloves. Indeed, this is avoided wherever possible by installing fixed lines, with as few jumps as only necessary. Sweden has a rich history of mining and some mines have many flooded levels, down to 114m depth or even greater. Natural caves are relatively less common and the deepest cave dive in Sweden is at about 30m with an average depth at about 8m. Our most famous and popular mine dives are Tuna Hästberg near the town of Borlänge and SalaSilvergruva in Sala. At these mines you can enjoy diving all year around and with heated rooms for food and relaxation underground.

Tuna Hastberg

Endless visibility and passages littered with artefacts, 'Tuna' is a well-preserved window into the past. The mine's history extends back to at least the 15th Century and today it has a main shaft on a 45 degree angle with excellent Scandinavian pine stairs descending 80m into the earth. A cable-trolley lowers and raises the dive gear next to the stairs. At the main dive area there is a hoist for lowering kits down to the floating dock. From here fixed nylon braided 3mm lines head east and west. Within a easy dive you can find wagons, electric room, shelters and tools lying around everywhere. In the mine we use Cookies and Arrows in the Florida style but all lines are connected to the main line, which is well marked with arrows to minimise confusion if a diver needs to exit without light. The main diving levels are at 14m, 36m, 74m and 114m.

In low visibility and in a stressed situation it could easily happen that divers follow the line blindly without looking at the direction of the line arrow. To overcome this we have constructed line junctions in a way that you are naturally directed on your way home when following the line, like this:



SalaSilvergruva

A formerly active mine since at least the 15th century, in Sala they heated the silver-bearing walls with fire and cracked away the rock with ore hammers. This made passages look more "naturally" occurring. In the same way that a seam of softer rock gets eroded in some natural cave systems, these ore seams were mined. Sala has a distinct cave appearance but with the benefit of man-sized passages between workshop 'rooms'. There are giant wooden barrels, an ancient wheelbarrow, rails on the floor and evidence of an active mine wherever you look. It is a fascinating dive.

The north Florida style Gold-line system is used in Sala at the main level, 35m deep, and it is well marked with large permanent line arrows. Line jumps are used when diving outside the main line. At deeper levels there is some exploration line, 2mm with fixed junctions.

Both Tuna Hastberg and SalaSivergruva welcome fully-trained international cave divers. For access arrangements contact: info@aventyrsgruvan.se, www.aventyrsgruvan.se (Tuna), or: info@oceanictech.se (Sala).

France (By Peter Buzzacott, with reliance on a translation of Frank Vasseur's book "Conditionnement et usage du fil d'Ariane")

In the earliest days of cave diving in France the lead diver would be tethered to a support team waiting outside the cave, such as Jacques Cousteau described in The Silent World when he and his team probed the Fontaine de Vaucluse. Through this rope signals could be communicated back to the team outside, for example if a siphon was crossed then the team could follow. In 1968 a diver loss consciousness, was recovered by the rope and revived after 15 minutes of mouth-to-mouth! But, the use of a tether fell out of fashion by the late 1960's and fixed lines became more common. Soon after, reels were adopted and the modern French system of route marking was born.

Hydrogeology systems vary greatly in this vast country and therefore so do conditions, from low and silty to majestic, clear and long. Some caves utilise a nylon braided line, some require plastic-coated steel cable (washing line) in passages where the flow is concentrated, and some even go as far as heavy iron chains, such as in the historic Chatillon-sur-Seine where archaeological digs unearth brass jewellery by the bagful. T's are common, for example in the Ressel where the main passage divides into two at about 200m penetration. From there, the left passage remains relatively shallow at 10m while the right passage heads down to 19m, before they rejoin at 300m penetration to head down to the deepest section, 50-80m depth. Since the deeper passage is also the fastest to reach the deep section, it is common for divers to scooter through the deeper truncation on the way in, and then make decompression while exiting through the shallower branch. On any day the Y junction may be unmarked, or marked with arrows. Initially many T's are clearly labelled with plastic signs but in caves with variable flow these may be missing on the day of the dive. Duct-tape 'Dorf'-style markers are common in French caves, with the distance to the last exit noted, even if the last exit was between sumps. In some caves the total distance from the entry is noted instead. Arrows are common where nylon line is in use, possibly left by a few of the many international cave divers who visit this cave diving paradise, but they have little or no use where heavier rope or steel cable are used.

Speleo divers trained by the Federation Français de Speleologie prepare to dive alone when exploring, in low or nil visibility and, therefore, they have no use for arrows or cookies. When tying into an existing line the FFS Speleo diver makes a secure primary knot to the main line but leaves a short tail over and secures this to the main line also, with a half-hitch on the exit-side of the primary knot. The diver carries a collection of rubber 'snoopy loops' and uses these to secure the line to rocks or projections with a degree of inherent tension in the line. If a promising lead pinches out then the diver reels-in his line on the way out, with the snoopy-loops still attached. The loops are removed and the line made ready for diving again later.

Given the growth in cave diving tourism over the last quarter of a century it is now more common than ever to see both the French and Florida styles of route marking in any popular cave. Occasionally, for example in Goul de Tannerie in the Ardeche, a jump to a side passage may be marked with two arrows but the gap may be less than a metre wide and the angle between the lines relatively acute from one direction of the other, making it quite important to reference the line when scootering in. Since scooter use became commonplace though, major distance markers in many caves are now large enough to be read 'on the fly'.

Following the guideline in the Ressel, the Lot.

The 500m marker in Goul de Tannerie, the Ardeche.

South Africa (By André Shirley)

South Africa is an old country. It was at the centre of the world when it was part of the super continent Pangaea, and geologically it has not moved much since then. Most of our land masses formed before life as we know it came out of the sea 3.6 billion years ago. We have very little limestone, and most of the caves in South Africa are dry. Our natural wet caves are mainly formed from sinkholes in soluble dolomite.

Our cave directional markers follow the normal international trend. Jumps are marked with double arrows. Permanent lines have arrows approximately every 30 meters, and we try to make permanent lines with a thicker line than on normal cave reels, though this is not always the case.

Komati Springs is 915 m above sea level and exists due to mining activities. The mine was decommissioned in the 1970's, after it hit a point where the natural ground water began to flood in and could not be pumped out fast enough to sustain it. It is a labyrinth of very stable rock which forms the underwater cave. The ground water very slowly feeds from the caves to the open hole which subsequently overflows into a river. There are cave levels at 9, 18, 26, 36, 48, 68 and 110 meters with an inclined shaft at 30 degrees from 110 to 186 meters. Each level has its own character and is very natural in appearance.

The permanent lines are kept to a minimum. This is so that divers can use exploration reels to explore the caves. In the 18m level there is a 3mm permanent line which goes to the shaft and all the way down to 110m. In the 18m area there is also a jump marked with double arrows. The circuit is mainly used for training.

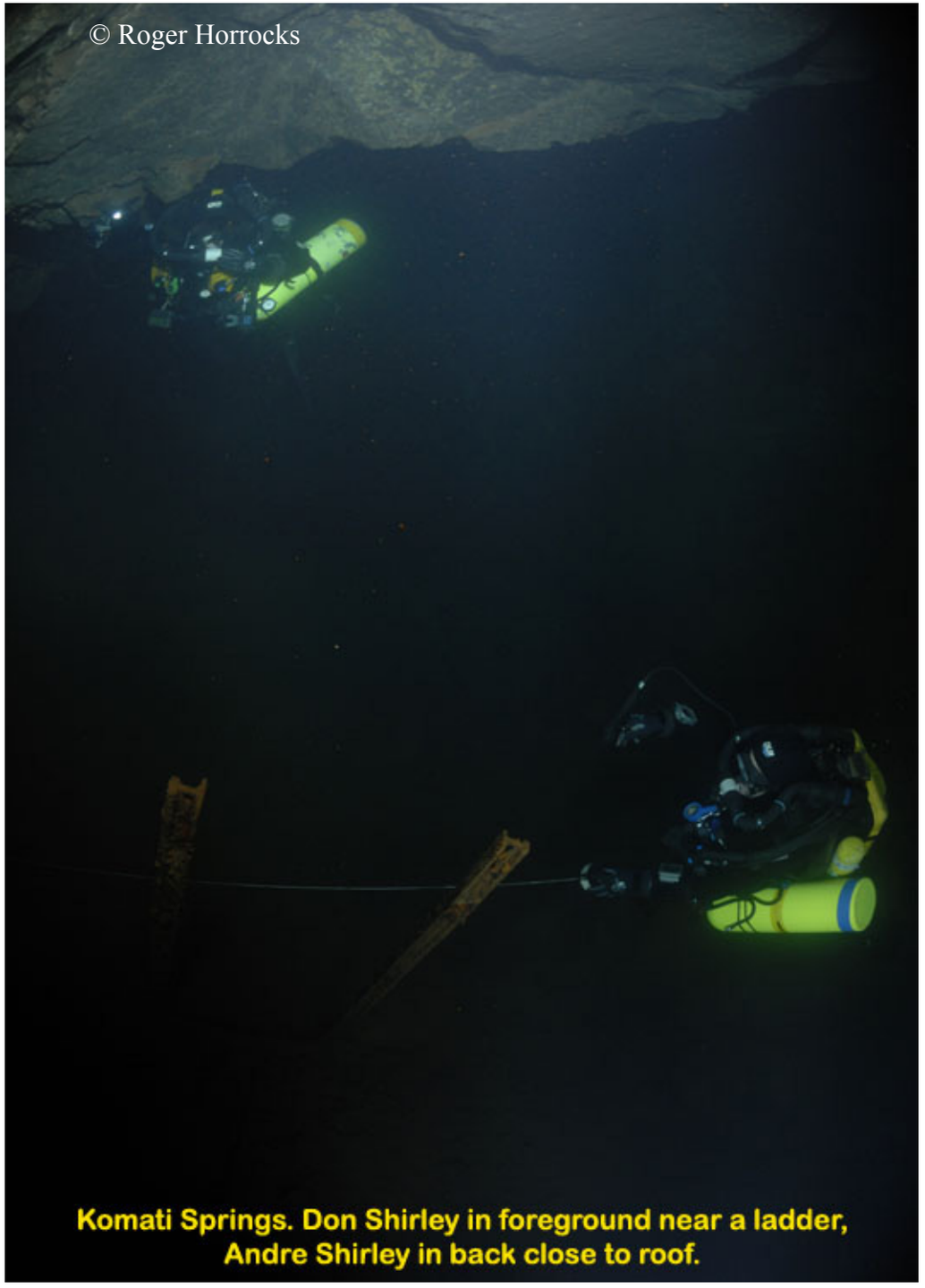
In the 36, 68, and 110m areas there is a permanent line which runs from the main shaft. Locations are marked with double arrows. There is much to be explored that is deliberately not lined out.

Boesmansgat cave is the most famous of our caves. It is effectively a super large sinkhole in the middle of the Karoo. The rock is very soft soluble dolomite and tie-off's can only be made slowly and carefully with each being more like a primary tie off rather than a single loop. In the event of a lights out situation the line could not be pulled by a diver exiting as it would more than likely detach from the cave walls together with the rock it is tied off on.

Its deepest known depth is 280m and it is unmapped past 100m. We have a circuit around the edge of the roof at 60m and an escape line over the middle of the roof which is approximately half way around the circuit. This is approximately a 30 minute swim to get around. The second line is the start of an 80m circuit, which took 45 minutes to lay and is still incomplete.

There was a line put in by Sheck Exley but it was destroyed a few years ago when one of the cave groups entangled it while retrieving lines they had put in. This will probably be re-laid this year.

Komati Springs has on site gas facilities, and trained cave divers are welcome. Cave coursed are also offered - from cavern to technical cave. Expeditions to Boesmansgat can also be arranged. Contact Don and André at info@komatisprings.com, www.komatisprings.com.

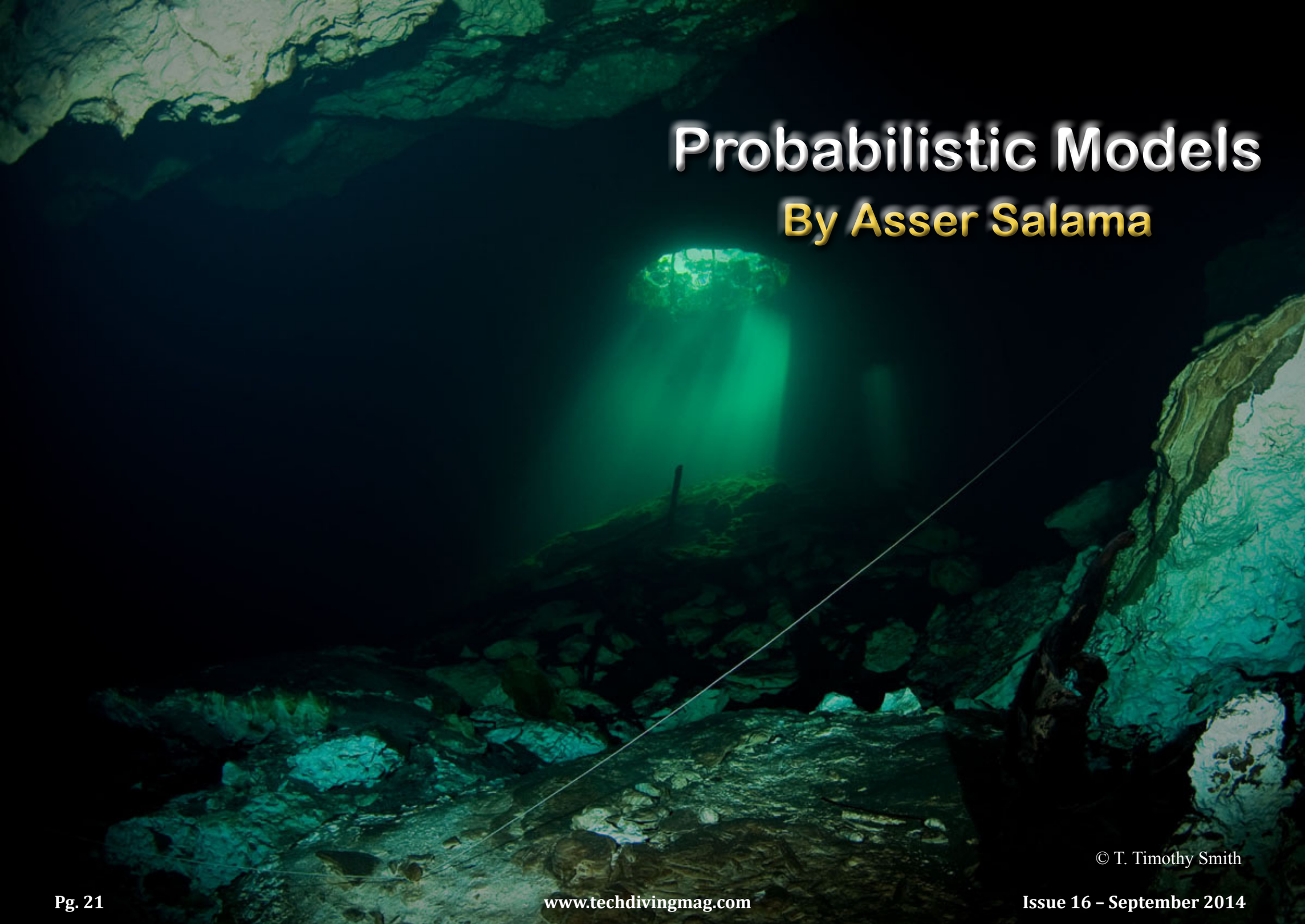


Komati Springs. Don Shirley in foreground near a ladder, Andre Shirley in back close to roof.

Boesmansgat. Don Shirley – you can see part of the wall next to him covered in silt.

Probabilistic Models

By Asser Salama



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A probabilistic decompression model is a statistical inference model validated with enough number (usually several hundred to several thousand) of manned dives with known outcomes. The model is first developed then fitted to a dataset containing as much human dive profiles as possible, as long as the incidence of DCS in these profiles is precisely known.

The dataset should accurately describe the type of dives the model is equipped to handle (air-only, oxygen-nitrogen, oxygen-helium, oxygen-nitrogen-helium, high O2 content, etc…). In the mid 1990s, the U.S. Navy had a dataset consisting of 3,222 oxygen-nitrogen dives. The probabilistic models calibrated with this dataset were successful in describing DCS risk observed across a wide variety of oxygen-nitrogen dives, yet failed to account for the observed DCS incidence in dives with high ppO2 during decompression. The U.S. Navy researchers added 1,013 O2 decompression dives to the calibration data and re-fitted the models to the expanded dataset.[1] The efficiency of predicting the observed incidence in dives with pure oxygen breathing during decompression increased from 40% to 90%.

Probabilistic decompression models do not look at predicting the incidence of DCS following a specific dive profile, as this falls into the 'statistically uncertain' category. What they do is that they generate decompression schedules to any level of accepted risk. These generated schedules are then compared to the dive plan one wants to estimate its risk of DCS, hence the probability of DCS occurrence could be calculated.

The first ever validation trial of a probabilistic decompression model was conducted from 1991 to 1992 by Thalmann and his colleagues, incorporating the exponential-linear kinetics.[2] Other decompression models followed, some consider risk as a function of tissue compartment gas load whereas others consider risk as a function of bubble volume. The latter hypothesized that symptoms of DCS appear when the total volume of bubbles in a unit volume of any tissue exceeds the critical specific volume of a free gas phase.

It is worth noting that developing a probabilistic inference model is not a difficult task for computer scientists, especially those into the artificial intelligence field. However, to make it work properly, the model has to be 'sufficiently trained'. This training requires a dataset that is representative to the modeled phenomenon, which is not available off-shelf. In plain English, the dataset should match the dive plans the diver wants to assess their level of risk. If, for instance, the diver used a probabilistic model fitted to an air-only dataset to assess a Trimix dive, the result would be comparable to using an English-only OCR system on Arabic images.

So unlike other decompression planning tools, the diver can't just buy a probabilistic model. It is important not to confuse probabilistic models with dive profile analyzers. A profile analyzer is usually an algorithm that compares the dive profile entered by the diver to a very conservative schedule it generates on the fly. Looking at the two plans concurrently, if the entered profile has shorter time frames, the corresponding parts are identified as potential risk of DCS. If an ICD formula is incorporated, the dive profile analyzer can also display ICD warnings on gas switch stops.

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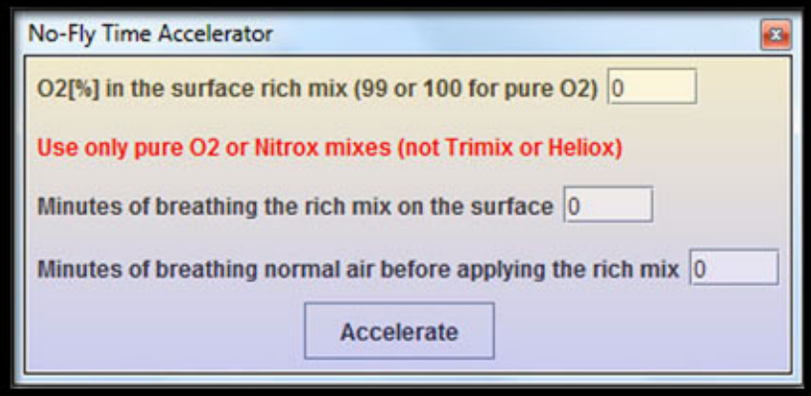

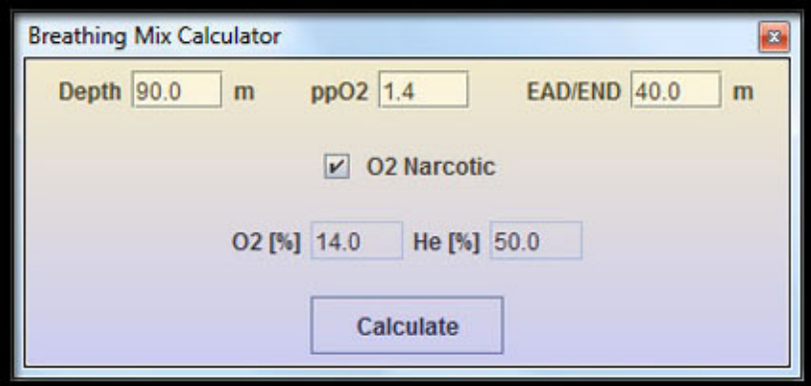

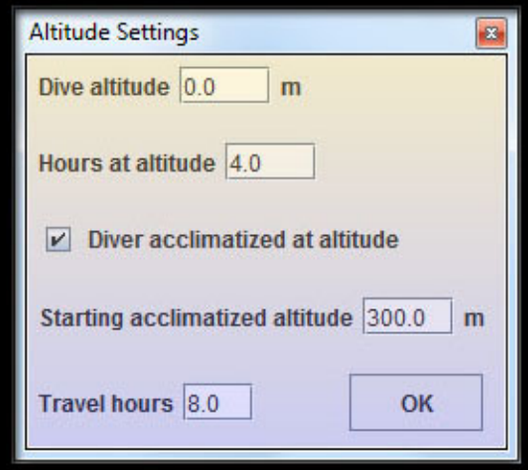

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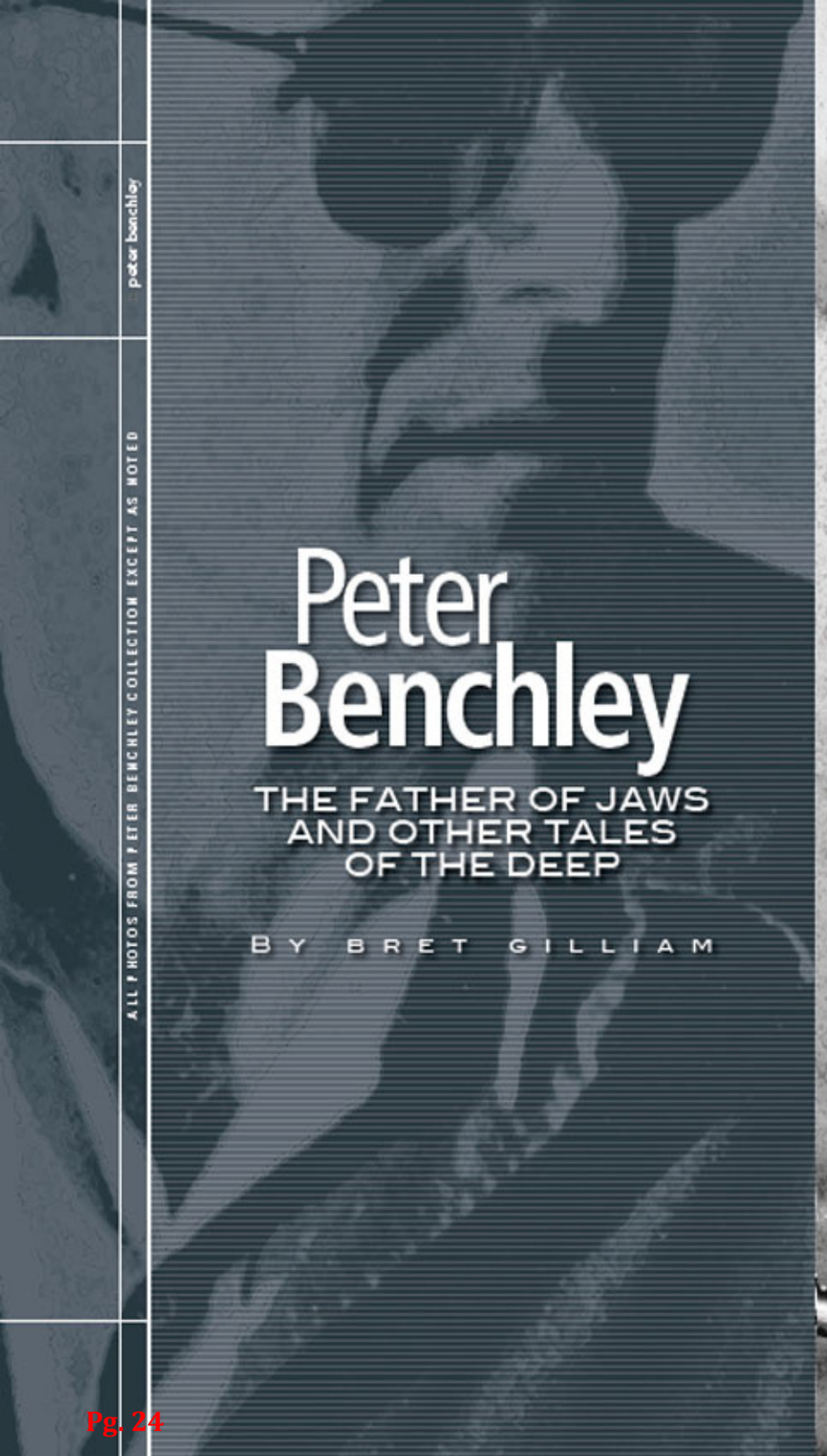


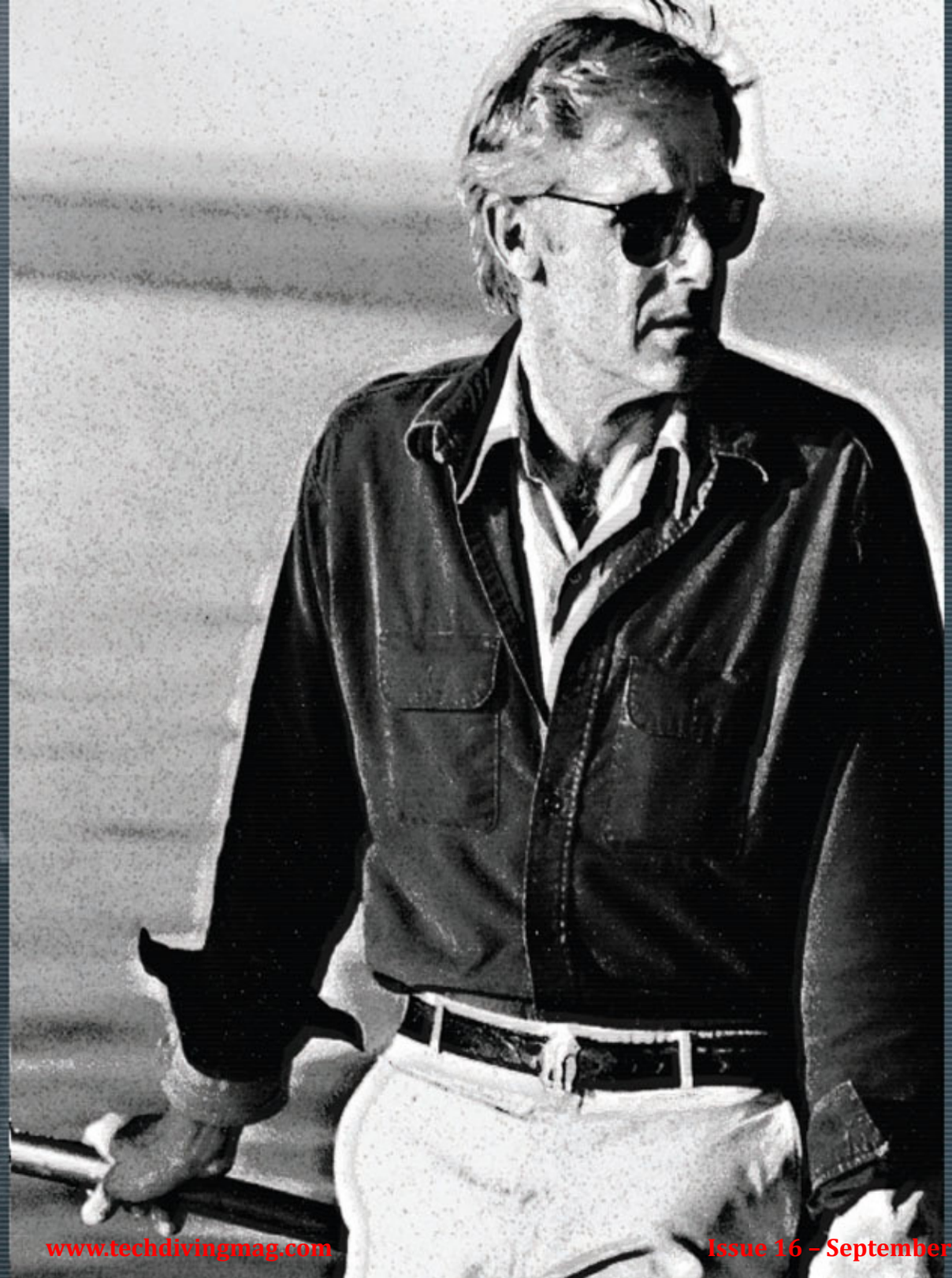
Peter Benchley

THE FATHER OF JAWS AND OTHER TALES OF THE DEEP

BY BRET GILLIAM

ALL PHOTOS FROM PETER BENCHLEY COLLECTION EXCEPT AS NOTED

peter benchley



The great fish moved silently through the night water, propelled by short sweeps of its crescent tail. The mouth was open just enough to permit a rush of water over its gills... The eyes were sightless in the black, and the other senses transmitted nothing extraordinary to the small primitive brain.

The land seemed almost as dark as the water, for there was no moon. All that separated sea from shore was a long straight stretch of beach, so white it shone. From a house behind the grass-splotched dunes, lights cast yellow glimmers on the sand.

The front door to the house opened, and a man and woman stepped out onto the wooden front porch, they stood for a moment staring at the sea, embraced quickly, and scrambled down the few steps onto the sand. The man was drunk, and he stumbled on the bottom step. The woman laughed and took his hand, and together they ran to the beach.

"First a swim," said the woman, "to clear your head."

Is there even one amongst you who doesn't recognize the infamous opening paragraphs of the most terrifying novel of the sea ever written? Without reading one more sentence we all knew that this particular moonlight swim would not end well. The subsequent release of *Jaws* the movie in 1975 created the genre of summer blockbuster films, set director Steven Spielberg on his road to Hollywood immortality, and memorably changed the life of a young struggling novelist named Peter Benchley.

The movie also forever twisted the psyche of hundreds of millions of people in their awareness of sharks and profoundly affected the collective perspective of simply going to the beach. In short, Benchley scared the wits out of a generation and we're still getting over it.

He followed with another successful tale, this one about deep sea treasure, diving and bad guys — *The Deep*. And Jackie Bissett forever earned a place in history for "Most Compelling Use of Large Breasts in a Wet T-Shirt" when the movie was released in 1977. For Benchley, a series of other fine adventure novels, all with a link to the ocean would follow establishing him as a one-man cottage industry of Hollywood and television fodder for decades.

His last book, *Shark Trouble*, was released in the summer of 2002 and I decided it was the perfect time to track him down and get him to talk about his own diving experiences, the writing process, dealing with the movie industry, marine conservation, his buddy Stan Waterman, and how he feels about being branded (unfairly) by some as the man singularly responsible for a global fear of sharks.

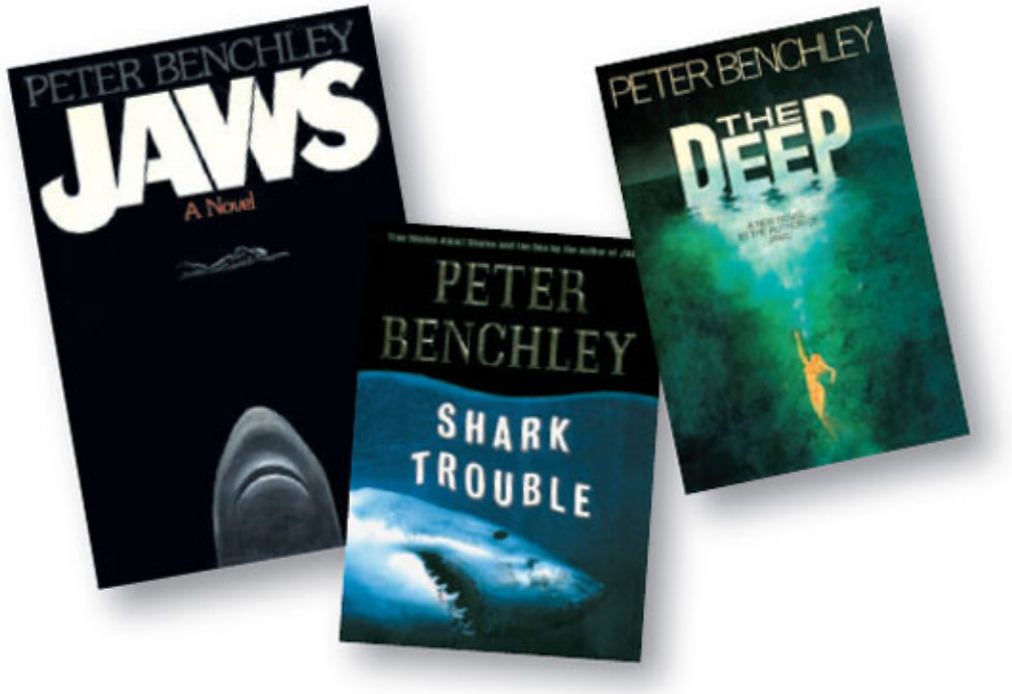
Okay, so how did a nice boy with a Harvard degree who worked as one of President Lyndon Johnson's speechwriters end up inspired to write the definitive shark terror novel?» I had been carrying around in my pocket for years a 1964 clipping about a fisherman who had harpooned a 4,550-lb. Great White shark somewhere off Montauk, L.I. To someone who'd been fascinated by sharks all my life – I believe implicitly that all male children are fascinated by sharks or dinosaurs, and I chose sharks because they actually exist, I could see their fins slicing the oil-calm surface of the sea on warm summer days – the mere idea that a critter that huge could exist was thrilling. Immediately, I thought to myself: what would happen if one of those monsters came into a resort community and wouldn't go away? The idea of a "rogue" shark hadn't been discredited by then. So little was known about sharks in general, and Great White sharks in particular, that almost any assumption was fair game.

Anyway, I carried the clipping around as a sort of relic, and more than once it proved useful. I was the radio/ TV editor of *Newsweek* at the time, and all magazine writers and editors were occasionally courted by publishers on the lookout for fresh book ideas. I kept two arrows in my quiver: the shark idea for a novel and some thoughts about a history of pirates as a non-fiction book. I had them ready to pull out at any free lunch to which I was treated by a publisher. The shark idea always generated interest, and several publishers encouraged me to write it, but I never did. I had neither the time nor the interest to write a novel; I was satisfied with the free lunches.

Then, in 1971, an editor from Doubleday, Tom Congdon, heard the idea, was taken with it and did what no other editor or publisher had ever done: he offered me money ! A thousand dollars for four chapters. If he and Doubleday liked the four chapters, they'd sign me to a contract providing for the balance of the advance: a grand total of $7,500 for a completed, acceptable manuscript. I took the thousand dollars and promptly set about doing ... nothing. I spent the money and continued to work at *Newsweek*.

A couple of months went by, and my agent called to ask where the four chapters were; it seemed that the publishers were insistent on getting either the four chapters or their thousand dollars back. Well, I'd long since spent the dough, of course, so I had no choice. I had a wife and two small children in a tiny house in Pennington, N.J., and I couldn't possibly work there, so I rented (for $50 a month) the back room of a furnace-supply company in downtown Pennington and – amid the clang and clank of hammers on sheet metal, of welders and riveters – wrote down the words, "The great fish moved silently through the night water, propelled by short sweeps of its crescent tail." Then, right away, I was stuck; I had a problem. I phoned my father, who lived in Nantucket, and asked him, "What would happen if you cut a body in two? Would any of it float, and if so, which parts?"

"Depends," he said. "If you cut it above the air sacs, the bottom half would float, if below the air sacs, the top half would float .... What are you up to?"
"Writing a story about a fish."
"What, a fish that bites people in two?"
"Uh-huh."
"That's some fish."
"Yup."
"Well, have a good time with it."



We hung up, I wrote the first four chapters and sent them to Tom Congdon, who ... hated them. In a moment of lunacy, I had decided to try to tell the story as a comedy, and the story was a mess, an

unsatisfactory blend of unfunny humor and unthrilling thriller. Tom sent me back to the typewriter.

A month or so later, I had the four chapters. Tom liked them, with reservations, and after we edited the four chapters and agreed on a course for the rest of the story, I repaired to the back room of the furnace-supply company and completed the first draft. Tom and his assistant Kate Medina, criticized, and I rewrote, and rewrote again, and after a total elapsed time of perhaps a year and a half, Doubleday had a completed, acceptable manuscript, and I had the $7,500, minus the thousand already paid.

Your father, Nathaniel Benchley, was a prolific writer himself including a wonderful novel called *The Off Islanders*. Hollywood eventually made that story into a successful movie titled *The Russians Are Coming! The Russians Are Coming!* Did he offer any advice on your early decision to be a novelist?» My father's novel was about Nantucket (and other islands, too, I'm sure) and was a put-down of anyone who wasn't born on the island. If anything, my father discouraged me from becoming a writer. His father had been a writer and actor, Robert Benchley; he himself had been a reporter and a critic and was now a freelance writer, and he knew all too well how hard it was to make a living as a writer. He scratched for every dollar and was barely able to pay my tuitions. I worked at a more-or-less full-time job while I was at college, to earn my own walking-around money.

But once he saw that I was interested in writing, he did a wonderful thing. For two summers, when I was 15 and 16, he paid me the going wage I might make as a gardener or a soda jerk or a club attendant, and my only duty was to sit alone in a room with a typewriter for four hours every day, or until I produced a thousand words, whichever came first. He didn't want to read it; I never had to do anything with it. But I had to produce it. He wanted me to experience both the solitude and the discipline that are requisites of a writing life, to see if I could tolerate them. If I couldn't, he said, I'd better start looking in another direction.

As things turned out, I not only tolerated discipline and isolation, I liked them, and so, at the age of 17, I became half a professional writer: I say half because although I sent story after story to *The New Yorker* and other magazines, none of the stories sold. So I was a professional in that I wrote to make money, but I wasn't a professional in that I never made any. I sold my first freelance journalism at 18, and my first fiction at 21, to *Vogue* magazine.

Did he have any suggestions for making the connection from novel to movies?» Several of my father's books were sold to movies and television, but he never participated in the production of any of them, even though he had been a full-time screenwriter in the mid-1950s. His advice was: take the money and run.

***Jaws* was such a runaway best seller that it surprised most folks in the staid publishing world. How did your publishers initially view the book? When *Jaws* was released as a novel in 1974, it was probably difficult to imagine that Hollywood could come up with the technology to make a mechanical shark feasible.»** Nobody thought *Jaws* would be a success. It was a first novel, and nobody reads first novels. It was a novel about a fish, for God's sake, and who cared about fish? Finally, we all knew it couldn't be made into a movie, because it was a given that no one could catch and train a Great White shark, and everyone involved thought that Hollywood's special-effects technology was nowhere near advanced enough to build a credible mechanical shark.

I understand that you went through a considerable process just to come up with the title?» The title was one of a thousand lucky breaks that happened to the book and the movie. Tom and I labored through about 125 titles, pretentious titles like *A Stillness In The Water* and *Leviathan Rising*, down-market titles like *The Jaws Of Death* and (from my father) *What's That Noshin' On My Laig?* At last, with 20 minutes left before the book had to go into production, I said to Tom, "Look, we can't agree on a title. In fact, the only word we both like is 'jaws.' Why don't we call the bloody thing '*Jaws*'?"
He said, "*Jaws*? What does it mean?"
"Who knows?" I said. "At least it's short."
That was most everyone's reaction. "*Jaws*? What does it mean?" And always the response, "Who knows? At least it's short."

It turned out, of course, to be the perfect title: mysterious, dangerous, a little oblique rather than dead-on. And, yes, short, so it fit on a book cover and a movie-house marquee in gigantic letters.

There was nothing subtle about *Jaws* in terms of invoking an almost visceral fear response in the reader. Did you expect that it would have the impact on the public that it did?» No one, least of all I, had any hope that it would have any impact on anyone at all. I was trying to see if I could write a novel. Period.

You wrote with surprising accuracy for a layperson on shark behavior at the time. How did you do your research on the Great White?» Come with me back to the early 1970s. The environmental movement was in its infancy. Earth Day was only a couple of years old. The prevailing attitude about the sea was that it was infinite and invulnerable to anything and everything humans could do to it. Very few people knew anything at all about sharks, and even fewer knew anything about Great Whites. I did all the research I possibly could,

which was very little. In addition to reading the accepted texts on sharks, such as *Shadows In The Sea*, Cousteau's shark book and David Davies' *Sharks And Sharks Attacks*, I watched *Blue Water, White Death* as many times as I could and read Peter Matthiessen's account of the odyssey, *Blue Meridian*. By then, I felt I knew pretty much everything that was generally known at the time... not as much as Perry Gilbert or Eugenie Clark, certainly, but as much as any layman.

Were you a diver at the time? Tell us a bit about your early dive experiences.» I had been a diver since 1961, when I was in the south of France and had tried this new sport in the waters off Antibes. The only instruction we received (in French) was, "Don't hold your breath on the way up." Not until after the dive did I realize we had been pitched overboard in 110 feet of water. The assumption of the divemaster was that we'd come up when we ran out of air. There weren't even J-valves on the tanks. After that, I dove whenever I could, but I didn't get certified until 1969 or '70, when I wrote a piece for Holiday magazine on the training course at UNEXSO on Grand Bahama.

Did you have any aspirations to sell the rights for a movie?» A sale to the movies never occurred to me until the book began to have extraordinary pre-publication success: book clubs, paperback sales, foreign sales, etc.

Who courted you for the rights?» Nobody courted me. The manuscript was circulated among the studios by my agents. The "coverage" – meaning the reaction by professional readers – was favorable; in part because the property was what was (and is) called "high concept," i.e. the story could be encapsulated into one sentence. Only the readers ever read the entire manuscript. They put a one-or-two-page synopsis on top of the pile of paper. On top of that went a one-paragraph synopsis and a recommendation. Finally, on top of that went a letter grade – A, B, C, D. No executive ever looked at even the two-pager if the grade wasn't at least a high 'B.'

Universal was late in bidding on *Jaws*, or so I heard, because the final reader had meant to put an 'A' on the paper but had used a lower-case letter 'a' which he didn't fully close. As written, it looked like a 'c.' Only after several studios were buzzing about the book did Dick Zanuck and David Brown, the excellent producers, wonder what the hoo-hah was all about and look at the coverage. They then joined the bidding.

What did they offer as compensation?» I have no idea how the bidding went – if there was actual bidding – but the final offer from Universal was $150,000 for the "Sequel rights!?" shouted I. "I don't care about sequels; who'll ever want to make a sequel to a movie about a fish? Sell them the rights to anything they want ... my life as an astronaut, ANYthing. I need money!"
"Nay," said she. "This is important. Be patient."

And so I was, eating paint and serving sawdust to the kids. As things turned out, of course, she was right. In turn for relinquishing all rights to any sequels – save for a one-time payment of $70,000 for each one – John Ptak secured a doubling of my participation in the original, which was the only one that made substantial profits.

But you'd never done a screenplay?» David Brown, one of the most gracious, kindly, generous and thoughtful producers ever to work in the fetid swamps of Hollywood, convinced me that I must write the screenplay because only I had the knowledge and the creative genius to do it justice. Naïf that I was, I bathed happily in the ridiculous praise. Not till much later did I discover that the only reason I was

permitted to lay a finger on the screenplay was that there was at the time a threat of a craft strike – writers, actors, electricians, I don't remember which – that would have shut down the industry. Because I had never written a screenplay, I wasn't yet a member of the Writers Guild of America, West, so I could continue to work even if a strike did occur. The producers would, therefore, be assured of getting 120 pages that would, at least, be in English and from which they could begin to build the movie.

***Jaws* ended up with a rookie director named Steven Spielberg. What was your first impression of him?»** As I understand it, Steven was the choice of Sidney Scheinberg, then the president of Universal. Zanuck and Brown – and I, sort of – had interviewed several possible directors, including one who said (out loud), "I've always wanted to do a movie about a whale." Spielberg wasn't a rookie; he had done two movies, a TV movie called *Duel*, about a malevolent truck, and *Sugarland Express*, with Goldie Hawn, and Scheinberg already recognized his genius. With a proposed budget of only $2.5 million, what did Universal have to lose? My first impression – and my lasting impression – was of a young man knowledgeable far beyond his 26 years, a veritable encyclopedia of film, utterly confident, certain of exactly the movie he wanted to make, very pleasant, tolerant of my stupendous ignorance, willing to help me even though he knew (which I didn't) why I had been hired and he had very little reason to believe that I'd turn in anything remotely usable.

Were you satisfied with the movie?» Absolutely. The only serious, ongoing argument Steven and I had was about the ending. I said that his ending was absurd, couldn't happen, wouldn't be believable, blah, blah, blah. He said, in effect, "I don't care; if I've got the audience hooked for the first two hours, I can do anything I want in the last three minutes and they'll stick with me."

Peter Benchley's book jacket photo for the release of *Jaws*, 1974

He felt that my ending, the one in the book, was a downer for the movie. He wanted his audience on their feet, screaming and cheering at the end, not wallowing in gloom. He was right, of course... for the movie. It all goes back to William Goldman's old dictate: in film, truth is beautiful, reality is wonderful, but neither of them is worth a dime compared to believability. And contrary to what I knew, Steven had, indeed, lured his audience into believing what he wanted them to at the end.

The other significant changes – losing the Mafia stuff, the romance between Hooper and Ellen, the death of Hooper, etc. – were known to me from the beginning, and I was easy with them. Dick Zanuck's first instruction to me was to "lose all the backstories. I want this to be an A to Z adventure story, a straight line from beginning to end." One of the many, many enriching things Steven gave the A to Z story was the texture, all the little details that fleshed out the characters, like the wonderful scene between Brody and his little son when they make faces at each other, and the drinking scene on the boat at night, which ends with Quint's by-now-classic speech about the sinking of the *Indianapolis*.

How did you come to play a bit role as the news guy on the beach in the film?» David Brown knew I had worked in television as a writer, reporter and anchor, so the role would be second nature for me ... i.e., wouldn't need any acting. *Jaws* and I were getting so much publicity that he knew that to cast me would give the press something new to write about. Steven had no objection; if I stunk up the place, he could always cut me out.

Did you get your SAG card?» Yes, indeed. So when, later on, I was offered tiny roles in *The Deep*, *Mrs. Parker & The Vicious Circle* and *Creature* (aka *White Shark*). I was already a card-carrying, legal member of SAG.

When *Jaws* was released in the summer of 1975 it opened to huge business and then kept getting bigger. Did you expect that kind of box office success?» No one could have anticipated the phenomenon that *Jaws* became. We had evidence – from screenings, previews and cards that audiences at those events filled out – that people liked the movie a lot, but the prospect of it becoming, albeit briefly, the largest-grossing movie in history was the farthest thing from anyone's mind.

People were afraid to go in the water at the beach. Did you ever dream that you could influence the behavior of millions like that?» Never. Nor had I any ambition to do so.

Many remember the chaos that *Jaws* caused to the infant sport diving business. Diving courses fell off nearly 50 percent and stayed depressed for over a year. Did you ever experience any negativity directed at yourself when you came in contact with dive operators?» Sure. I got hostile letters, messages, phone calls and press from dive operators, Cousteau and quite a few marine environmentalists (though there weren't very many back then).

Steven Spielberg preparing Benchley for his scene in *Jaws*

Your notoriety from the *Jaws* fame led you into a series of diving adventures of your own. Can you tell us about those and what it was like to confront a Great White yourself the first time?» *Shark Trouble* contains most of the more memorable ones, and I haven't the

time, nor you the space, to recount them. I have never, thank God, had any experience even remotely resembling your horrible day in 1972 on the north shore of St. Croix that you tell so well in Great Shark Adventures. I hope I never do. (*editor's note: Bret Gilliam survived a fierce attack by two Oceanic Whitetip sharks that killed his dive buddy. The incident is related in detail in the book Benchley refers to, available from Key Porter Books, Canada, edited by Marty Snyderman.*)

More than death-defying adventure, what *Jaws* gave me and my family was the opportunity to gain experience and, most important, education about the sea and its inhabitants. I was able to grow alongside the marine-environmental movement itself. From the first shark show I did for ABC's *The American Sportsman* in 1974 – diving with Tigers, Bronze Whalers and Great Whites in Australia – through nearly three decades of working with *National Geographic Magazine* and various television entities, right up to the present (I leave for South Africa in ten days' time to dive with Whitey for a show called – I kid you not – *The New American Sportsman*), I've been blessed with wonderful opportunities to learn, first-hand, about the sea. Looking back on the range of animals I've been privileged to dive with – from all kinds of sharks to orcas to giant octopuses to mantis shrimp, sea snakes and sperm whales – I find only one word that fits: luck. I have been amazingly (and eternally gratefully) lucky.

The very first time I saw a Great White underwater was totally by accident. It was late in 1974, and Stan Waterman and I were just beginning the ABC show. We had arrived on the Barrier Reef, directly off Townesville, where we knew there were no White sharks. Stan went overboard to test his empty 16 mm housing for leaks. I, with nothing better to do, went with him.

As soon as we hit the water, before we could even clear our masks, Stan pointed downward. Rising at us like a slow-motion torpedo from the bottom maybe 40 feet away, was a Great White shark – not very big, perhaps 10 feet max, but a White shark nevertheless. As everyone who has seen Whitey underwater knows, it is an animal unlike any other, instantly recognizable. I had no idea what to do. I knew only that I shouldn't turn and scramble to get back on the boat. So I froze.

Stan didn't. One of the few people on the planet who had ever been in the water with Whitey, Stan knew that the proper thing to do was to appear, as much as possible, like a big, healthy, fearless animal. So, with his housing held out in front of him like a monstrous eye and with me beside (but mostly behind) him, he kicked slowly down, directly at the shark. The shark did precisely what it was supposed to: it kept coming until the distance between us had closed to maybe 10 feet, then it slowly arced downward, swam beneath us and disappeared. Stan checked his housing for leaks, and then – slowly and with forced (on my part) calm – we swam back to the boat.
"By Gregory!" Stan thundered as soon as his mask was off. "Wasn't he a stunner? Wonderful!"

I, wondering whether or not to vomit, had nothing to add.

***Blue Water, White Death* was a remarkable documentary on Peter Gimbel's search for the Great White shark. Released in early 1971, had you seen the film and was it an influence on the creation of *Jaws*?»** It certainly was. Stan Waterman came to be a close friend and diving advisor. As Stan tells it, in early 1974 he saw the cover of *The New York Times Magazine*, a picture of me in front of a Richard Ellis painting of a Great White shark. The cover story was called something like, "The making of a bestseller." It was a cynical, superior, semi-accurate story about *Jaws*, which was soon

to be published. Stan says his immediate reaction was, 'Hey, who's intruding on my territory? I'm the shark expert around here.' He saw in the magazine that I lived nearby, so he sent me a photograph of him in a cage facing Whitey from *Blue Water*... accompanied by a nice note suggesting that we meet. We did.

I noticed that your most recent book, *Shark Trouble*, is dedicated to Stan. Was that a surprise for him?» A surprise? I suppose so. I gave the book to him in galley proofs and showed him the dedication. He reacted as you would expect: with gratitude and infinite grace. Undoubtedly, he said something that only he would know how to say, but I can't remember it.

With best friend, Stan Waterman

Do you still keep in touch and go diving together?» We're in touch all the time. He lives only five miles from me, so whenever he's home, we get together for lunch or dinner quite often. We haven't had an opportunity to dive together since ... well, I can't remember when, but it's been a while.

You followed *Jaws* with another blockbuster in *The Deep*. This time the villains were human bad guys and diving was part of the adventure. I understand that Robert Shaw's character was patterned on Bermuda wreck diving legend, Teddy Tucker. How did you come to know him?» In 1970 or '71, *National Geographic* offered me a choice of two stories: poisonous sea snakes in the Coral Sea or the history of Bermuda as told by the shipwrecks around it. Thank heavens, I chose the latter. The magazine sent the late Ken MacLeish, an old friend of Teddy and Edna's, down with me to make introductions, for Teddy was known to be prickly about the people he worked with. I spent six weeks diving with him, and we've been fast friends ever since.

Did Tucker like his reincarnation as Treece?» He's never said so directly, but I believe so. Teddy worked very closely on the movie. His was the workboat, the mother ship, the camera platform, the ferry, the cafeteria and home base whenever the crew was at sea. His were the decisions about whether or not to go to sea, where to go to accommodate the wind and weather, and whence and how to stock the two-million-gallon underwater set. He was even in the movie, as the dockmaster who barks at Coffin (Eli Wallach).

Once again, the movie production broke a lot of new ground with nearly half the film being shot underwater. Were you involved on the sets during production?» One of my lasting regrets is that *The Deep* wasn't recognized publicly (by the Academy or any other group) for its truly groundbreaking underwater cinematography. Al Giddings, Stan, Chuck Nicklin, Tony Masters (Art Director), Peter Yates and a lot of others accomplished marvels that have never been attempted, let alone duplicated, since. They worked for endless

hours in horrible conditions and produced a feature film unlike any other. I don't know why the real world of underwater – as opposed to the fantasy world created in pictures like *The Abyss* – has been so neglected, but it has.

Once again, I wrote three drafts of the screenplay. It was rewritten by a couple of others, and then returned and was re-re-written almost daily on location. I was in Bermuda for most, but not all, of the shoot, and, once again, I was in the movie. Where, you might well ask? I'm in the beginning of the re-edited expanded TV version, playing an officer on the bridge of the *Goliath* as she runs onto the reefs. Extra scenes had to be shot, to make the movie long enough to fill two two-hour slots on TV. Al Giddings was in the TV version, too, as was Cameron Mitchell.

***The Deep* had a bunch of memorable characters involved including Peter Yates as the director and Peter Guber as the producer. What were they like to work with?»** Peter Yates, the director, a gracious, low-keyed Englishman, was a delight. He had had a huge success with *Bullitt*, and he plunged into these unknown waters with intelligence and enthusiasm. He had never dived before, yet by the middle of the production he was completely comfortable in the water: standing on the bottom, for example, in jeans and a shortie neoprene top, both arms over his head to hold Stan steady so he could shoot down at Robert Shaw's character digging in the sand. He endured with a smile all the normal perils of movie-making – the anxious studio people, the occasionally difficult cast and crew members, the frenetic producer desperate to bring his picture in on time and on budget – plus all the added horrors of shooting hours and hours of film under water. As calm as his exterior seemed, however, I noticed that by the end of the shoot a nurse was by his side at all times.

Peter Guber, the producer, was like a genius on speed. He worked and talked and talked and worked nonstop, 18 hours a day, generating ideas every five seconds, discarding most of them at the first sign of disagreement, keeping the ones that worked. He was a presence everywhere and always, even when he wasn't around. He was nervous, and justifiably so: this picture could be his passport to a good career as an independent producer, or his ticket back to the relative anonymity of the law or business (he had graduate degrees in both law and business).

He marketed the picture brilliantly, opening it in hundreds of theaters all at once – standard practice today, of course, but pretty new back then – and earning huge receipts in the first two weeks. I've heard it said that *The Deep* saved Columbia Pictures from financial ruin. Whatever the truth of that, Peter Guber certainly used its success as a springboard for his remarkable career. I have no idea what he made on it – a few million dollars, I guess – but he parlayed those bucks into a fortune of hundreds and hundreds of millions.

Your old pal Stan Waterman and Al Giddings teamed up as co-directors of the underwater unit. That must have been satisfying. Did you dive on the film production?» I dove whenever I wanted to, but after touring the underwater set and watching a few days' shooting, there wasn't much to see. To quote another of William Goldman's truisms, "The first day on a movie set is the most exciting day of your life; the second day is the most boring." I didn't join the crew in Tortola (the wreck of the *Rhone*) or join the second unit in Australia, where the shark sequences were filmed. I was enormously pleased that Stan and Al were involved, and I take a measure of credit for suggesting them to Yates and Guber and introducing them all. They did a terrific job.

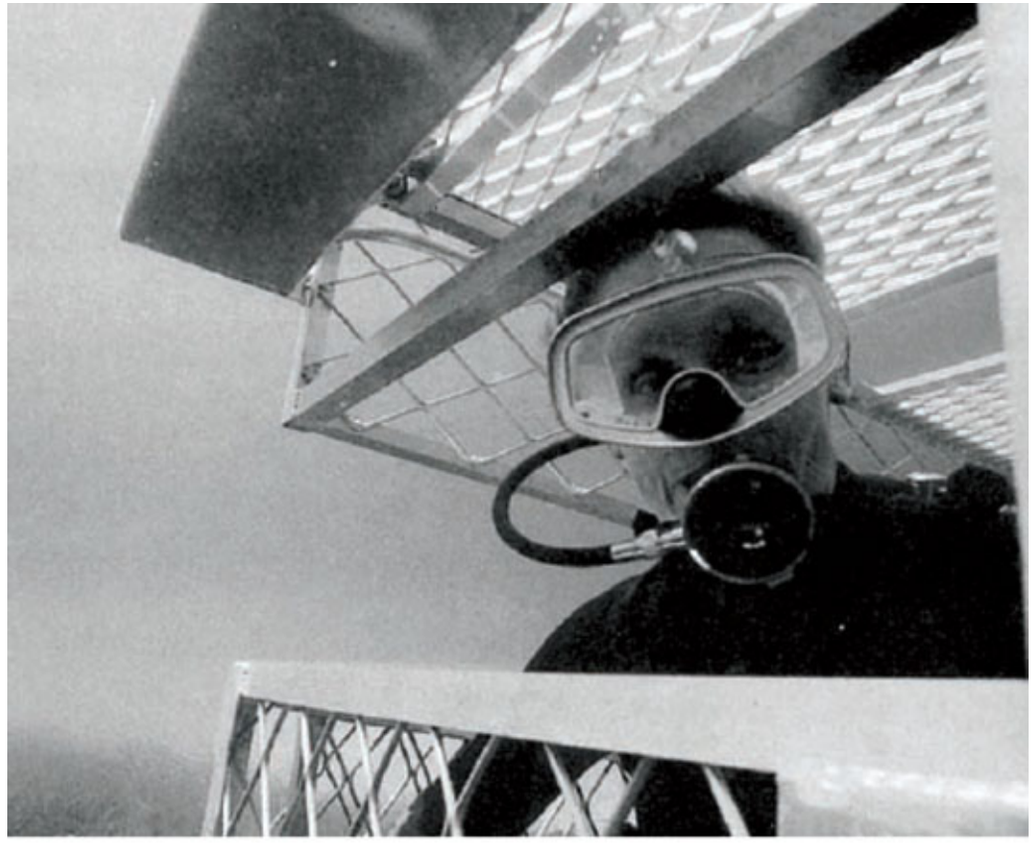
Who came up with the idea to put Jackie Bissett in a wet t-shirt?» I have no idea, but I'd guess it was one of the two Peters ... Guber or Yates.

How did she feel about that?» She was a very game and gutsy lady. She had never dived – Stan taught her – and she became competent and very willing. I know she wasn't happy with the wet-T-shirt scenes: she felt her gorgeous body was being exploited, which, of course, it was. But she never complained in public (to my knowledge), and she was savvy enough to realize that all the attention she received for her ample endowments could not but help make her a movie star.

The film's second unit also included the young Howard Hall as a support diver who speared fish to start the shark frenzy scene. You've since done some other film work with Howard and Michele. What's it like to work with them?» Howard and Michele are now, and always have been in the more than 20 years I've known them, wonderful. No other word fits. They're not only supremely gifted, but they work like demons and produce (in my opinion) many of the finest underwater films in the world. They're enormously strong – both of them – very smart and ingenious. They have wonderful senses of humor, they're helpful to the ignorant and tolerant of the inept (I speak from personal experience here), and they're as excellent shipmates as anyone could wish for.

I understand that Michele was your inspiration for *The Girl of the Sea of Cortez*? How did that come about?» True. The story's much too long to recount here, so I refer you to the account in *Shark Trouble*. Anything to drive my book sales…

Considering that you were responsible for giving Robert Shaw two of the best parts in his movie career, how was it he didn't end up in your next movie, *The Island*?» In the first place, he wouldn't have been right for the lead. In the second, I never heard his name suggested. In the third place, I have no idea that he would have accepted the part had it been offered to him.



Shark's-eye-view of Benchley as he views the first Great White he ever saw off South Australia in 1976

***The Island* may not have done the box office of *Jaws* and *The Deep* but Michael Caine gave a credible performance. Why haven't we seen *Beast* or *White Shark* rolled out for the big screen?»** Both have been on the small screen. *Beast* was sold to Universal as a feature, but, after receiving scripts from both me and John Carpenter, the studio deemed it too expensive – around $30 million, which doesn't seem

like much today, when the average movie costs something like $74 million to make and market, but it stopped them back then. It ended up as a two-part miniseries on NBC in 1996, and I gather it got good ratings.

White Shark was optioned for a feature in 1994, but, again, various studios thought it would be too expensive. So it languished for a while and was finally made into a miniseries for ABC. Were the producers faithful to the book? Why, certainly: they kept everything but the title (it was renamed *Creature*), the location, the good guys, the bad guys, the monster and the story. I don't remember what year it was broadcast, but I heard that it did okay. It starred Craig T. Nelson and Kim Cattrall – long before her *Sex And The City* triumph.

Your latest book, *Shark Trouble*, might be interpreted as something of a *mea culpa*. You've spent a lot of time in recent years working to better educate the public about the need for shark conservation and helping to bring some reality to the discussion of sharks as predators of man. How did you feel about the sensationalized stories last summer about shark attacks?» *Shark Trouble* was not intended at all as a *mea culpa*, for several reasons. I don't feel a bit of guilt about *Jaws*. The book made use of the best information that was available 30 years ago. It was as realistic as I could make it. Great White sharks had done every single thing that happened in the book, though not all at once and certainly not one single shark. Over the years, *Jaws* has brought a great deal of positive attention to the plight of sharks and the ocean. I still get about a thousand letters a year from kids who weren't alive when the book was published or the movie released, and they all express fascination and adoration for sharks. The conservation work I've done since – and do still – is the result of education and growth: mine. I've grown up with the environmental movement, and with what I – we all – know now, I couldn't possibly write *Jaws* today.

Last summer's hysteria was dumb, hideous and downright wrong! I campaigned against it all summer, and in the fall it became the genesis of *Shark Trouble*. I wanted to write something that set the record straight and pointed out how the Internet makes us all vulnerable to distortions, wild exaggerations, and outright lies.

Are you and your family still active divers?» Oh yes. My two grown kids work in New York and don't have much chance to dive, but Wendy and I and 15-year-old Christopher dive as often as we can. We three took long trips to Polynesia and Galapagos for the *Geographic*, and Christopher has learned from Teddy Tucker how to be a discerning bottle collector. His favorite pastime is diving for old bottles in Bermuda.

What are your favorite places to dive?» That depends on what we're looking for. For White sharks: South Africa. For shipwrecks: Bermuda. For sheer beauty: the Barrier Reef. I've never, though, been to the Philippines, which I hear is spectacular. For variety, beauty and WWII relics: New Guinea. For pristine wildlife and (relatively) untouched reefs in this hemisphere: The Gardens of the Queen, off the southeast coast of Cuba.

Any bad encounters with sharks yourself?» I've had some exciting encounters – all detailed in *Shark Trouble* – but I've never been bitten nor witnessed anyone being bitten. I repeat: I feel awkward even speaking about shark problems in your presence. Your ghastly day near St. Croix is worse than anything I can imagine.

Do you think that sharks are getting a better reputation from the efforts of those like yourself who can use celebrity as a bully pulpit?» I hope so, I think so, but it's hard to know for sure. Certainly, the devastation that's happening to shark populations has nothing to do with fear of sharks: it's all due to human greed.

How do you feel about Florida's ban on shark feeding for divers?» I think it's overkill. Some shark-feeding enterprises – most, in fact – are well run, safe and genuinely educational for the public. A few aren't. I don't think the entire industry needed to be shut down.

What marine life do you find most fascinating?» Since I don't take photographs and thus don't know much about the macro creatures that David Doubilet and Stan and others know so well, I still gravitate toward big animals. Sharks are endlessly fascinating to me.

What more should we be doing to further the conservation efforts for sharks and other marine species?» It sounds banal, but the answers really are: education and lobbying. I recently spent a day in Washington, lobbying four Senators and two Congressmen on issues like IFQs (Individual Fishing Quotas) and MPAs (Marine Protected Areas), which, in my opinion, are the best solutions currently available to the problem of depletion of species.

Pardon me, but I have to ask, were you involved in the later movie editions in the *Jaws* series? They weren't exactly *Citizen Kane* material.» I had nothing to do with any of the sequels. I didn't even see them. I took my fee for each one, and ran like a rabbit.

How many copies of your novels are in print circulation?» I haven't the faintest idea. The generally accepted figure for *Jaws* has for years been 20 million, but since it's still in print all around the world, that figure must have grown. Curiously, Bantam let it go out of print here in the U.S., so when the rights reverted to me, I sold them (for a mere pittance) to one of the divisions of Random House, which has kept a paperback in print ever since. I'm told it sells about a 1,000 copies a year – no bestseller, for sure, but worth keeping around. Needless to say, the other books haven't sold nearly as many copies, and most of them are out of print in the U.S.

The royalties will probably put your great grandchildren through Harvard, right?» Ah, if only. I receive a few hundred dollars a year from book royalties and a few thousand from the movies of *Jaws* and *The Deep*. I'm not complaining, mind you; I've been very lucky. But if the markets keep plummeting, everything may vanish like my lap when I stand up.

As one who has read and kept first editions of all your novels, what can we look forward to next?» I never know what I'm going to write next. What I'm doing next – now and for the foreseeable future – is traveling and speaking on behalf of environmental groups. And, in collaboration with Teddy Tucker and Dr. Greg Stone of the New England Aquarium and the Bermuda Underwater Exploration Institute, I make short films about ocean issues that are given away, free, to any aquarium or museum – or school, for that matter – that wants them. Since no money's involved, success is measured only by how many institutions keep asking for more and how many awards they win. By those standards, the films seem to be doing pretty well.

Will they save the oceans? No. Will I? Not a chance. But if we don't keep hoping and trying, coming up with ideas like IFQs and MPAs and buckets of other acronymic experiments, we might as well retire to the back room with a bottle of gin, and wait for night to fall.

We concluded the interview then and Peter departed off to a dive trip. When the piece was published in Fathoms magazine a few months later, he sent me a note, "Bret, your interview with me is my favorite of all the ones I've done. It has one incontrovertible asset that few, if any others have had: absolute fidelity. The words are mine: no more, no less, no editing, no illusions… and if someone has a bone to pick with them, he or she can come directly to me. In short, it's what an interview should be (and so few are): dead-on accurate."

Peter passed away in February 2006. The entire world mourned his passing. A wave of articles and obituary features poured forth and I was surprised to see many pieces from this interview excerpted to shed a more personal light on him through his own words that we shared.

I think what I appreciated most about Peter was his wicked sense of humor. I had kept original hardback editions of his books in my collection for years and had him sign them for me when we did the interview. His inscription in Jaws reads, "To my friend Bret who publishes the best diving magazine in the world. I see that this is a first edition that you paid $6.95 for. That's a bargain!" He then scrawled a little rendition of a shark over his signature.

I will always treasure the collection but the best bargain I made was in sharing time with the fascinating man who wrote them.

Editor's note: There are about 40 copies of the original book still in Bret Gilliam's personal inventory. They are available as a Signed/Numbered Limited Edition personalized to each buyer by Gilliam at $200 each, including shipping. He can be contacted for purchase at bretgilliam@gmail.com.