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AUTHORS NOTE

This book started out life as a chapter for an update to the book I wrote on the history of the Doxa dive watch. As I started to research it and compile the information, it became apparent that a single chapter would not do justice to the wealth of information that was being given to me.

Because you are now holding a separate book rather than an update to the Doxa book, the focus of the information contained herein has changed. Certainly it includes many photos of Doxa watches, both vintage and modern, but primarily it is about the people who made the development of diving and dive watches possible.

Once again I owe tremendous gratitude to Rick Marei and Doxa watches for giving me a canvas on which to develop my creativity and just like my last book, Greg Bottle took words and photos and made them come alive with his artistry.

Doxa wanted to put something back into the diving world and help keep alive the memories and achievements of the pioneers of the sport which made them famous. This book is a small part of that plan.

Other than the small story about my first dive, the book was written by others. Without them, it couldn't even begin to exist. I am indebted to those who took the time to send me their stories and photos and made this book possible. I hope I have done their adventures and memories justice.



INTRODUCTION

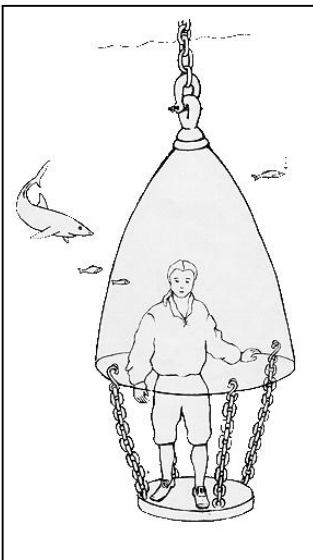


For many people it was Jacques Cousteau and his adventures on the Calypso or Mike Nelson in the television series 'Sea Hunt' which introduced them to diving. Not me though. For me, it was a bunch of string puppets. I suppose I better explain exactly what that means before I go any further. The string puppets or marionette characters were called; Troy Tempest, Phones and Marina, and they were the main characters in a children's television series created by Gerry Anderson called Stingray. The series aired on British television from 1964 to 1965 and told the adventures of a fantastic submarine

named Stingray. To a six year old it was perfect escapism and I became enthralled with the underwater world.

Two years later Stingray gave way to the Undersea World of Jacques Cousteau and I can remember sitting with my parents watching the adventures of Jacques, Jean-Michel, Philippe and the crew of the Calypso as they explored the world's oceans. I always dreamed of putting on scuba gear and seeing for myself the wonderful sea life and vistas that were brought into our living room all those years ago.

Even though I have spent a great deal of my working life to date involved with the marine and offshore industries, I didn't actually become a certified diver until a few years ago. Not surprisingly, the reality of diving differed considerably from what I remembered from the television images of Stingray and Jacques Cousteau. Certainly the principles of pressure and depth and decompression remain the same but the technological advancements and the explosion in interest in the sport have been incredible. PADI, the Professional Association of Diving Instructors alone has certified over 5 million divers. Thanks to scuba diving, the underwater world really has opened up for almost everyone. By the way, SCUBA stands for Self-Contained Underwater Breathing Apparatus and was coined by the US Navy.



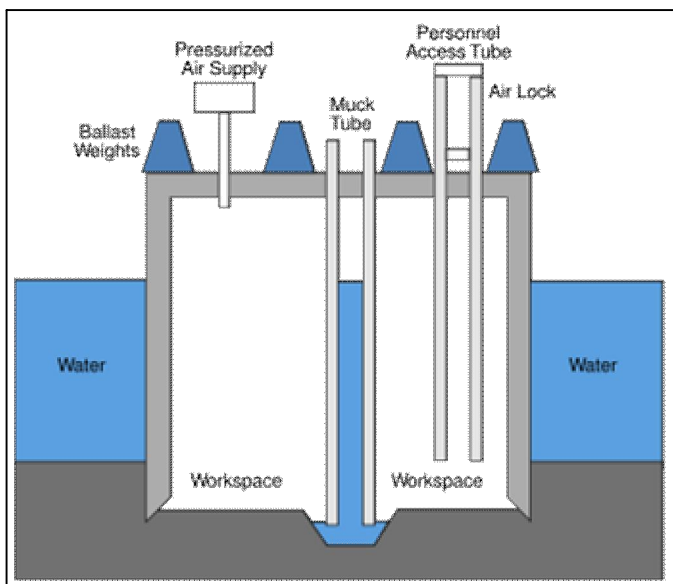
Although scuba diving is a relatively young sport, the desire to spend extended periods underwater has probably been around since we evolved to become land mammals. It is almost as if there is some subconscious desire to return to our evolutionary roots. Men and women have been holding their breath and diving for thousands of years. There are depictions of them in ancient drawings, and from archeological artifacts it seems that attempts to fabricate apparatus to extend that time underwater have been going on for just as long.

Possibly the first method to try to allow humans to remain below the water for longer than a few minutes was a form of diving bell. Early bells consisted of a container open only at the bottom, the trapped air being used as a reservoir by the hapless diver until the usable oxygen was exhausted. Though the diving bell in rudimentary form is mentioned by Aristotle, the device was not fully practicable until the

early 16th century when Guglielmo de Loreno developed what is considered to be a true diving bell.

Early attempts at increasing the pressure in the bell were largely unsuccessful until 1771, when John Smeaton invented the air pump. A hose was connected between the air pump and the diving barrel, allowing air to be pumped to the diver. However, increasing air pressure in order to keep water at bay, both underwater and in mine shafts brought with it a new set of complications. In 1670, Robert Boyle observed a gas bubble in the eye of a snake that he had put under atmospheric compression and then quickly decompressed. This was the first recorded observation of decompression sickness. Boyle concluded that the bubble was a consequence of previously dissolved gas. This conclusion manifested itself as Boyle's Law, which states that at a constant temperature, the volume of a gas is inversely proportional to its pressure. This basically means that a gas will compress proportionately to the amount of pressure exerted on it.

It was almost two centuries later before Boyle's discovery was applied to humans. In 1841 a mining engineer reported observing pain and muscle cramps among coal miners working in mine shafts where compressed air was used to force water from the tunnels. Like the snake in Boyle's experiment, the miners apparently suffered no ill effects while under pressure. However, after they left the pressurized regions of the mine, they were beset with muscular pains and cramps. It wasn't until 1876 when nitrogen was implicated in this "Decompression Sickness". Decompression sickness later became known as "The Bends". The bent posture of afflicted individuals approximated the 'Grecian Bend', a fashion posture assumed by women of the period caused by wearing corsets, crinolettes and bustles. Although the term "The Bends" is often used to describe decompression sickness, it is only one manifestation of the condition. Other symptoms can be itching skin and rashes, joint pain, nervous system failure, paralysis and death.



Years later, workers constructing the tunnel beneath the Hudson River or working in the pressurized caissons for the Brooklyn bridge supports also came down with decompression sickness. Almost one quarter of the workers died in these construction projects. When affected workers were treated by recompression and relatively slow decompression, the death rate dropped dramatically. This treatment was effective because increasing the pressure forced the nitrogen bubbles to re-dissolve into the blood stream and body tissues. The slow decompression allowed the dissolved nitrogen to circulate to the lungs and be exhaled under normal

breathing.

Around the same time that decompression sickness was beginning to be understood, Charles Anthony Deane patented a "smoke helmet" for fire fighters. Not surprisingly the helmet was also used for diving. The helmet enclosed the wearers head and was held on with weights, with air being supplied through a connecting hose. Deane marketed the helmet with a "diving suit". The

suit was not attached to the helmet, but secured with straps. Augustus Siebe later sealed the Deane diving helmet to a watertight, rubber suit. This suit was used during the salvage of the British warship HMS Royal George in 1834 - 36. The improved suit was adopted as the standard diving dress by the Royal Engineers and was utilized extensively when the Royal Navy established the first diving school in 1843

During the next 60 years a number of improvements in the diving suit were made, including the innovation of using a compressed air tank on the divers back which connected to a valve and a mouth-piece. The diver still used a hose attached to a surface pump to replenish the tank, but it was possible to disconnect and "free swim" for several minutes relying on just the air reservoir in the tank. Also great strides were made in the understanding of decompression sickness and the methods used to try to mitigate their effects. This culminated in the US Navy testing dive tables published by Haldane, Boycott and Damant in 1912. The tables were derived from a paper on decompression sickness by the three men in 1908 called; "The Prevention of Compressed-Air Illness".



It wasn't until 1917 when the first true diving helmet was manufactured. The U.S. Bureau of Construction and Repair introduced the now familiar Mark V Diving Helmet. This helmet became the mainstay of underwater work and a standard piece of U.S. Navy Diving equipment. It was used for most of the salvage work carried out during World War II.

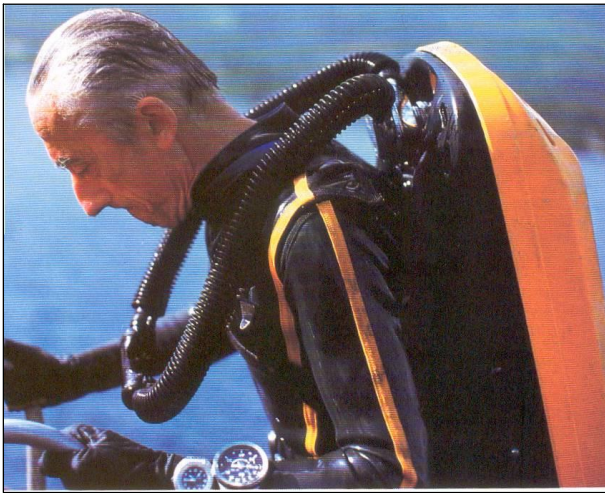
Two years later in 1919, Professor Elihu Thompson, an electronics engineer and inventor, reasoned that decompression sickness might be avoided if the nitrogen in the diver's air mixture were diluted with another gas. He suggested that helium would be a suitable gas for deep diving. Helium is tasteless, odorless, colorless, normally nontoxic, and the second most abundant element in existence. Helium is also the only substance that never solidifies under normal pressure, even at absolute zero. Quite literally, hell will freeze over long before helium does. The problem at the time was that helium was incredibly expensive so

very few people were able to test Thompson's theory. However, a series of experimental dives were carried out on the U.S.S. Falcon, which included at least one dive to 150 feet using a heliox mixture. Following a discovery that helium was present in vast quantities under the American Great Plains, as a constituent of natural gas, the United States had a virtual monopoly on the world's supply of helium. In fact, for many years the USA produced over 90% of the world's commercially usable helium. The new found abundance dropped the price of helium to a few cents per cubic foot.

The US Navy began examining the potential for deep diving using helium and oxygen as a breathing gas mix and by 1925 a research laboratory had been established in Pittsburgh to carry out lab animal experimentation using various gas combinations. This work established that animals and humans breathing an 80 % helium / 20% oxygen mix could be decompressed at between 1/6 and 1/4 the decompression time of that using air. The bonus was that divers using an 80 / 20 mix could function "clear headed" at depths where air breathing divers were incapacitated by nitrogen narcosis.

Thompson's also came up with the idea for a rebreather. Although it took many years and the development of high efficiency absorbents before his postulations became a reality. Thompson suggested that since the helium was not consumed by the metabolic process of breathing, it could be recycled and used continuously during the dive. All it took was the mechanism to remove the carbon dioxide exhaled by the diver.

The next great technological leaps happened in the 1930s and 1940s. Guy Gilpatric pioneered the use of rubber goggles with glass lenses for skin diving and by the mid 1930s, face masks and snorkels were in common use. The patent for fins was filed in 1933 by Louis de Corlieu and his simple invention increased the efficiency of movement underwater tremendously. 1933 also saw the first time that a diver could be freed from hoses and lines for extended periods of time thanks to Yves Le Prieur combining a demand valve with a high pressure air tank.



However, undoubtedly, the single most important invention which allowed a human freedom underwater didn't appear until 1943. That is when Jacques Yves Cousteau and Emile Gagnan designed a spring loaded diaphragm regulator open to the sea. The regulator ensured that air would always be delivered at a pressure equal to that of the surround water and hence the diver could breathe comfortably. Cousteau called the invention the Aqua Lung. Over the years there have been refinements to the original design but that original piece of equipment revolutionized diving.

Although the Aqua Lung allowed unparalleled freedom of movement underwater it did not remove the necessity for decompression stops if the diver remained underwater for extended periods. The joke among scuba divers is that there are two ways to avoid decompression sickness: "don't go down, or don't come up". The "don't go down" part is easy, the "don't come up" bit is more difficult but 'Saturation Diving' effectively takes care of it. Saturation diving allows humans to live and work at sustained depths for days, weeks or even months at a time. The technique uses the principle that after about 24 hours at any working depth, a diver's body becomes saturated with dissolved gas. Once the body is saturated, decompression time is the same regardless of how much time has been spent underwater. The dive team is only compressed to the working pressure once, and decompressed to surface pressure once, over the entire work period. Although the first intentional saturation dive was done in 1938 the technique did not really begin to be fully tested until the early 1960s when the 'Man in the Sea' and 'Conshelf' programs began. Although Ed Link's initial 'Man in the Sea' experiment lasted only 8 hours, Albert Falco and Claude Wesley lived for seven days in the first 'Conshelf' which was basically just a large cylinder submerged in 10 metres of water.

With the advent of the Aqua Lung and saturation diving, humans could now effectively live and work underwater for considerable periods of time. However, they were still limited to relatively shallow depths. It is an immutable law that not only does your bottom time decrease the deeper you go but the water pressure acting on your body increases also. It is a simple relationship which dictates that a diver will experience an increase of one atmosphere of pressure approximately every 10 meters of descent.

In order to allow exploration but not necessarily work at depth, bathyspheres and bathyscaphes were developed. The difference being that a bathysphere is unpowered and tethered to a surface vessel whereas the bathyscaphes is free diving and self propelled. The first bathyscaphes was invented by Auguste Piccard and built in Belgium between 1946 and 1948. Propulsion was provided by battery-driven electric motors. He composed the name bathyscaphes using the Greek words bathys ("deep") and skaphos ("ship"). In 1960, Piccard's second bathyscaphes, the 'Trieste', carrying Piccard's son; Jacques Piccard and Lt. Don Walsh descended to the deepest point on the earth's surface, the Challenger Deep, in the Mariana Trench. They reached a depth of 35,813 feet (10,916 meters), a record which has remained unbroken.

Probably the most famous of all bathyscaphes or submersibles as they are now known, is the DSV Alvin. It is owned by the US Navy and operated by the Woods Hole Oceanographic Institution and was commissioned in 1964. Alvin was involved in Dr. Robert Ballard's exploration of the wreckage of RMS Titanic in 1986. Alvin, which launched a small remotely operated vehicle, named Jason Jr., was able to conduct detailed photographic surveys and inspections of the Titanic's wreckage.



When it comes to beating the phrase “don’t go down or don’t come up” there is one other method which also originates from the late 1960s, and that is to use an atmospheric diving suit (ADS), the most famous of which is the JIM suit. The JIM Suit is designed to maintain an interior pressure of one atmosphere no matter what depth or water pressure it is subject to. By maintaining one atmosphere the diver doesn’t need to decompress, there is no need for special gas mixtures, and there is no danger of either nitrogen narcosis or decompression sickness.

The first JIM suit, invented by Mike Humphrey and Mike Borrow, was completed in November 1971 and in underwent trials reached depths in excess of 400 feet (121 meters). It was expected that the offshore industry would beat a path to its door, but the reception was strangely cold. It was not until 1975, when Oceaneering acquired exclusive rights to the application of JIM suits in the oilfields, that the suit achieved success. Oceaneering now operate a number of atmospheric diving suits including the WASP IV which can operate at depths of 700 meters.

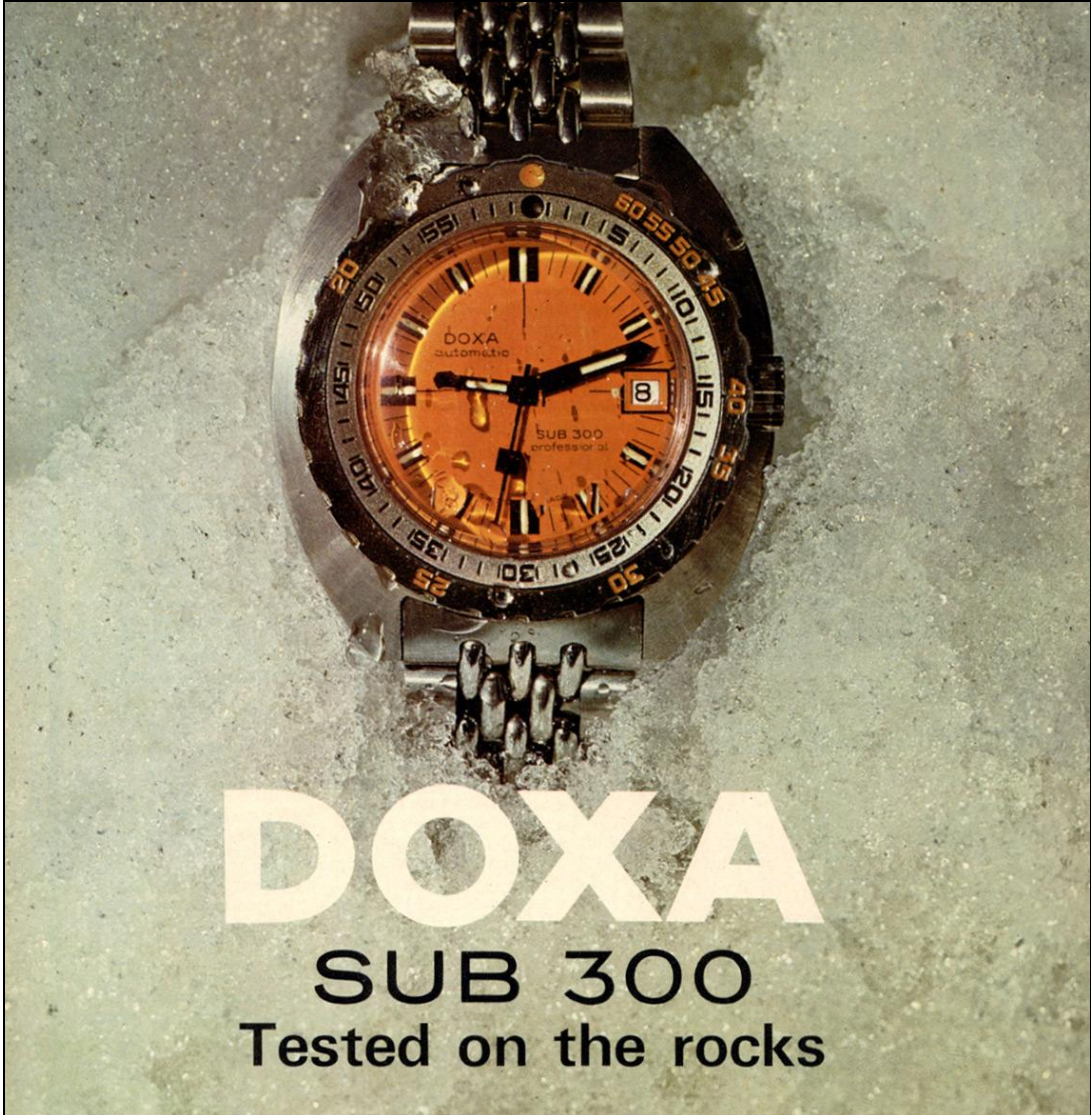
One of the other indispensable items used by the early divers was the dive watch. Nowadays most dives are timed using a dive computer but many people still wear a dive watch as a back up. There is some debate as to who produced the first dive watches, and it is no surprise that “big names” like; Blancpain, Omega, Panerai and Rolex all vie for the claim. However, general consent seems to indicate that the Omega Marine introduced in 1932 probably takes the prize. One of the innovations of the dive watch was the graduated bezel which allowed a diver to set the time he entered the water and hence have a more accurate indication of his time spent subsurface. That type of bezel remained constant until 1967 when Doxa, along with producing a dive watch with large luminous markers and a bright orange dial, released the SUB 300 which incorporated a Non Decompression Dive Table in the bezel.

In 1969 Doxa introduced a dive watch with a Helium Release Valve (HRV) to the general public. Both Doxa and Rolex, who hold the patent, worked together on the development of the HRV. While Doxa worked with Jacques Cousteau and Claude Wesley, Rolex enlisted the help of

Comex divers to test their HRV equipped Submariner. So what is the big deal about having a HRV? Is it really necessary and what does it do? Well, if you are a saturation diver, then yes. If you are a normally aspirated diver, then no. What it does is allow trapped helium to be vented from the watch as the diver decompresses.



Saturation divers breathe a mixture of gases which include helium. Because of its molecular size, helium is able to bypass the water tight rubber seals and invade the inside of a watch. Consequently during decompression the gas will expand and unless it is vented the buildup of pressure will blow the crystal off the watch. Sometimes quite dramatically and dangerously. In order to allow continuous venting of the helium, a simple non return valve was incorporated into the side of the case.



DOXA

SUB 300

Tested on the rocks

Divers who know quality insist on Doxa watches. In fact, discriminating sportsmen everywhere choose Doxa. They wear Doxa with pride during leisure hours as well as on more formal occasions. And no wonder. This unique watch from Aqua-Lung is so handsomely styled, so incomparably efficient that it stands alone. Here is a master-crafted timepiece with a 17 jeweled self-winding Swiss movement to assure absolute accuracy. Doxa also features a double-scale no-decompression bezel which indicates elapsed time and maximum time at depth for ascending without decompression. A tritium luminous dial permits fast, easy reading in darkest waters. You'll find these other distinctive Doxa extras, too: Stainless steel link band adjustable to any wrist. Special shock-absorber system for maximum protection. Your choice of an orange, black or silver face. A full year guarantee. Doxa is tested to withstand pressure at 990 feet and 76 degrees below zero temperatures. Get Doxa at your Aqua-Lung Dealer. Only \$150. But worth much more. Obviously. Aqua-Lung, a division of U.S. Divers Co., 3323 West Warner Avenue, Santa Ana, California 92702.



U.S. DIVERS CO. guarantees each new watch to be free from defects in material and workmanship under normal use and service for one (1) year from date of purchase. Guarantee excludes any damage resulting from neglect, accidents or improper usage, alteration or attempted service from a source other than U.S. DIVERS. Guarantee is effective only when watch is returned to U.S. DIVERS Co., postage prepaid, with case, crown and crystal intact.

Stan Waterman - Creatures of the Night



Stan Waterman has been at the forefront of scuba diving since its inception as a recreational sport. However, he may be best known for his work in commercial film. In 1968 he collaborated with Peter Gimbel on the classic shark film, 'BLUE WATER, WHITE DEATH'. He was associate producer and underwater cameraman during the seven-month long production. He was also co-director of underwater photography and second unit in the production of 'THE DEEP', based on Peter Benchley's best selling novel. Stan was also one of the first professional divers to wear the innovative Doxa dive watch when it was introduced forty years ago.

Stan has received numerous honors and awards for his work in television including five Emmys, the Cousteau Diver of the Year Award and most recently has been named to the International Scuba Diving Hall of Fame. He has also written a fascinating book: 'SEA SALT-Memories and Essays' which describes his underwater adventures. I am indebted to him for allowing me to use one of his essays from that book here. He said it was one of his most memorable dives and it took place in Hawaii

Kona Coast



The Kona Coast is on the leeward slope of Mauna Loa, on the big island of Hawaii. A number of small towns and resorts lie along the coastline with mostly ranches and conservation land, including some areas of native forest further inland. The Kona area is a wide basin which is bounded by ridgelines from the peak of the volcano down to the ocean. The Big Island of Hawaii is a wonderful place for snorkeling and scuba diving. Kona was given the name; "the Gold Coast" due to the large schools of yellow tang in the

water which seemed to turn the water into shimmering gold. Even today you can still see big schools of these fish. Hawaii is very unique in that 25% of the fish that are there are only found there. It is not uncommon to count over 150 different species of fish at Honouliuli. Turtles, dolphins and manta rays are routinely spotted by Big Island Hawaii scuba divers & snorkelers.

There is a dive activity on the Kona Coast of Hawaii's Big Island that has, at this writing, failed to attract a deluge of customers. The reason? The activity scares people. It violates our most deeply-rooted fear of exposure and vulnerability to "monsters" that live in the ocean deep.

Years ago, when I was a charter boatman with my own dive boat in the Bahamas I tested that fear. On a passage from the Little Bahama Banks to Nassau, the course takes a boat over a fearsome ocean abyss, called "The Tongue of the Ocean". It is six thousand feet deep. I was alone, having failed to find a crewman to accompany me from Ft. Lauderdale to Nassau. The time

was mid-day. The sea was flat-calm (the Bahamians call it an “oily-glass-calm”). I had in mind to let my boat drift, while I went over the side and did a free dive with mask and fins as deep as I could go. The thought of doing that had entered my mind like a virus. It pecked at my shell. It haunted a region that nagged at the back of my mind. Certainly an element of reason existed along side the challenge. My reason assured me that “nothing down there would get me”.

I won't string out the story. I did go over the side, hyperventilated and finned down into the deep blue toward a bottom six thousand feet away. The dive lasted no more than 1.5 minutes at the most. I reached a level 5950 feet above the bottom. I forced myself to linger, peering downward along the sun shafts that converged to points far down in the darkening blue. I power-finned back up, resisting a look backwards over my feet and reached the ladder on my boat. That done I found myself refreshed both in body and mind. I had slain the self-imposed dragon. I need never do anything like that again.....or so I thought.

Forty-one years later I found myself drifting sixty feet down over a 6,000 foot-deep abyss in the dead of night. I did have company; and it was company I trusted. Here's how it came about: Through some gossip or publication - I can't recall when and how - I heard about a lady dive operator with a company called Ocean Drifters. She worked with her own boat off the Kona Coast on the Big Island of Hawaii. She took divers out at night to drift with lights over the ocean deep. Now, the Hawaiian Islands are all volcanic peaks that rise from the ocean floor. The bottom, not far out from the shore, plunges to abyssal depths.

These are the same waters in which Chris Newbert took his stunning picture of a pelagic octopus as he, himself, drifted alone through the night waters off the Kona Coast. He did those drift dives alone. By doing so he achieved instant and heroic stature in the diving community as a man who didn't know the meaning of fear.



I got an address for Bonnie and initiated a correspondence. I had achieved enough currency as a camera person and movie maker for Bonnie to know who I was. Her response was enthusiastic and wonderfully generous. She not only invited me to stop by on my travels for some drift dives with her but supported the invitation with a bag of Kona coffee beans, grown and roasted by her own family. I was hooked. I would do anything for a batch of Kona coffee, for me the richest and best in the world. I would even sublimate my sense of self-preservation

and prudence to eagerly embrace the prospect of drifting through the dark of night over a black void inhabited by giant squid, oceanic white tip sharks and other supposed “bad chaps” and - especially - by the unknown.

Bonnie Carini proved to be as enthusiastic and full of energy as our correspondence had promised. Her family house, a quarter-of-a-mile above the Kona Coast, looks out upon a glorious expanse of sea. It is set in a verdant, tropical garden of coffee trees, giant ferns and exotic plants. The house is shaded by a giant avocado tree. Her father-in-law, a retired Yale professor, and her mother spend half of each year in that splendid fragrant environment. Bonnie's husband is a golf pro. Her daughter, Larena, now fourteen, took to the water like a dolphin when she was only a few months old. She and her mother are children of the sea.

Some years ago Bonnie became interested in what she calls the “Ocean Drifters”. They are the

zooplankton, a diverse and often spectacular base of the great food chain in the sea. During her daytime dives in the open ocean off Kona she had encountered strange and wonderful drifting organism near the surface. She had read about the drifters and knew that at night time they rose from deeper water, bizarre, transparent animals that hunted through the night, casting their nets of tendrils for capture of food in the broth of near-microscopic phytoplankton through which they drifted. Bonnie developed a system by which divers might join the drifting parade sixty feet down at night time.

Here was a target area for my documentary video work, a door to a new and mysterious chamber of the sea. As far as I knew, very little had been done by way of visually recording such encounters. I found the prospect appealing. I also liked the real sense of adventure. In my mind's eye I clothed the activity with a certain aura of risk, danger, utter vulnerability. I was, in fact, back where I had started when the idea of doing the solo dive over the Tongue of the Ocean challenged my will power. Through my mind also ran the conversation between Stein and Jim, in Conrad's "Lord Jim". Stein said to the shy Jim, whose life was immersed in escape from reality: "The way is, to the destructive element submit yourself; and by the exertion of your hands and your feet in the water, make the deep, deep sea hold you up". I scheduled a four-day stop over in Hawaii on my way back from one of my Palau / Truck tours. The die was cast.

Bonnie Carini turned out to be a slender, fit lady of 37 years with a wild halo of sun-bleached blond hair and a smile as bright as the Hawaiian sun. The generous, warm welcome by her entire family was, as thousands of "haoles" from the mainland have discovered, characteristic of the Hawaiian Islanders. I was drawn into the family as easily as a long-lost relative.

Bonnie's own boat was on the ways, undergoing repairs. In anticipation of our night drifts she had chartered the 26' foot work boat of her old friend, Capt. Pat Cunningham, a weather-worn fisherman for whom the waters of the Kona coast had been a love and a hunting ground for the great marlin for most of a lifetime.

At dusk on my second evening we loaded our gear aboard the Stryker at a little cove near Bonnie's house. With the last of a golden sunset darkening to deep red the Stryker was backed down the ramp into the sea. An outrigger canoe, stroked by six paddles, passed us, inbound, as we cleared the harbor with the last of the day's light.



There are two deep bottom steps a boat passes over moving straight out from the coast. The fathometer recorded our passage over those steps: five minutes with 200' under us; then the fathom line on the glowing instrument dropped to 600' for fifteen more minutes before the ocean floor abruptly vanished off the graph, plunging downward beyond its range. The indication was only electronic. The gut feel was of falling from the rim

of the Grand Canyon. We stopped the engine and commenced our drift over a water column more than a mile deep. It is along this edge that the sport fishermen hunt for the giant marlin, the thousand-pound leviathans

No time to think about what was down there.....Bonnie became a whirlwind of preparation, carefully preparing the down line and the four leads that would extend from it. Her system is entirely practical. A thirty foot down line is attached to the boat. At the bottom of the line are four 30' leads. At the end of each a clip is secured to the diver's buoyancy compensator. Thus four

divers may drift sixty feet down with the boat, which is also drifting above them. The leads allow independent movement for each diver to chase whatever drifting organism he may wish to focus on or observe closely. It also assures Bonnie that her guests will not disappear into the dark beyond or chase some pelagic prize deeper than the lead permits. 300w underwater lights, just under the surface by the boat, flood lights the arena and, Bonnie explained, serves to attract toward ourselves the night drifters from deeper water. A vision of Peter Benchley's giant squid was quickly squashed as it flitted past my mind.

Bonnie was all efficiency, a calming stay to the apprehensions we kept under our hats. In addition to Bonnie and Capt. Pat were Bonnie's brother, Louis, just back from China and soon to leave for graduate studies at Columbia. Rob Barrel and Catherine Holloway, operators of the splendid live-aboard dive yacht, Nia'a - and old friends - were visiting on business from Fiji. There was room on a fourth lead for one of them each on the two night drifts I had planned. Catherine (called Cat) was on this first night.

I was shooting video with a pair of video lights. Cat and Bonnie had still cameras with strobes. Louis carried with him the latest shark repeller, the Shark Pod, an electronic device that broadcasts an electronic pulse when activated. Ron and Val Taylor had thoroughly tested it and found it worked well with even the great white IF the animal was not already feeding. We did not intend to feed. However, the big, beefy oceanic white tips frequent those deep waters and can be quite nosy. The device, attached to Peter's tank and one fin, was primarily psychological insurance.

As introducers are fond of saying: "and without further ado", we were over the side, down to the end of our tethers, clipped on, and each on our own.



The light from above penetrated the intense darkness about us for little more than the circumference of our extended tethers. A scattering of suspended material, like motes of dust, reflected the light. Within less than five minutes, and so gradual that the change was hardly perceptible, I became aware of a quantum increase in that scattering, now punctuated by the appearance of large, transparent but entirely visual animals that drifted and pulsed through the increasing broth of life.

I started shooting. The lightening flashes of the strobes picked up. The others, like myself, were so caught up in chasing down the ocean drifters and concentrating on framing them for the takes, that there wasn't time to pass even a thought about lurking monsters. I was fascinated, totally taken up with the challenge of focusing on those ephemeral macro beasties. On eye contact, inches away and

illuminated by my video light from below or from the side, they were gorgeous, delicate, complexly designed space ships.

Siphonophores, transparent, ectoplasmic cubes pulsed through the water. Iridescent red and green lateral veins pulsed through their bodies. Flagelli, near-microscopic hairs, waved rhythmically, providing propulsion.

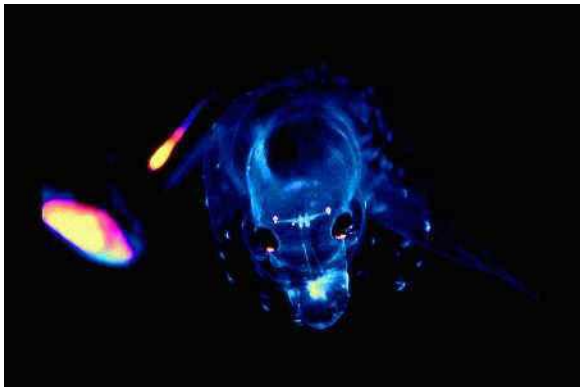
A salp chain, sometimes called a colonial salp, drifted by, a necklace of glass like cells, each the

size of my thumb nail. I later learned that each cell contains a notochord, forerunner of the vertebrae that would millions of years later support the primates. I greeted my ancestor with a fifteen second run of the tape.

The broth was thickening, composed of mycid shrimp, phytoplankton and larval zooplankton, these last too small to see. Almost all of the larger animals were transparent. One, about an inch and a half long, had twin disks, like Mickey Mouse ears, attached to a larval lobster. Another carried within it a fish, 3/8th of an inch long. As I rolled my camera, it backed out of an open end and darted out of frame.

At last, something I recognized.....and wanted no part of. A box jelly appeared in my lights. I maneuvered out of its path and ran my camera and lights along the fifteen foot length of its nematocyst charged tentacles that trailed past as it pulsed by. This was not the box jelly with four short tentacles so feared in Australia. Bonnie confirmed, however, that it was a fairly innocuous species.

A series of raps on a tank drew my attention to Bonnie. She pointed to a pair of squid, each about 12" long, fighting over a scrap of fish she had torn up and released as we drifted. Their arms were meshed as they grappled for the bait, then flew apart, leaving a small cloud of ink where they had been. Shortly after that encounter, my lights picked up another solid form among the drifting phantoms. It was a dark-red, tiny sea horse, no more than 2" long. We converged on it, like paparazzi, strobes flashing. Later, when we surfaced Bonnie told me she had never encountered one in a night drift.



Such is the iridescent and often luminous beauty of these creatures that a written description is entirely futile. I must depend on the gallery of still pictures, taken by Bonnie and accompanying this article, to impart to the reader a measure of the enchantment this voyage in the night sea provided.

The time space between encounters shortened until one had to selectively choose the most exotic and interesting animals. That first night perhaps the most exotic, and certainly the

most predatory of the macro animas was a large drifter with a body that looked like an electronic circuit board, a grid composed of lines of glowing beads. Attached to this 8"x 4" rectangle was a tail so long that it extended beyond the length of my tether. I lighted it as far as I could reach. As I rolled tape, myriad slivers erupted on either side of the tail, like teeth from a comb, spreading a hair-like net. In that jungle of hunter and prey, that net must have been as deadly as a fine-mesh gill net before a school of herring.

I might mention that documenting the ocean drifters with video is somewhat more difficult than doing it with a still camera with framer and strobe. Then again, some of the animals are too widely spread with their tails and tendrils to fit into a framer. With video you of course have two moving objects: yourself and the target, and nothing to anchor yourself. I often found it efficacious to abandon the viewing port, observe the animal from the side, placing him almost next to my dome port and counting on auto focus and the depth of field with a wide angle dome port at point blank range.

Our second night was, with some notable new comers, a repeat of the first. However, one of the new comers was so unexpected and startling that the encounter dominated the dive.

This time Rob Barrel and Bonnie's daughter, Larena, made up two of the four. The conditions both nights were ideal: calm sea and easy current. We had a visitor, unique in all of Bonnie's experience. Toward the end of the dive that night we were in somewhat of a tangle. Having pursued our various courses in all directions as the targets dictated, the tethers were criss crossed again and again. Rob told me later that he was watching Bonnie when something collided with the back of his head. He thought I had blundered into him and turned around to find himself nose to nose with a twenty foot whale shark. Now Rob is a cool customer with several thousand hours of diving; but he came closer to soiling his undies, he said, than any other time in his career. He bellowed into the water, catching my attention. I almost jumped out of my suit. Fortunately the whale shark was so instantly recognized that only the brief shock of the giant's sudden appearance out of the night stunned us. I swing both my lights onto him and caught the scene as he passed through our light sphere, returned for another pass and finally turned upwards to arrive on the surface by the boat, almost frightening the captain out of his wits.

I will go back for more and avail myself of Bonnie's unique and entirely wonderful night drifts. There's nothing pecking at my shell any more. The phantoms are dispersed and the sea, as usual, provides as fine an adventure and experience as we may have on this wondrous planet.

Henry Joyce - Submarine Life



Henry Joyce is a second generation Submariner. Now retired, he served on the USS Benjamin Franklin (SSBN-640). His father made six war patrols on board the USS Sea Lion II (SS-315) which was the only US boat to sink a battleship.



The USS Benjamin Franklin was built by the Electric Boat Division of General Dynamics Corporation in Groton, Connecticut and was launched on 5 December 1964. She was 129.54 meters (425 feet) in length and was powered by a S5W reactor and was the lead ship of her class of ballistic missile submarine.

Decommissioned on 23 November 1993, the Benjamin Franklin entered the Nuclear Powered Ship and Submarine Recycling Program in Bremerton, Washington, and on 21 August 1995 ceased to exist.

Unless they are a saturation diver, most recreational or normally aspirated divers will spend very little prolonged time underwater. The same, however, can not be said for Submariners, especially those stationed on nuclear submarines. Nuclear powered submarines can operate submerged for months at a time. In fact it is only the need to replenish food stores which forces them to surface. A little known fact is that all Submariners are volunteers and have to go through extensive physical and psychological testing before they can be accepted for a posting. Nuclear crews undergo even more rigorous testing than those destined for conventional submarines. This is necessary because the physical and psychological stamina of the crew on a nuclear powered submarine can become a crucial factor in the welfare of the men and the vessel. While on patrol they can undergo long periods of boredom and isolation, becoming virtually cut off from the outside world. Because a submarine normally maintains radio silence, this means no contact with their families and friends.

There's a story, probably apocryphal, about the first boomer patrol. The Navy had never intentionally sent out a submarine planning to keep it submerged for 75 days. A research-type Navy shrink insisted on going along, after all, who had ever really studied men in this situation before? Being an academic type, this guy didn't know much about submarines or submariners. As I said earlier, submarine life is mostly boring and boring is good. But it's still boring. Once you've rehashed the small supply of books on board, what's left is screwing around with other people. Verbally, and prankwise, the only limit is you stay away from family, no wife digs or anything like that. Everything else is fair game. Someone saying "You can't get to me" is seen as a

challenge. Anyway, by the end of the patrol the shrink was hiding in his stateroom, insisting the cook deliver his meals to the door. As he ran off the boat at the end of the patrol, his parting words were along the line of "You people are crazy and I will never go near a submarine again."

This is actually something of a time honored tradition on the boats. Here's a story my dad told me:

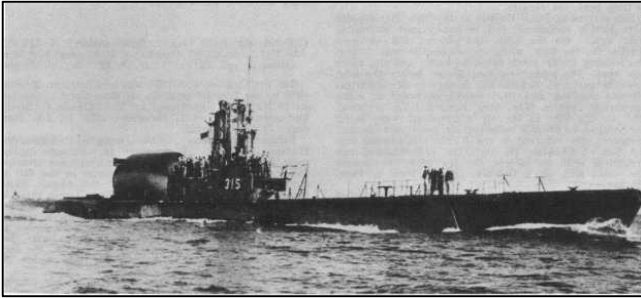
When Sea Lion left Pearl Harbour for her third war patrol, she carried a well known correspondent, who was supposed to ride for the full patrol and write it up for the folks back home. Well, submariners being what they are, they started playing with this guy's mind about the time they got under way. All the usual craziness, plus a twist.

Every now and then, one of the crew would take this guy aside and, in a serious and scared voice, talk about what a nutcase Captain. Reich was. They told stories about his complete disregard for the crew's safety in pursuit of a CMH, and how they all feared for their lives every second they were underway. The point, of course, was just to rattle the guy's cage a little for the entertainment value (We [all] know how that works). Anyway, they forgot one small detail, a refueling stop at Guam. According to my dad, before the brow was even over, this guy "remembered" a previous commitment back in the States and off he went. To quote my dad, "he missed a Pulitzer for the story he could have written on the Kongo, and we missed our chance to be famous, not to mention a tour of the States as heroes peddling war bonds".

If you stress test the people around you when things are quiet, you learn something about them. If somebody outside your crew tries to mess with one of your guys, even if you don't like him you stand up with him. Kinda like bikers but with better dental.

Everyone knows what a submarine looks like from the outside, but few have detailed knowledge of what it is like inside. Crew members live in a cylindrical pressure hull which is filled with the machinery and equipment required to keep them alive and allow the ship to function. A normal Submariner's day lasts 18 hours. This is made up of three six hour watch cycles; One on and two off. First is the duty watch. The next two watches consisting of twelve hours are for repair and maintenance tasks, study, relaxation, eating, and sleeping. Then it's back to the duty watch. There is nothing palatial or luxurious about the conditions. The cabins are cramped with little privacy and even less room for storage or personal items.

There are couple of things about living on board a submarine that many people don't realize, one in particular is about the drinking water. Seawater comes in through an opening on the bottom of the submarine which is why a nuclear sub can't sit on the bottom as it will block this inlet. This is also an outlet for the spent warmer water. As it comes out it is dispersed by the propeller so it cannot be detected by thermal imaging equipment. As the seawater is pumped into the sub the salt is taken out to produce fresh water which is then used in electrolysis to extract oxygen which goes to replenish that used by the crew. The fresh water made by a nuclear submarine is pure. It has no salts or minerals in it as has to be used for cooling the reactor. However, this water needs to be treated before the crew can drink it. Various 'bits' need to be added back. These include various minerals and vitamins which are determined by the medic and will depend on a number of things which include the diet of the crew. If the vessel has been submerged for a long time, vitamin D will be added to counteract the lack of sunlight. If supplies of fresh fruit are running low, vitamin C will be an addition. In this way the medic decides what needs to be added to the drinking water to best benefit the crew.



The USS Sealion II (SS-315) was built by the Electric Boat Division of General Dynamics Corporation in Groton, Connecticut and was launched on 31 October 1943. She was assigned to Submarine Division 222, sailed for the Pacific and arrived at Pearl Harbor on 17 May 1944 where she began war patrols.

My father reported aboard as BM 2nd Class Nov. 11, 1943. Life on board for him was completely different to what I experienced many years later. He joined in wartime, I served in peacetime. There is a world of difference. My father kept a diary of his days onboard. Rather than tell his story I'll just let the pages of his diary tell what it was like.

March 8th, 1944 the U.S.S. Sealion went in commission at the Submarine Base, New London, Connecticut. Underway training, etc., started almost immediately and continued with various periods spent in the Electric Boat yard for repairs, alterations, etc., until April 15th. The boat was then stripped for action and loaded with stores and war shots. We left the states April 19th, 1944. Half of us drunk and the rest of us with hangovers enough to last us to Panama, our first stop on the way to war.

Panama, April 28th. The best liberty port any of us had ever seen. Canadian Club whisky, forty two dollars a case. More young ladies of easy morals and clean habits than in any place in the world. Sailors paradise. We left Panama after four days of heaven.

May 17th we passed through the nets and moored at the Submarine Base, Pearl Harbour, Territorial Hawaii, on the island of Oahu. We had three weeks of intensive training operations here and then on the morning of June 8th fell in for quarters. The captain said a few well chosen words and then we stationed the manoeuvring watch and got underway for our area, via Midway, on War Patrol #1.

June 12th stopped at Midway to top off fuel tanks and drink a little beer. Underway the same afternoon for the East China Sea and the yellow sea. On our way to station we held more drills, etc., and had a pretty smooth working outfit by the time we made the lower tip of the Japanese mainland. There we rendezvoused with the "Tang" and "Tunosa", sending our exec over to the "Tang" in a rubber boat to hold a conference and exchange movie films. All this was done literally alongside a Japanese lighthouse which illuminated us every time it flashed.

Getting the word on a convoy of crippled ships, etc., supposedly heading for Nagasaki we passed through "Colnett Strait" and steamed up to take station on the North-western approach to Nagasaki Harbour. We being the junior boat, left "Tang" and "Tunosa" to the better approaches.

June 23rd, our first day of patrolling, brought what appeared to be a small freighter in front of our virgin periscope. We went to "Battle Stations, Submerged" and fired three fish at him, feeling a little ashamed of ourselves because he was so small. We didn't feel ashamed long because we missed him or rather the fish went under him and turning down the wake of the fish he started dropping depth charges all over us. The Japs have quite a few of these vessels, Q boats they are called and they steam along praying for a sub to fire at them.

He gave us a couple of bad hours dropping 21 depth charges before we finally evaded him. We

continued our patrolling off Nagasaki for a couple more days with no success; therefore, we eased up into the “Yellow Sea” for a look around.

June 28th, running submerged and spotted a five thousand ton freighter with a P.C. as escort. 1000 hours, went to “Battle Stations, Submerged”. We made our approach and fired three fish, hitting and sinking him in 57 seconds with one fish.

The P.C. dropped depth charges, none of which came very close and then got busy picking up survivors. Sealion no longer a virgin.



On July 6th I picked up a convoy of 14 ships and six or seven escorts at twelve miles on the radar. 0430 went to “Battle Stations, Night Attack”. We ran in as close as possible on the surface and then were forced to submerge almost out of range by daylight. We fired our six bow tubes, all steam fish, at an excessive range and sank an 8000 ton tanker with one hit. Two of the destroyers escorting them turned on us and made several, most of them close. We were off the mouth of the Yangtze river and Shanghai at the time with only 80 to 90 feet of water to operate in. We could easily have been in a bad way.

We fired four fish at one of the tin cans, missing with all of them and then proceeded to work our way out to sea and deeper water. Bombers and P.C. came out from Shanghai and from 0600 to 1600 we were bomber and depth charged steadily. None of them after the first couple of hours came very close. We cleared this area that night and headed up into the “Yellow Sea” with eight fish left, seven for’d and one aft. Things were pretty slow up here.

The whole area was heavily mined and we had several close shaves with free floating mines, passing one thirty feet abeam and exploding another with my 20 MM. It was a common thing to pass two or three mines in a day and God knows how many we shaved by at night. We put boarding parties aboard several sampans up here. I was the searcher on these forays but I never found anything fit to drink or any Oriental girls of easy morals.

July 11th, 1944, while cruising in the “Yellow Sea” near “Darien” we made radar contact with a freighter of 5000 tons. It was a thick of fog and raining. Visibility was zero, also at times it would lift to two or three hundred yards. We made a radar approach, going to “Battle Stations, Night Attack” at about 2230. We fired a three fish spread, hitting and sinking her with one fish. We continued our search and went to “Battle Stations, Night Attack” again at about 0230. Another radar contact. The Japs figured they were safe in the fog. This ship seemed to be anchored and we stalked it for an hour or so, being afraid of a trap. We finally fired three fish, missing with all of them.

Having only two fish left and being deep in enemy waters, amidst mine fields and free floating mines and with a Jap “Killer Pack” composed of three destroyers and eight or ten P.C. boats hunting us, the old man decided to clear the area for home. We had 18,000 tons of shipping at this time, as well as a fishing boat which we had rammed and sunk in “Colnett Straits” (Tokaro Kaikyō) and the Jap sampan, which is a pretty good batting average for one run.

However, at 0400 we went to "Battle Stations, Night Attack" again. The visibility was about three to five hundred yards at times. We had radar contact with two vessels, both of them apparently good sized, and the old man decided to get them both, one fish a piece. We made our approach on the larger of the two and fired our stern fish at him, missing.

We pulled out and tracked him again and made a high speed approach on him at right angles.

The Cap't determined not to miss, held the fish until he could make out her bow wave and fired at about five hundred yards. We were making standard speed on all four main engines and coming head on into the freighter's beam. The Cap't roared out "Right full rudder, all ahead flank. Rig for collision, we're going to ram him".

At that time the fish hit him amidships with a terrific explosion. Deckplates, hatches and debris of all kinds showered around us. We cleared his stern by a matter of feet, doing 20 knots, and fired 60 rounds of high explosive 20 MM into his bridge, our after lookout Devitt manning the after 20. The freighter sank in a matter of minutes and we finally started for the southern end of Japan and the narrow pass through to the Pacific and safety.

We had a fairly uneventful run down Japan's western coast, dodging P.Cs, the "Killer Pack" and bombers. In "Colnett Straits" we had another close one about 2230 while running on the surface. A Jap sub was lying in wait for us and fired three fish at us. One crossing under the bow and the other two passing close by astern.

North of the Bonin Islands, about July 15th, we were forced down by a Jap four motored bomber who dropped one large one fairly close and hung around for four or five hours, keeping us down. We had a movie in the for'd room while he patrolled above us and surfaced that afternoon.

July 21st we moored at Midway Island and the next day we went up to the rest camp for two weeks of rest and relaxation. The less said about this two weeks the better.

Nov. 18th. Patrolling off Barren Islands submerged. Many small craft and an occasional patrol bomber topside.

1600. Battery explosion and electrical fire in #5 torpedo. Unable to put out fire. Unable to surface due to many small craft and patrol bombers overhead. Much smoke and fumes in for'd room. Over five tons of high explosives in this room and a fire and explosion can be dangerous. Reloaded fish in tube after failing to subdue fire in it. Bell, torpedoman in charge of room deserves the highest praise for his level headedness and bravery in handling the situation. The fish expanded due to the pressure and heat inside it and stuck halfway in the tube. It was finally forced in, the door was closed and the tube flooded. Several minor explosions occurred inside the torpedo. Many prayers were said. We couldn't fire it to sea due to the shallow depth of the water. 1830. Surfaced surrounded by small craft of all kinds. As many as fifty of them in sight at one time. Backed down full for about a half mile and fired defective fish to sea. Four Sisters and Two Brothers Islands in sight to eastward.

Nov. 19th. Submerged 0630. routine patrol. Received word that wolf pack composed of seven U.S. submarines engaged flack vessels in same area we did. They sank three, damaged two and two escaped when submarines ran out of ammunition. One boat received two holes in the pressure hull. Three men were seriously wounded. These flack vessels are especially equipped to fight aircraft and we did well to get away unharmed.

Nov. 21. 0013. Radar contact at 44,000 yards. Hunter on the radar. At 0015 I relieved him. Three large pips at such an extreme range denote ships of tremendous size.

0030. "Station the Radar Tracking Party". All indications are of a large task force.

0045. U.S.S. Sealion goes to "Battle Stations Night Attack".

Tracking high speed task force composed of two cruisers, three battleships, three to seven destroyers. They are doing about 17 knots, our best is 18 knots. We get ahead of them and about 0300 turn and come in on their port bow, on the surface.

0315. With the nearest destroyer at 1800 yards, dead ahead, and the nearest battleship at 2800 yds, ahead, we fired our six bow tubes at #1 Battleship, swung around to the right and fired three stern fish at #2 Battleship. Three fish hit #1 BB causing a tremendous explosion. Two fish hit #2 BB causing major explosions. The Japs opened up with many guns, firing starshells, tracer, etc. and dropped many depth charges. We escaped on the surface and took up a position on their port beam to reload our tubes and try for another shot. The weather has been pretty heavy all night and is now getting worse. Our tracking party shows that the task force is continuing at the same speed and that we are slowly losing ground.

0340. #1 BB turns out of force with two destroyers escorting.

0345. We set up on No. 1 BB and start in for another shot. A short time before we reach the firing point she slows to fourteen knots, then six knots, then zero knots. As we come in for the kill at about 0430 there is an explosion that tops by far anything we have ever seen before. The sea is lit up for miles around. A great cloud of smoke, steam and debris flies up in the air and in the midst of it all a great Japanese Battleship breaks in two pieces and sinks. The Sealion has done something no submarine has ever done before. Sunk a BB.

(Note in margin: "Later identified as the battleship "Kongo Maru" of 30,000 tons")

We immediately set out in pursuit of the rest of the force. Plot showed them slowing down. It was growing very rough now and our motors were starting to show the strain of running at flank speed for so long. Green water was coming over and down the conning tower hatch in large quantities. Twice the hatch was closed to prevent swamping.

0630. Still holding position but can't get close enough to attack.

0730. Tremendous seas force us to slow. Task force mastheads go out of sight. We submerge and secure from "Battle Stations" with score of one BB sunk, one damaged.

(Note in margin: "One large destroyer was sunk when she came alongside Kongo as it exploded")

The rest of the day is spent repairing minor damages caused by heavy seas.

Nov. 22. Patrolling on surface. 1230 we are forced down by two large bombers which are directly overhead when seen. We finally dove and then broached from 150 feet with bubble in bow buoyancy. Laid on the surface for a minute and a half before we could get down again. The Japs were evidently so amazed by this performance that they didn't know quite what to do. After

thinking it over they dropped a marker buoy and proceeded on their way. It is only by the Grace of God that we lived thru this one. I hope I never get as scared again. Surfaced at 1830.

Nov. 23. Thanksgiving day. It comes at an appropriate time. Submerged at 0630, routine patrolling. Thanksgiving dinner while submerged. Turkey and all the trimmings. Movie in for'd room "Pussy Café" & "Mrs. Hadley Goes to War". Surface about 1430.

Dr. Pete Millar - First Dive



Pete Millar, that's me, is famous for ...well, probably nothing. In fact I'm almost embarrassed to be in a book about the adventures and innovations of some of the most respected and charismatic pioneers of the undersea world. But as I was writing the book, people said; "put your own story in Pete". So here it is. Nothing spectacular but maybe those who read it can empathize with the feelings that my first 'real' dive brought.

Sherkston Quarry

The quarry is in Canada, within Sherkston Shores Resort, located on the shore of Lake Erie, in the Niagara Peninsula between the towns of Fort Erie and Port Colborne. The quarry was originally owned by the Empire Limestone Company and flooded while in full operation and thus has much of the quarry machinery still in place. It is a great place to dive when conditions are right as there is a great deal to see. There are lots of fish, rock walls, many ore cars and miles of railway track and two well preserved locomotives located in 30 feet of water about a five minute swim from the shore. Visibility can range from 1-20 feet and is usually best between May and August. Once the Black algae arrives it can be a navigation and visibility challenging dive.

For many people their first introduction to diving happens in a swimming pool. Whether it is as part of a resort course while on holiday or a training dive in your home town. The water is clear. The visibility is exceptional, the water temperature is pleasant and conditions are perfect. However, once the course is over it comes time for the first real dive and then things can be very different.



I did my dive training at Discover Diving in Buffalo, New York with Dallas, Darryl and Linda Edmiston. I had started to collect Doxa dive watches at the time and rationalized that I couldn't talk or write about dive watches with any kind of authority if I had never been diving with one. Even though I worked in the Middle East for many years running subsea pipeline inspections I had never gotten "wet", so when the chance arose I signed up. After the obligatory training and pool dives it came time for my first open water dive and there was a choice to be made: Lake Erie or

Sherkston quarry in Canada. Because the weather at the time was bad and there was no guarantee of getting out to the dive site we plumped for Sherkston quarry. So much for all that clear, warm, blue water I had stared into during my time in Qatar and Abu Dhabi, I was going to be "baptized" in a dark, dank "mud hole".

After several hours drive we arrived at Sherkston, paid our fees and drove round to an access area. As we checked our gear and put on our wet suits there was a real sense of excitement and also a small amount of fear among the "first timers". The weather was overcast and threatened rain. There was a cold breeze blowing and the water in the quarry looked dark and foreboding.

As I stood between the open doors of my car, stripped off my clothes and struggled to get into my wetsuit I looked around at the other members of the team. Some were talking, some had finished dressing and were assembling their gear and others, just like me, were in quiet contemplation of what lay ahead.

Once I completed a final check of my gear, I climbed down the few rocks at the edge of the access area and after easing into the water, I put on my fins. The ground sloped gently down for about ten feet then dropped away. I watched as my companions followed Darryl our dive leader and slowly disappeared under the water. I started to follow and several things began to happen. I sensed the coldness of the water as it moved up my body and pressed the neoprene wet suit to my skin. The weight of my tank and buoyancy compensator (BC) began to disappear until, almost without warning, I was floating / swimming. I kicked with my fins and set off after the others.

This was no swimming pool dive. It was late in the season and there was a lot of particulate matter in the water and the visibility was probably around twenty feet. To facilitate diving in the quarry, a series of guide ropes had been strung along various underwater routes. We were following one of the guide ropes towards the middle of the quarry. After what seemed like only a few minutes we all stopped and Darryl checked to ensure everyone was comfortable. I took the time to adjust my BC, orientate myself and look around. It was light up above, dark down below and grey all around. It was nothing like the photos I had seen of dives on coral reefs teeming with life in clear blue water, but what a glorious feeling it elicited. I also took a moment to look at the watch on my wrist. It was the orange Doxa SUB 300T reissue which really had been the instigation for me learning to dive. I had read all of Clive Cussler's books and just for a moment, orange Doxa on my wrist and scuba tank on my back, I felt like Dirk Pitt, off on some wild adventure to save the world.

Darryl set off again and I headed downwards to follow him. As I descended I had my first surprise. At about fifteen feet I experienced a thermocline. The water suddenly got noticeably colder on the exposed portions of my face. I had heard and read about thermoclines but the actual experience was really weird. The next surprise was the appearance of ghostly shapes as I reached the bottom of the quarry at around thirty five feet.



Because the quarry had effectively flash flooded, all the equipment was submerged exactly where it had been left. Swimming along the bottom Darryl led us along a small railway track. I first encountered an abandoned ore cart and swam round it looking at it like it was some alien artifact. Then came one of the best experiences I think I've ever had. I started swimming harder to catch up with the team and as I approached them a large dark shape started to appear out of the gloom. As I got closer it started to materialize into a steam locomotive. It was a tremendous experience and although Darryl had already told us to expect sunken machinery in the quarry it was such a surprise to watch it appear out of the darkness.

Swimming around and into the engine I started to think about just what a feeling it must be for the divers who have found old wrecks or planes or artifacts which have been lost for many, many

years. It must be incredibly exciting to know that you are looking at something that hasn't been seen in maybe hundreds of years.



We left the locomotive and followed the guide rope to explore another part of the quarry and finished the dive. As I sat on a rock at the edge of the water removing my fins and equipment, I must have been grinning like an idiot. I was cold and shivering in the cool breeze but I was incredibly happy. I had now joined a "society" who lived in a world which had previously existed only on television or in magazines for me. It had taken me nearly forty years to become inducted into the fraternity but I had finally got to experience

the environment that people like Jacques Cousteau had opened up to the masses. The whole experience made me understand why scuba diving had become such a popular pastime.

Although it has been many years since that dive, I am still very much a novice diver. Each new dive still gives that adrenalin rush and excitement and each one reminds me of that first dive in Smerkston quarry.

Gordon Reid – Just another day at the office



Gordon Reid is an ex inspection diver or as he likes to call it, an underwater probe pusher. I first met Gordon when we were running subsea pipeline inspections in the Middle East back in the mid 1980's and he was always trying to get me into scuba gear. It took a few years but I finally joined the "club", much to his surprise. When he knew I was writing this book, Gordon sent me the following story with his own response. I don't know if the first one is apocryphal or not, but Gordon's tale is certainly true.

For all those who complain about their job, next time you have a bad day at work...think of this guy.

Rob is a commercial saturation diver for Global Divers in Louisiana. He performs underwater repairs on offshore drilling rigs.

Below is an E-mail he sent to his sister. She then sent it to radio station 103.2 FM in Ft. Wayne, Indiana, which was sponsoring a Worst Job Experience Contest. This entry WON!

"Hi Sue,

Just another note from your bottom-dwelling brother. Last week I had a bad day at the office. I know you've been feeling down lately at work, so I thought I would share my dilemma with you to make you realize it's not so bad after all. Before I can tell you what happened to me, I first must bore you with a few technicalities of my job. As you know, my office lies at the bottom of the sea. I wear a suit to the office. It's a wetsuit. This time of year the water is quite cool. So what we do to keep warm is this: We have a diesel powered industrial water heater. This \$20,000 piece of equipment sucks the water out of the sea. It heats it to a delightful temperature. It then pumps it down to the diver through a garden hose, which is taped to the air hose.

Now this sounds like a darn good plan, and I've used it several times with no complaints. When I get to the bottom and start working, I take the hose and stuff it down the back of my wetsuit. This floods my whole suit with warm water. It's like working in a Jacuzzi. Everything was going well until all of a sudden, my butt started to itch. So, of course, I scratched it. This only made things worse. Within a few seconds my butt started to burn. I pulled the hose out from my back, but the damage was done. In agony I realized what had happened.

The hot water machine had sucked up a jellyfish and pumped it into my suit. Now since, I don't have any hair on my back, the jellyfish couldn't stick to it. However, the crack of my butt was not as fortunate. When I scratched what I thought was an itch, I was actually grinding the jellyfish into the crack of my butt. I informed the dive supervisor of my dilemma over the communicator. His instructions were unclear due to the fact that he, along with five other divers, were all laughing hysterically. Needless to say I aborted the dive. I was instructed to make three agonizing in-water decompression stops totaling thirty-five minutes before I could reach the surface.

When I arrived at the surface, I was wearing nothing but my brass helmet. As I climbed out of the water, the medic, with tears of laughter running down his face, handed me a tube of cream and told me to rub it on my butt as soon as I got in the chamber. The cream put the fire out, but I couldn't poop for two days because my butt was swollen shut. I later found this whole incident could have been prevented if the hose had been located on the leeward side of the ship. So, next time you're having a bad day at work, think about how much worse it would be if you had a jellyfish shoved up your butt”.

Now repeat to yourself, “I love my job. I love my job. I love my job...”

Gordon didn't fare much better:

Back in the days of the Oceone, in the early 1980's, Mike Ryan was fixing the coms on a hat and put the soldering iron down on a chair as he fiddled with some of the wiring. The chair just happened to be the one that I was about to sit on to drain the water traps on the HP compressor. When I say soldering iron, I'm not talking about one of those baby electrical soldering iron either! This was a heavy duty, burn a hole in your floor job. As I sat down to drain the water traps he had already put the soldering iron down on the chair.

I was only dressed in a pair of Speedo's and flip flops as they was the standard Personal Protection Equipment in those days. The hot iron instantly melted the nylon of the trunks which stuck to the cheek of my arse. Of course I squealed and leapt to my feet, jumping and shouting and clutching my buttock and then running out onto the deck where the rest of the divers and crew just stood in amazement. Much hilarity was had until four days later (I kept diving, what a hero) when I asked Dave Blakemore the supervisor to check it out for me as I was in considerable pain. He insisted that Maurice, the skipper, had a look too and I was convinced that this was a wind up.

"Ooooooh....Nasty better get him off" said Maurice and with that I knew that it wasn't good.

Maurice then went up to the bridge to arrange a Medivac. The burn had become infected and I was subjected to the humiliation of listening to the skipper arranging the Medivac over the radio with the complex for all of the Gulf to hear.

"Nature of injury?"

"Errrr he has burnt his arse!"

"How did he do that!!!"

"errrr, sat on a soldering iron"

"Can he sit on the seat or should we organize a stretcher in the chopper?"

The reply came simultaneously from around a hundred boats.

"If he can sit on a soldering iron, he can sit on anything!!!!"

I was two weeks on the sick trying very hard to avoid people who would ask what happened.

Jellyfish??? Phah..... I eat them for breakfast!!