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**Features**

**10 Naval Divers**
By Minna Irving

The published public record of early American military diving history during the 19th century is sporadic at best. If we accept that traditional surface supplied diving in America was slowly evolving during the 1830s through to the 1850s it is difficult to find much more than newspaper articles covering random events. By the time the 1860s came around the country was embroiled with the Civil War with submarine attacks and a hastening expansion of military capability. The development of the torpedo provided the impetus for establishing what is currently believed to be the nation’s first military diving school, at Newport, Rhode Island in 1882. It was here that former naval diver Jake Anderson taught the art of surface supplied diving to naval gunners. There is brief reference to any of this diving history in U.S. Navy publications, but a very rare exception appeared in 1898 when Frank Leslie’s *Popular Monthly* magazine published an 11-page article on the activities and equipment of American naval divers. The full article is republished using scans of the original, and comes with introduction by Leslie Leaney.

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**23 Lad Handelman: Profile of a Pioneer, Part II**
By Staff, in cooperation with Lad Handelman and Christopher Swann

Part two of Lad Handelman’s legendary adventures in the development of international commercial oil field diving pick up in 1969 as his small Santa Barbara-based Cal Dive company wrestles with the industry environment after the catastrophic oil spill from Union Oil’s Platform A in the Santa Barbara Channel. The formation of Oceaneering and the competition with Comex and other international diving contracts are the backdrop for Lad’s personal recollections of the good, the bad, and the ugly times of his battles inside commercial diving. His departure from Oceaneering, the birth of the new Cal Dive and his tragic accident are all detailed, as is an up-to-date account of his current activities. Lad’s recollections are supported by contributions from Chris Swann and Patricia Putnam, and with photos from the files of Bev Morgan, Phil Nuytten and Bob Ratcliff. The article provides a rare glimpse into the true American success story of a true American diving pioneer.
EDITORIAL

Welcome 2015!
The Year of the Military Diver

As the Society enters 2015 we are pleased to be able to present some early history that connects us to The Year of the Military Diver. There is not a lot of published material on the early history of the military diving units in America, but we have located a magazine article from 1898 titled Naval Divers, which we are re-publishing in full in its original format. My speculation is that the sinking of the USS Maine in Havana Harbor in the same year probably raised interest in the exploits of military divers, who were soon to be involved in the salvage operation of the ship.

As I note in the introduction to the article, the content is a very early step towards the 1905 Handbook For Seaman Gunners, Manual For Diver, Gunner George D. Stillson’s deep diving tests of 1914, and the 1916 U.S. Navy Diving Manual. It is in the 1916 Diving Manual that the USN Mark V diving helmet is shown in it’s final pre-Mod 1 configuration, but the concept of the Mark V helmet was first published a year earlier in 1915, in Stillson’s report.

As the Mark V was the mainstay of military surface supplied diving for most of the 20th Century, it seems appropriate that we celebrate the nation’s military divers on the centennial anniversary of the first appearance of the helmet that would serve them during so many campaigns.

In keeping with this military theme we have also re-published a 1976 U.S.N. update on the Mark XII helmet, which was being evaluated to replace the Mark V. Unlike the Mark V, the Mark XII tests would include the use of a mixed-gas breathing medium for deeper work. The U.S. Navy had spearheaded the research into diving with helium, and it was the ability to dive with this gas that helped launch the giant American commercial diving company Oceaneering International. How this came about is explained in Part II of our article on HDS Advisory Board member Lad Handelman.

Another Advisory Board member, Dr. Sylvia Early, was the leader of the 2014 HDS GWS Fund Raiser, which is reported here by Society Chairman Dan Orr. We are very happy to again present an article by HDS Germany President Franz Rothbrust on the annual historical gathering at Neustadt, which is becoming a form of pilgrimage for European divers interested in vintage diving equipment. Our usual cast of very loyal historical columnists round out this issue.

The Society booth will be set up at all our regular dive shows throughout 2015 and we hope you are able to stop by for a visit if you attend these shows.

Safe bubbles,

—Leslie Leaney, Executive Editor
The Board of Directors is pleased to announce that Alan Krasberg and the late Jerry O’Neill are the recipients of the Historical Diving Society Diving Pioneer Award. In announcing the award the Board made special reference to Krasberg and O’Neill’s pioneering work in developing saturation diving for the commercial diving industry.

Alan Krasberg built his first closed circuit oxygen rebreather in 1948 setting out on a career in diving technology that continues to this day. He worked at the underwater division of the J.H. Emerson Company and later for Westinghouse where he and Jerry O’Neill developed the Cachalot saturation system.

This system was used on the Smith Mountain Dam project in 1966, which is historically recognized as the world’s first commercial saturation diving job. In 1967 the system was deployed to the Gulf of Mexico.

Krasberg’s career includes development of hot water suits, development of decompression tables for early mixed gas diving to 500 feet, working in Ekofisk North Sea Norway, development of gas reclaim system, the formation of General Diving Systems in Aberdeen. He is the holder of numerous patents.

Wilber Jerome O’Neill, or Jerry, as he was best known, was a specialist in Support Systems for Manned Undersea Work, with particular experience in breathing apparatus, diving equipment, and hyperbaric system, design, operation and safety.

He dedicated his life to advancement of diving technology, held numerous patents, and the following are among his notable career accomplishments: Inventor, designer of the Arawak I through VI return line systems; Inventor, designer of the Abalone diving apparatus adopted by the US Navy as their Mark XI; Principal designer of the Westinghouse 1500’ Man-Rated hyperbaric facility; Principal Designer of the Westinghouse CCM, a closed circuit mixed gas diver breathing apparatus; Co-designer of the Westinghouse CACHALOT saturation diving systems; Co-designer, Krasberg sensor controlled underwater breathing apparatus, the CACHALOT Underwater Breathing Apparatus CUBA, a tethered semi-closed mixed gas umbilical supplied apparatus; First Commercial Saturation Dives on Smith Mountain Dam (1966); First Commercial Saturation Dives Offshore Gulf of Mexico(1967); Inventor, designer of the CARDIOID Valve used in the US Navy Mark XI; Designer of a one atmosphere, inert gas environment, return line, Worker Breathing System, and a fully closed circuit four-man 72 hour Emergency Breathing System, manufactured by Divex for Lockheed Petroleum.

O’Neill was inducted into the Commercial Diving Hall of Fame in 2007 and passed away September 16, 2009.

On behalf of the Society, the Board of Directors congratulates Alan Krasberg and the late Jerry O’Neill on this significant career recognition.

The Board of Directors wish to acknowledge the valued assistance of Bill Rowley and Christopher Swann for their research.
Preserve and Protect the Future of the Historical Diving Society

Become a member of the HDS Legacy Society

By Dan Orr
Chairman
HDS Board of Directors

During our lives, we are often reminded that more must be done to sustain the programs and organizations that enrich our lives. The charitable organizations we support can also touch the future and perpetuate our vision and interests long after our lifetime. Supporting the work of the Historical Diving Society, preserving the history of our sport and our industry, enriching our lives and lives of others around the world, can be your legacy.

What better way to support the organization that has had such a profound impact on your life and the lives of so many others, than by making a charitable bequest and becoming an elite member of the HDS Legacy Society.

How to give to the Historical Diving Society and become a member of the exclusive HDS Legacy Society

You’d like to help build the long-term financial health of the Historical Diving Society, but feel you cannot make a significant gift today. Your solution may be a charitable bequest.

A bequest under your will or revocable trust can complement your lifestyle and commitments today while supporting the Historical Diving Society tomorrow.

Donors choose to make a bequest because:
• It is not payable until death, so it does not affect your assets or cash flow during your lifetime.
• It is revocable. You can change the provisions in your will or trust at any time, and
• It is private. Your will is not filed or made public until your death.

Your giving options are increased:
• A bequest can deliver a specific financial gift to the Historical Diving Society (“I bequeath the sum of ________ Dollars”). Alternately, it can deliver a percentage of the balance remaining in your estate after taxes; expenses and specific bequests have been paid — what’s known as the residue (“I bequeath _______ Percent of the residue of my estate”).
• You can designate that a particular program or activity at the Historical Diving Society benefit from your bequest. Or, you can make your bequest unrestricted and allow the HDS to use it to fulfill the HDS’ top priorities when your financial gift is received.

Is a bequest deductible?

A bequest from a will or a trust distribution to the Historical Diving Society is fully deductible for federal estate tax purposes, and there is no limit on the deduction your estate can claim. In addition, the gift is usually exempt from state inheritance taxes.

What is the difference between a will and a trust?

A will is your instruction manual to survivors about how you want your property distributed. It is a revocable, private document that only takes affect after your death.

A revocable trust is an entity that holds assets during your lifetime, then transfers ownership of them, or benefit from them, upon your death.

There is no difference between wills and trusts in how they make charitable transfers. In some states the probate and distribution process is simpler with a revocable trust. Your attorney or financial advisors can guide you in choosing which vehicle will work better for you.

What if I’ve already written my will or trust?

You can amend a will or trust to make a gift without rewriting the entire document. Your attorney can prepare a simple document, called a codicil, which adds a new bequest to the HDS while reaffirming the other terms of your will. Similarly, an attorney can prepare an amendment to a revocable trust to add The Historical Diving Society as a beneficiary.

Join Ernie Brooks

Let us know your plans! If you have left the Historical Diving Society in your estate plans we would like to thank you and welcome you to the HDS Legacy Society.

Internationally known photographer and HDS Patron, Ernie Brooks, has decided to leave a significant legacy gift to the HDS through his estate becoming the first member of the HDS Legacy Society. Join him as a member of the exclusive Legacy Society expressing your continuing support for the mission of the HDS.

Your attorney will advise you about your Will and Charitable Gift to the HDS. After you have discussed your
charitable giving plans with your attorney or financial planner, please advise the HDS of your desire to support our mission with an official letter notifying the HDS of your bequest. Mail to:

Historical Diving Society
PO Box 2837
Santa Maria, CA  93457

Once the HDS has received this official letter, we will acknowledge your bequest with an official ‘Thank You’ letter as well as in the Journal of Diving History and on the HDS website, where you will be listed as a member of the exclusive Legacy Society. If you wish to remain anonymous, the HDS will simply list you in all publications as ‘anonymous.’ If you wish your gift to be in memory of someone, that can be done as well.

James Hazewinkel

As the HDS was preparing to announce its new Legacy Society Program, we received a call from a Michigan attorney announcing a bequest to the HDS by James Hazewinkel, member number 606, from Grand Rapids, Michigan.

James had joined the HDS in 1996 and had been a member in good standing for 18 consecutive years. His belief in the mission of the HDS, and our ability to preserve and protect the history of diving led to his final gift to the Society.

The administrator of his estate said, “Jim’s passion in life was diving, and he wanted to support your mission even upon his death.” James had been an active diver since the 1960s, with an interest in diving helmets and regulators.

When hearing of this bequest, Ernie Brooks, co-author of the Legacy Patron program, wrote that the estate of James Hazewinkel, ‘proves that there are those who treasure the mission of HDS. This is a perfect example of a single man who planned his estate to Honor the Diving Society in his ending wish.’

Dan Orr, Chairman of the HDS Board said, “We are overwhelmed by Mr. Hazewinkel’s generosity and are proud to be able to recognize his gift through the HDS Legacy Society.”

To support the essential mission of the Historical Diving Society as a member of the Legacy Society through a bequest as part of your estate planning, call (503) 835-0700 or email legacysociety@hds.org.

“Now, a portion of my accumulated wealth will be used to support what I have believed in and worked for, the preservation of the history of diving. I am also encouraging my friends and colleagues to support the mission of the HDS by becoming a member of the Legacy Society.”

– Ernie Brooks, HDS Patron

James Hazewinkel
100TH ANNIVERSARY OF THE U.S. NAVY MARK V DIVING HELMET
1915 – 2015

HDS 2015 CONFERENCE
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Friday evening reception to be held at the Museum of Man In The Sea. Conference presentations at the Florida Institute of Technology campus on Saturday. Watch the HDS website and Facebook page for updates.

www.hds.org
HDS Welcomes Uditis as Director

Ed Uditis has joined the HDS Board of Directors as our newest Director. Ed is well known in the diving industry and has been involved in many different endeavors over the years.

He began diving in 1954 and was working as an assistant instructor at the YMCA by 1959. Ed received his NAUI instructor certification (#1293) in 1966 and later became a NAUI Course Director and an IANTD instructor trainer. Ed has lived and worked in the Cayman Islands, Florida, and Connecticut, as a dive instructor, photographer and video producer, dive shop owner, author, and lecturer. Over the years, Ed has developed an extended family of close friends within the recreational diving world. He brings a vast repertoire of knowledge and experience, plus a love for and dedication to the Society.

Ed joined the HDS in 1992 and holds member number 95. He is a Lifetime member of the Society and volunteers frequently at the various dive shows. You may have seen him in front of the HDS booth selling memberships and raffle tickets. “Cheaper than a hamburger”, is his description of a chance to win the Mark V diving helmet.

We welcome Ed and plan to put his skills to good use in the coming years.

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2015 has been designated the Year of the Military Diver and is therefore an appropriate time to dig back into the files of America’s military diving history. The following article, Naval Divers, was published in 1898 and is one of the few late 1800s references that I have been able to locate on the subject.

Research by HDS members shows that the first USN Dive School was established in 1882 at Newport, Rhode Island. Little more than newspaper articles regarding navy diving were published during this period and a magazine article of this length seems to have been quiet uncommon.

At the time of publication American public interest in the role of the military diver had almost certainly been aroused by the sinking of the USS Maine in Havana harbor on February 15, 1898. It was headline news, which continued for some time as the public cry of “Remember the Maine, to Hell with Spain,” was a backdrop for the Spanish American war of the same year. This article was published in December 1898.

U.S. Navy diving equipment of that period was a miss-mash from different manufacturers, a situation which would continue through to 1916 when the detailed research done by Gunner George D. Stillson and his team during the Deep Diving Tests of 1914 eventually produced the USN Mark V.

Photographs in this article show American equipment by Andrew J. Morse & Son, and England’s Siebe & Gorman. The diver wearing the Morse equipment is shown wearing a weight belt whereas the Siebe & Gorman diver is wearing the tradition English chest weights. The helmets shown are both of the standard 12 bolt design, so only one style of diving dress would be required. One interesting feature is that the Siebe & Gorman helmet shown dates from between 1873 and 1880 and has the style 4 closeable exhaust valve, (See Siebe Closed Helmets of the 19th Century, by Leaney, in association with Lyons, Historical Diver issue 18, Winter 1999.) It may be that this helmet was just randomly selected for the photograph as adjustable exhaust valves were in production in both countries prior to 1898. It is also possible that adjustable exhaust valves were not instantly adopted by the U.S.N., as a Morse helmet with a non-adjustable exhaust was still being used by Stillson’s team during the 1914 Deep Diving Tests.

Some of the photographs seen here were also used seven years later when the Naval Torpedo Station prepared the Handbook For Seaman Gunners, Manual For Divers, published by the Government printing Office in Washington D.C in 1905. There is far more detail in that Manual than in this article, and it is currently believed that the 1905 Manual was the first USN diving manual.

–Leslie Leaney
LIFE is full of danger to those who go down to the sea in ships, but the men whose vocation takes them under water to recover lost articles, explore wrecks, find the bodies of the drowned, or raise valuable cargoes, court grim Death and meet him face to face every time they descend the frail rope-ladder or frailer lifeline into the cold, mysterious depths below.

It is a favorite amusement with the passengers on steamships touching at ports in the Sandwich Islands to throw small silver coins overboard and watch the naked natives dive for them. From long practice they are able to remain under water for an astonishing length of time, and are really in no danger except from possible sharks, as, not being burdened with clothes, they can move swiftly and freely about in the clear tropic seas. The white diver, however, is weighted with heavy armor, and his life depends entirely upon the man at the air-pump above. No calling, not even that of “Steeple Jack,” is so fraught with danger, and few are so full of romance, mystery and adventure. Volumes might be written on the subject if the professional diver could be induced to talk; but he is very uncommunicative, and, as a rule, extremely unwilling to relate his experiences under water. It has, however, been my good fortune to meet two noted divers and hear from their lips interesting accounts of their visits to Neptune’s domain. Both of these, Charles Morgan and
Joseph Hill, are officers in the United States Navy; while to a third, Captain John Magee, until recently a professional diver in the employ of the Merritt-Chapman Wrecking Company, I am indebted for much courtesy. At present writing Captain Magee is in command of the little wrecking steamer Right Arm, which was lately purchased by the Navy Department, and, when not on duty, is moored at the Ordnance Dock in the Brooklyn Navy Yard. It takes a brave man to be a successful diver, and not only must he be in perfect health, but of strictly temperate habits as well. Between twenty and fifty years of age is usually a diver's working period, but Captain Magee told me that one of the best divers on the Right Arm was a man fifty years old. This was before the boat was bought by the government, no divers being now attached to her, as the navy depends entirely upon its own resources for such work; and Captain Magee, who has been himself twelve years a diver, is not acting in that capacity now, but merely continues in command of the wrecker.

Naval divers receive a three months' training at the Newport Torpedo Station, and before further describing the process which is necessary to enable a man to live and work for hours in the depths of the sea, a description of the torpedo station and the training station attached may not be amiss. The training station is situated on Coaster's Harbor Island, and is an adjunct of the torpedo station on Goat Island nearby, but before it was acquired by the government it was used as a poorhouse with farm attached. The old poorhouse building still remains, and is now the commandant's quarters, while the farm is still worked, hired laborers being employed to plow, to sow, and to reap. When the training school was first established the old New Hampshire was used for quarters, but later a commodious building was erected for a

Charles Morgan, Gun Captain, U. S. S. "New York."
gymnasium and drill hall, and in the latter were rigged masts and yards, sails and other equipments necessary for the instruction of apprentices in seamanship. All boys are sent there before being assigned to training-ships, and often as many as six hundred jolly young jack tars are there at a time. They are divided into divisions, with a schoolmaster to each division, and four drills a day, for the study of mathematics and geography comes under the head of a drill at the training station. These drills are so arranged that while one division is receiving instruction in seamanship, another is learning infantry tactics, and a third locating the parts of the world on the map. Wednesday and Saturday afternoons are devoted to bedding and clothing, and each boy is taught to sew, and is required to repair his own garments and keep them clean. From the mainland a short distance away the silvery bugle-calls of Fort Adams float over the water, and between, historic Goat Island marshals its terrible chemicals for manufacturing the forces of war.

The torpedo station was established on this island in the summer of 1869, its occupation by the Navy Department having been authorized by the Secretary of War on July 29th of that year. Its Indian name was "Nanti-Sinonk," and it was purchased from the Indians May 22d, 1658, and subsequently sold to the Colony of Rhode Island and Providence Plantations by Benedict Arnold. The Assembly in 1701 voted one hundred and fifty pounds for the building of a fort on the island, naming the structure Fort Anne. In 1730 it became Fort George, and in 1774, when the storm wind of liberty began to blow, the Assembly ordered it dismantled and the guns sent to Providence for safety. During the Revolution it was called Fort Liberty by the Americans, although the English while they occupied Newport retained the old name of Fort George. In 1784 it was re-christened Fort Washington, and in 1798 Fort Wolcott, to commemorate the Revolutionary services of Governor Oliver Wolcott. In the war of the Rebellion the Naval Academy was removed from Annapolis to Goat Island for safety. Two frigates, the Santee and Constitution, were moored near the shore and used as quarters for midshipmen, while a one-story
building (formerly the army barracks), and a number of small wooden structures were occupied by the academy. But now there are storehouses, machine shops, cottages for officers, a chemical laboratory, an electrical laboratory and gun-cotton factory on the island, while the old barracks has been fitted up into quarters and offices for the inspector in charge. From its inception the torpedo station has been conducted for the experimental solution of a great variety of technical problems affecting the naval service. There the spar torpedo, with its steel-tube and compact sheet-iron case, has been born, the "towing torpedo" has been decided to be obsolete, and an experimental torpedo of the same nature as the deadly Whitehead has been planned. Submarine projectiles actuated by the burning of a rocket composition have also been studied there and a submerged gun provided. Every year a number of naval officers are ordered to the torpedo station for instruction in torpedo work, diving, electricity, high-speed engines, and the complicated chemistry of explosives.

Practice dominates this course, and theory only enters so far as is necessary, and there it is that the future diver takes his first lesson. Before a man attempts diving he is thoroughly examined by the physician in charge, and is rejected if found to be subject to palpitation of the heart, headache, slight deafness, running from the ears, rheumatism or hemorrhage. Men with short necks, full-blooded and florid complexions, blood-shot eyes and a high color in the cheeks, or who are very pale, whose lips are more blue than red, who are subject to cold hands and feet or poor circulation, or who are hard drinkers or have suffered at any time from sunstroke, are barred. Having passed the doctor's careful examination, the diver dons the suit of submarine armor with the help of an attendant, for it is impossible to put it on alone. The diving suits used in the navy are made by Andrew J. Morse, of Boston, and a complete outfit costs $724, the rubber dress being $40 alone; and the helmet, of nickel or brass, with safety and regulating valves, $100. Having taken off his own clothes, the diver puts
on a heavy flannel shirt and pair of drawers carefully adjusted outside the shirt, and well secured to prevent slipping down, and a pair of heavy stockings. If the water is cold into which he is about to descend, he puts on two or more of these articles. If going into deep water he adds a woollen cap, and sometimes inserts cotton saturated with oil in his ears. The shoulder-pad is now put on and tied under his arms, and he gets into the dress, which, in cold weather, is slightly warmed; the inner collar is drawn up and tied around his neck with a bit of spun yarn; the breastplate, with its four straps, is adjusted; and the shoes, with lead or iron soles, are put on and strapped. If rubber mittens are worn, rings are put inside the cuffs, and the mittens drawn on and fastened with clamps fitted into the rings and screwed tight. The heavy metal helmet, without the front plate, is now put on, the attendant first, however, putting it on his own head with his mouth over the place where the air escapes, and blowing strongly to see if the safety-valve vibrates properly. A loop of the life-line is placed around the diver's waist, the line brought up in front of his body and secured to the stud on the helmet; the waist-belt is buckled on, with knife or hatchet, at the side; the
end of the air-hose passed through the ring on the belt to the man’s left, and up to the inlet-valve of the helmet to which it is secured, and the upper part of the hose made fast to the helmet, and two men are told to man the pump as the diver goes to the side of the boat.

Last of all a belt, very much like a cartridge-belt, with detachable lead weights in place of the cartridges, is buckled around his waist. With a heavy man the belt is not used, but if the diver is of slender build the leads are put on or taken off until the proper weight necessary to carry him straight to the bottom is secured, otherwise an over-pressure of air in the air-pump would cause him to rise. He is now ready to descend, and if it is for the first time he is conscious of a nervous tremor as the front plate of the helmet is closed, and he begins the journey downward. He now carries 200 pounds besides his own weight, though the rubber suit is inflated. Professional divers usually descend by a rope-ladder, but those in the navy use only a rope, and, sailor-like, go down it hand over hand. The rope is weighted at the bottom, and even an expert diver makes the descent slowly, halting for a few minutes after his head is under water to satisfy himself that everything is all right before he continues the descent. If he feels oppressed, or has a humming in his ears, he rises a yard or two, and if the humming noise continues or his head begins to ache, he returns slowly to the surface, as it would be dangerous to continue. Severe pain in the ears is often
experienced, and if a man has weak lungs, and the fact has escaped the
doctor, blood is likely to gush profusely from his mouth, nose and ears when
he arrives at the bottom. When such is the case, he is, of course, immedi-
ately disqualified by the doctor. In returning from great depths the prudent
diver ascends very slowly, being careful to avoid the often disastrous effects
of passing too abruptly from a considerable pressure to the open air. The
ascent from a depth of twenty fathoms should occupy about five minutes, and
in any case it is more important to move slowly in rising than in going down.
Divers of the navy take no food for at least two hours before descending, and
the majority of them do not indulge in an ounce more of animal food than is
required to maintain health. The harbor of Newport, where the diver in
Uncle Sam’s service usually takes his first trip, is about ten fathoms deep
and affords very good practice to the novice in deep-sea exploration. In
June, 1891, a diver discovered a very interesting old wreck almost submerged
in the soft mud at the bottom, and lying about seventy-five feet off the
Goat Island shore, with bow to Fort Adams and stern to the training sta-
tion, and the account of it as given me by Diver Joseph Hill suggests the old
romances of the time of Captain Kidd, Blackbeard and other famous bucc-
caneers. Diver Hill, who is tall and athletic, with a handsome figure and
dark hair, was an officer of the ill-starred Maine, and the picture presented of
him was taken a short time before his ship sailed for Havana on that fatal
voyage.

"As I now remember," he said, "the Newport wreck was of substantial
timbers, which were prac-
tically sunk below the sur-
face of the bottom of the
harbor, but had some spars
and beams projecting suf-
ficiently to outline the
hull, enabling me to make
a search, and then use ex-
plosives to blow it up."

The cabin, or what was
once the cabin, was filled
with mud, but two beau-
tiful vases of quaint de-
sign, a water-jar, some
iron pike-heads, and sev-
eral bottles of wine sealed
with the coat of arms of
the King of Spain, were
saved. "I brought up a
couple of iron or bronze
cannons," said Mr. Hill,
"each loaded to the muz-
zie with shot, indicating
that the vessel ‘missed
stays' during an engagement with the harbor forts or some warship and went down under the enemy's guns, being unable to maneuver out of range. I expected to find a chest of gold doubloons, the spoil of the long-dead Spanish captain, somewhere among the decayed timbers, but was disappointed.'"

Six guns altogether were recovered at different times from the mysterious wreck, all loaded and all deeply pitted with the salt water in which they had lain for countless years. When the wreck was first discovered it was supposed to be the remains of a French transport sunk by the English in the French-Indian War of 1754, but the vases, water-jar, pike-heads, cannon and wine-bottles were undoubtedly of Spanish origin, while the vessel is believed to have lain for fully two hundred years at the bottom of the harbor. No mention of the sinking of any such vessel is to be found in any history of Rhode Island or of Newport, but there is every reason to believe that it was a Spanish privateer probably on a predatory cruise from the West Indies in Queen Anne's War, 1702-13, and sunk by the guns of Fort Anne, now Fort Adams. When England at that time declared war against France and Spain the brunt of the war fell on New England, New York being protected from invasion by the treaty between the French and the Five Nations.

"The first time I ventured down in diving dress," says Joseph Hill, "it was in about thirty feet of water. I remained down about four hours, and was then hauled up for lunch. The next time I went down it was in sixty feet, and I was down about three hours. The average naval diver stops down about two hours the first time, and after that four hours, which, under ordinary circumstances, is considered a naval diver's day's work."

Under the waters of Newport Harbor, on a clear day, Diver Hill could see distinctly for a distance of ten feet, though as he walked about on the bottom the soft mud and fine sand rose up before his feet as do clouds of dust along a country road in dry seasons. The torpedo station divers often bring
up a mess of flounders for dinner, as they find them lying in great numbers in the mud. Fish usually display considerable curiosity when a diver descends among them, swimming about him, and no doubt regarding him as some new species of marine monster. In tropic seas the diver most fears the terrible octopus or devil-fish, which often winds its tentacles about his arms and legs, or, worst of all, becomes entangled with his lifeline, when it must be fought with and chopped loose with the knife or hatchet he usually carries. But probably the most thrilling experience ever met with by any diver was Charles Morgan’s, in the wreck of the battleship Maine at Havana. Mr. Morgan, who commands the guns of the U. S. S. New York, is small and slender, and one of the most interesting men I ever met, very bright, very active, with brilliant black eyes and a skin bronzed with southern seas and suns. For nearly two weeks he remained under water in the Maine, among the bodies of the dead, for seven hours a day—a wonderful record of endurance and nerve considering the fact that four hours are supposed to be a diver’s day. The waters of Havana Harbor are also very deep, and so black that he was obliged to use electric lamps, and then could see but a foot ahead of him in the grave-gloom of the wrecked vessel. It is best to give the story of his descent into the dark charnel ship in his own dramatic words, as he told it to me after his return to Sampson’s fleet. It is more interesting because this is the first time he has imparted to anyone his experience in the wreck.

"It was horrible!" he said. "As I descended into the death-ship the dead rose up to meet me. They floated toward me with outstretched arms, as if to welcome their shipmate. Their faces were for the most part bloated with decay or burned beyond recognition, but here and there the light of my lamp flashed upon a stony face I knew, which when I last saw it had smiled a merry greeting, but now returned my gaze with staring eyes and fallen jaw. The dead choked the hatchways and blocked my passage from stateroom to cabin. I had to elbow my way through them, as you do in a crowd. While I examined twisted iron and broken timbers they brushed against my helmet and touched my shoulders with rigid hands, as if they sought to tell me the tale of the disaster. I often had to push them aside to make my examinations of the interior of the wreck. I felt like a live man in command of the dead. From every part of the ship came sighs and whispers and groans. I knew it was the gurgling of the water through the shattered beams and battered sides of the vessel, but it made me shudder; it sounded so much like echoes of that awful February night of death. The water swayed the bodies to and fro, and kept them constantly moving with a hideous semblance of life. Turn which way I would, I was confronted by a corpse."

When asked his impressions on going down for the first time in a diving suit, Morgan said: "I was dressed and sent down in fifteen feet of water, and I felt like a ballet-girl walking on her toes, and even got so gay that I came near falling into a large hole. The hardest work a diver has to do is under a ship’s bottom. There you hang like a rag on a clothesline, with the ship going up and down in the sea-way; and you are very, very often seasick from the smell of the pump."
Diver Morgan is the first officer of the navy to be presented with a gift by the public. The business men of New Orleans, in which city he was born, have presented him with a sword and a gold medal in recognition of his heroic work in the wreck of the Maine. The most valuable article recovered from the sea by the naval divers during the past year was a torpedo which was lost overboard from one of our battleships, and valued at $2,225. A diver attached to the ship went down twenty-four hours afterward in ninety-three feet of water, and brought it up, locating and hoisting it without difficulty. Probably the article of smallest value ever brought up was a package of chewing-gum from the Maine. The bodies of the dead sailors were recovered by the wrecking divers on the Right Arm under the command of Captain Magee, and they were the last men inside the wreck. A professional diver receives a hundred dollars a week for his services, but the expert divers of the navy are paid only $1.25 an hour. Each diver is allowed fifteen minutes' breathing spell out of each hour, during which time he can come up and rest with his helmet off; but very few do this, preferring to remain down the whole hour, as by taking the allowance of fresh air they receive only a dollar an hour. The Morse helmet admits of the use of an electric telephone, by means of which the diver can communicate with his attendants above. No talking or laughing is permitted at the air-pump while the diver is down. Divers are very cranky as a rule, uncertain of temper, quick to feel a slight, and very easily offended, especially after having been at work. The greatest depth to which any diver has ever descended is 204 feet, at which depth the pressure is 88.5 lbs. to the square inch. Below that it would be impossible to sustain life.

As a general rule diving operations are carried on from a boat or stage instead of directly from a vessel. When it is necessary to send a diver under a vessel near the gangway, the platform of the gangway is sometimes utilized as a place for the pump and attendants; but the boat or launch is used by most experienced divers. A red flag is always hoisted in the bow of the diving-launch as a warning for other boats to keep clear, and diving operations are never carried on in foggy weather unless it is absolutely necessary to do so, in which case the fog-signal is kept sounding.

Divers usually walk backward under water, unless they are experts of many years' experience.

The Navy Department usually employs a wrecking company, and the company furnishes its own divers in ordinary cases where the services of a diver are required, naval divers being used only when it is necessary for an expert to examine the wreck, as in the case of the Maine, or where naval stores, such as guns, powder and projectiles, are to be recovered. Thus, under the direction of Lieutenant Hobson, the hero of the Merrimac, and Lieutenant George P. Blow, the Merritt-Chapman Wrecking Company is making an attempt to raise the sunken vessels of Cervera's fleet, having made a contract with the government to do what is practicable, but as the location is open to the elements, and it is an immense and complicated piece of engineering work, the task is a difficult one. I am told by officers who have examined the Spanish wrecks that there is little hope of saving any but the flagship
Infanta Maria Teresa, which is not so badly battered as the others, and which lies with bottom resting squarely and easily on a flat rock, almost as evenly as a ship on the ways. This is owing to the fact that when Cervera saw capture was inevitable he opened all the sea-valves of the Maria Teresa and threw the valve-caps into the sea, and the ship rapidly filled with water, careened with her guns pointing skyward, and sunk without serious injury to her steel sides. The Oquendo is a total wreck, for when the commander saw his vessel was doomed, he ordered all his men below, closed the hatches, flooded the decks with oil, applied the torch with his own hands, fired a pistol-shot into his brain, and fell dead in the flames, making an exit from the world more terribly tragic than any ever conceived by the dramatic genius of Sardou. The Viscaya is also a mass of ruin, and the magnificent Colon is reported as being very badly damaged by the action of the salt water, though it is understood that an effort will be made to save her. The means used by Lieutenant Hobson to raise the wrecks are rubber air-bags—air in bulbs, placed in the different compartments, and pontoons. The air-bags are taken down and placed in the ship by divers, the pontoons, which resemble immense coal-barges, being placed on each side of the wreck and filled with water until barely visible above the waves. Heavy chains are passed under the wreck with the ends secured to the pontoons; the water is then pumped out of the pontoons, and at the same time the rubber bags are filled with air, both together lifting the vessel a few feet each time the operation is repeated. As fast as the wreck rises it is pumped out, and the workmen repair the holes, if any, in the sides. Leaks below the water-line, as in the bottom, are mended by divers.

AMERICAN DIVERS AT WORK ON THE WRECK OF THE "MAINE," HAVANA HARBOR.
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As a result of Union Oil’s Platform A oil spill in the Santa Barbara Channel on January 28, 1969, the drilling industry in California came to a screeching halt. The new start-up group Cal Dive’s chances of survival were dark indeed.

Putting to use the expression “necessity is the mother of invention,” before going under, Cal Dive found a way to take prime contracts out of the grip of Cook Inlet’s long entrenched dive contractors, replenishing its coffers in the process. At the same time Bob Ratcliffe was finding a way to undercut longstanding large marine contractors’ lock on municipal projects and still collect lots of profit for the company. What Cal Dive lacked in size and reputation was made up for by crafting innovative inexpensive solutions… and doing an honest job. It was this unorthodox approach that allowed Cal Dive to survive the “dark period” and then become Oceaneering and beyond.

How many times have we heard “it is being in the right place at the right time”? Factually speaking, Cal Dive was in the wrong place at the worst time. How could this mini-sized group, with no resources, compete with the likes of the financially-backed and established divisions of corporate giants like Union Carbide (Ocean Systems), Westinghouse (Sanford Brothers), International Utilities (Divcon), Halliburton/Brown & Root (Taylor Diving) and government subsidized Comex? The answer was very simple: Cal Dive / early Oceaneering had to be creative and relentless in the winning of contracts.
The next coup was Cal Dive, a tiny Santa Barbara group, beating out all the large international dive companies to be contracted for Gulf Oil’s first exploration off the east coast of Australia. Reading & Bates’s novel catamaran drillship suffered extreme seafloor consequences, calling on the Cal Dive team to save the day time and again.

It so happened that just as Gulf Oil was happily drilling away off the Great Barrier Reef, news of the infamous ’69 blow-out finally reached the Brisbane Times, calling for an immediate halt to oil drilling on Australia’s environment jewel. Operations came to a screeching halt. Cal Dive’s hopes at this point seemed dashed again.

A MOMENTARY MONOPOLY

But not long after, the Reading & Bates new flagship, the E.W. Thornton, moved to new operations in Indonesia. Then, thanks to the Reading & Bates guys touting Cal Dive as heroes, the door to the lucrative Southeast Asia market opened wide. For a moment, Cal Dive had a monopoly and was secure enough to open the very first diving contractor headquarters in Singapore.

Being the only US service company (aside from R&B) in Singapore was an opportunity that was not missed. To expand and diversify, Sea Supply, (Southeast Asia’s first oilfield supply company) got launched as did Spiltrol (for emergency spills, contracted by Pertamina). Simultaneously, Cal Dive was landing more and more dive contracts. The window had opened and Cal Dive jumped through with both feet.

Shell Oil Canada needed a deep diving/bell diving capability to service its five-year exploration effort offshore western Canada. Ocean Systems, Comex, and all the other corporate-backed dive companies were fighting to secure this long-term and strategically located contract. What chance would an individual upstart, with no bell and no helium capability like Phil Nuytten have? By all counts “none.” So what did he do? He immediately got with Cal Dive, who he knew had the helium diving expertise as well as access (through Reading & Bates) to a bell system, to form a 50-50 owned partnership, “Can Dive.”

On top of that, Phil’s Canadian partner was world renowned wrestling champion, Don Leo Jonathan, western Canada’s hero. A natural born master of creative marketing, Phil must have played these cards perfectly. To the industry’s astonishment, Can Dive walked away with this five-year contract, thus providing another cornerstone for the formation of Oceaneering.

In the Gulf of Mexico, where Cal Dive did not have a presence, but where they had worked with World Wide Divers, the sale of deep water parcels off Louisiana was expected to lead to big opportunities. Globally, some sources were predicting that the approximately $3 billion that the oil industry had spent on offshore drilling and production in 1968 would grow to $25 billion by 1977. As a small company, however, Cal Dive faced a major difficulty if they were to keep pace with their much larger competitors. Besides not having a presence in the Gulf, one glaring obstacle among others was lack of capital.

The late sixties were heady years for corporate America. Industrial giants were growing but their stock valuations were lagging. Voilà, to reverse this picture, many conglomerates acquired dive companies to excite their shareholders with visions of producing unprecedented amounts of precious metals and minerals from the deep ocean, including vast oil discoveries. Thus virtually all the privately owned diving companies were snapped up.
had a drilling division and construction division, both utilizing divers. Santa Fe’s offer was $430,000 with an earn-out that could be worth an additional $300,000 - and equally as important, the promise of career jobs for the Cal Dive owners just tending to Santa Fe’s in-house subsea needs. Cal Dive was given 45 days in which to either say “yes” to Santa Fe or the offer would expire.

FINDING A BETTER WAY

Selling to Santa Fe would provide the partners with cash and security, but Phil Nuytten wasn’t satisfied. He cornered Lad and challenged him. He reminded Lad of why they all joined in the first place: “Not to have idiot bosses to report to, and to be able to do our own thing the way we want.” Lad agreed that there must be a better way.

In the midst of all these buy-out offers, recognizing his ignorance Lad went to a seminar on mergers and acquisitions to find out how earn-outs worked. It was at this fateful conference that destiny stepped in, in the form of a young man who was to become Cal Dive’s 

/ Oceaneering’s financial architect / strategist and Lad’s lifelong friend. His name was Matthew R. Simmons. He was employed as a post-graduate researcher at Harvard University. Lad at first thought “he was a kid who wanted to learn about diving.” He was soon to learn otherwise. After hearing of Cal Dive’s buy-out dilemma, Matt convinced Lad to allow him the thirty days (the amount of time before the Santa Fe offer expired) by which time he would bring a firm offer of over $300,000 for a minority position, the amount of funding Cal Dive needed, without any buy-out. Working at it night and day, within ten days, Matt created a compelling prospectus on Cal Dive. Thirty days later, Matt showed up with a signed Letter of Intent from a group of venture capitalists specifying $350,000 for a 30% stake in the company. Phil and Lad rejoiced and even the partners who had been skeptical jumped in. Phil’s Can Dive was an integral part of the new corporation they named Oceaneering. Lad says he thought of the name as more accurately representing future diversity and geographic expansion.

“Oceanologists study the ocean. Oceanographers map the ocean. Oceanographers do work in the ocean.” Had destiny not stepped in when it did, there would have been no Oceaneering and none of the other companies spawned by the Cal Dive-Can Dive-Oceaneering heritage. Equally as important as the new capital was that a brand new Oceaneering Board of Directors was formed featuring reps from the venture capital groups. “The wisdom and expertise they provided was invaluable.”

Lad told his partners that aside from the new Board, the survival and success of Oceaneering would depend on being able to attract new operational blood, specifically the kind of people who could provide everyday financial control and executive experience. The existing line-up could not provide this. To recruit such individuals at the pay level Oceaneering could afford, Lad sold the idea of minimal pay in turn for a piece of the action e.g. sizable stock options. They came. The result was fantastic. This “stock for pay” idea worked!

A few months later, after...
Then, in the spring of 1971, Lad got a telephone call from Nick Campise, the president of Divcon, saying there was an opportunity, if Oceaneering was interested, to talk to the parent company, International Utilities, about buying Divcon: a surprising suggestion given that Divcon was roughly five times the size of Oceaneering.

Campise’s call to Lad came at the last minute of Divcon’s eleventh hour. For the previous two or three months, International Utilities had been negotiating with Henri Delauze to sell the company to the French firm Comex. Several of the conglomerate’s representatives had even spent a week at Delauze’s house in Marseilles. Now that the parties had settled on a purchase price, all that remained was to sign the papers. Lad’s reaction when learning of this was strong and immediate. He knew that if the deal went through, the Comex-Divcon combine would command 80% of the world diving market, and even Oceaneering with all its tenacity would have little if any chance to grow. Faced with that frightening prospect, Lad persuaded the Oceaneering board that although the company had neither the resources, organizational capacity nor expertise necessary to acquire and run Divcon, they had to go for it – and now – before this window and Oceaneering’s future closed. Amazingly he and Mike got the board to agree.

The negotiations took place in Philadelphia at the national headquarters of International Utilities Corp. It took place from late afternoon until late at night just before Delauze and his general manager, Lamazou, were to arrive to conclude the sale to Comex. Representing Oceaneering were Lad, Mike Hughes and Johnny Johnson, plus a member of the financial staff and the senior partner of the company’s law firm.

Under the pressure of the imminent arrival of the Frenchmen, the discussions were tense. "We had to do a lot of fast talking and fancy footwork to convince International Utilities we could pull this off, especially because we didn’t know ourselves if we could," Lad recalled. "At a critical point in the negotiations, when we had to confess we didn’t have the promised money, their Vice President of Divestitures, Joe Griffin’s blood boiled. He stood up and walked out. But his financial guy stayed. In the end, Griffin came back and made the deal. Octopus Divcon had been acquired by upstart Oceaneering. Lad
later said, “It’s a good thing we didn’t know all that was in this Pandora’s Box… Divcon’s situation was even worse than we’d imagined.” Right or wrong, the minnow had swallowed the whale. Delauze and Lamazou were boarding the flight in Paris when they got word, through a telex to Air France, not to come.

MOVING TO HOUSTON

After the buy-out, Oceaneering moved to Divcon’s headquarters in Houston. Suddenly this relative upstart of a company found themselves the owners of an octopus-like concern whose tentacles extended around the globe. The whole thing had taken place so fast that the new boys had no idea where all the contracts were or even how many subsidiaries and affiliated companies Divcon had. “Making such a deal was crazy!”

Lad described that what happened to him next was like a blind man walking through a mine field… things blowing up seemingly in every direction. Customers were calling from Nigeria, Iran and everywhere asking why dive crews weren’t showing up; divers’ wives calling and asking why paychecks weren’t showing up and worst of all, a series of diving accidents occurred, including four fatalities.

The OI takeover depended on retaining Divcon’s Eastern Hemisphere VP and his management team. While pretending to be part of the new set-up and being paid handsomely, this pre-buy-out team had secretly formed Deep Six Ltd. Still in control of Eastern Hemisphere operations and administration, they systematically and covertly torpedoed ongoing contract relationships, diver/employee agreements and equipment shipments. Chaos and confusion reigned. In the midst of this nightmare was a brave Nigerian secretary. Seeing Lad’s despair, she pulled out a book of code names and at personal risk told Lad about the many strange goings-on as witnessed from her vantage point in Lagos. Putting two and two together, and with emergency legal help, within 48 hours these Deep Six saboteurs were served, then judiciously busted and forced to flee to England. The Deep Six commercial damage got repaired but not the human wounds.

While all this was going on, other Divcon foibles were rearing their heads. Over-the-side davits for lowering the huge double-lock Seatask dive systems were breaking off their bases, one-inch lift wires were parting and over-sophisticated breathing gas systems fatally malfunctioned. Then there was the hard to explain series of scuba gear fatalities. What had Oceaneering bitten off? Simultaneous decisions had to be made across the board. “There shall be no further use of scuba gear on any job for any reason.” Divcon’s monstrous two-story Seatask dive systems were chopped in half – eliminating handling system catastrophes; highly sophisticated Draeger semi-closed breathing systems were tossed out, replaced with simple and rugged Rat Hat systems. On top of this, Divcon, perhaps out of desperation, had taken full-on dive system contracts with dive crew charging $16,000 per month all-in. “No wonder they lost millions.” Under Oceaneering, monthly contract rates doubled. Customers screamed. However, once they saw that operational mishaps no longer occurred (which had interrupted the entire program), they stopped complaining. No contract was lost.

“I spent my time on these drill rigs going totally out of my skull trying to get these British divers, who were darn
cost of these engineering divisions was nearly $2 million. After the revamping of the Divcon dive systems, this entire engineering/service group was eliminated. Oceaneering’s operating philosophy was that each and every part of its on-site equipment needed to be doubly strong and simple enough to enable its dive crews to handle breakdowns independently, without project shutdowns and not having to wait for spare parts and engineers to show up.

STEADY AS SHE GOES

By the end of the first year after the buy-out, defying predictions that they had bitten off more than they could chew, Oceaneering had put the combined company on a reasonably even keel both financially and operationally. They even made a profit. Tom Earls decided to move from headquarters in London to operations headquarters in Great Yarmouth. Lou Tapscott was brought in from Singapore to head up all Eastern Hemisphere operations and utilizing his long-established state-side client connections, firmly established Oceaneering as a North Sea rival to be reckoned with. Through the successful Divcon acquisition, Oceaneering had become one of the two biggest diving companies in the world. The other was Comex.

From 1969 to 1975, Oceaneering’s turnover rocketed from $600,000 to $55 million. Admittedly, it was a period of rapid growth throughout the industry; but the company must clearly have been doing more than a few things right to expand at such a pace. The most important elements, Lad thought, other than not having a parent company, were its personnel and operating philosophy:

“Oceaneering consisted of hard-core, hard-working people who knew the business, with a management that understood the need to let the field people run the operations. Our job at corporate headquarters was to be ‘gofers’: to get financing, provide equipment for the contracts, come up with new diving tables or procedures as the field guys decided we needed them, and to act as a support group for our diving superintendents. That was our gospel. The most important guys in Oceaneering’s world were those diving superintendents, not the guys back at corporate headquarters.

“Our operations managers and area vice-presidents were all ex-diving superintendents who’d come up through the ranks. My personal belief was that it made more sense to educate an experienced diving superintendent, a guy with a proven record of decision making and balls, to become an executive than to try to get a Harvard Business School graduate who knew all about management theory to understand and manage a bunch of hard-ass divers. I think in the end that was the single most important bit of wisdom that separated Oceaneering from the rest.”

In 1974, to the astonishment of much more qualified marine contractors, Occidental Petroleum chose Oceaneering to install a mile-long pipeline segment from onshore out to where J Ray McDermott was completing the laying of a 30-inch pipeline that was to bring oil from Occidental’s Piper field to the Orkney Islands, a distance of 128 miles. It was the biggest and most challenging project Oceaneering had ever undertaken, one which required skills and experience beyond any that Oceaneering possessed. Complicating matters was that the pre-job survey was faulty, showing sloping sand outward from the shoreline. Instead, a half mile of ragged reef tops, much of it being pounded by Scapa Flow’s relentless breaking surf, was discovered. Fortunately the job was on a time-and-material basis, not on a lump-sum basis. Construction veterans were pulled in and along with Oceaneering’s very best, a giant sized crawling triple drilling machine got built and worked.

The SAAB SUB: Imagine Lad sitting in a control cabin wearing an electronic, remote-control helmet with a pair of robotic master arms in his fists, flying along the sea floor inspecting and collecting heavy debris. When he looked up or down or turned his head or reached out to grab something, this magic vehicle obeyed his physical commands. This was the brainchild of collaborators Saab Scandia and General Electric, led by Project Manager Phil Nuytten. SAAB SUB was too much, too soon. It was later replaced by today’s much less-expensive and less-sophisticated ROVs. This experience, limited as it was, is still the most exciting underwater experience Lad ever had. Courtesy Nuytco Research Ltd.
The crews blasted 3,000 feet of underwater trench 15 feet wide and a 3,000 feet long right-of-way out into 350 feet of water. In all, over 50 small boats and various vessels had to be brought in and managed. The deadline for meeting up with McDermott’s pipe lay barge was met. Oceaneering chalked up a profit of about $6 million on some $12 million worth of work. More than that, Oceaneering was recognized as a premier can-do contractor.

At the same moment in time, Oceaneering and Knutsen, a Norwegian ship owner, formed a joint venture to supply one of the industry’s first diver support vessels, the Constructor. Knutsen would supply the ship and crew. OI’s role was to win the contracts, supply the subsea capability and run the project. Liking what they saw, North Sea operators kept the Constructor busy, awarding the JV back-to-back contracts with a full package rate of $36,000-odd a day. Eastern Hemisphere Operations had quadrupled their turnover in the space of two or three years. On the added strength of the Occidental pipeline and the Constructor returns, in 1975 Oceaneering “went public.”

The introduction of prime contracting meant that oilfield diving went from being a largely labor-intensive business to a largely capital-intensive one: a change that would become still more pronounced in the latter 1980s with the widespread adoption of Remotely Operated Vehicles (ROVs).

Nowhere was this more so than in the technology-driven North Sea. Previously, in what was cynically referred to as the meat business, taking on a contract was mainly a question of rounding up the necessary divers and sending them out to work for large marine construction companies or ship owners. Nearly all the diving contractor revenue came from marking up the personnel, very little from the equipment. However, once the construction phase got under way and dive companies like Comex and Oceaneering provided the ships and project management in the deep waters of the northern North Sea, the balance began to shift. As Lad noted:

“During those years the diving industry changed its profile from companies that had a turnover of two, three, five or ten million dollars a year based on diving services, to companies whose turnover was thirty, forty, fifty million dollars a year, simply due to the charges connected with supplying the ships. A diving system and crew might go out on a monthly contract basis for anywhere from $30,000 a month in hard times, up to $75,000 a month in really good times: that amounts to $1,000 to $2,500 a day. With the Constructor, we offered the same dive services but with the dive support ship as well at $36,000 a day, base price: that’s a lot of bucks coming in!”

Surprisingly, although the overhead increased, managing a ship was not so different from managing a diving system. The capital investment was measured in millions for a ship, and in a few hundred thousand for a diving system. So the big charge was for the equipment. As a result of that, the diving companies grew from a second-level service group to a key part of the development of the North Sea. Having once broken the ice as far as offering total ship services—on which Comex paved the way—it was then a natural step to offer project engineering services, underwater pipeline welding and other high dollar value services from the same ship. So the big players in the oil patch were no longer just the drillers and large construction/pipe-lay contractors. The dive companies had emerged. Oil companies had realized that it was the company responsible for what took place on the seafloor that dictated job success or failure, and not the company who just owned the ship. It was at this point, when full service DSVs became available, that dive contractors were emancipated and drove their own destinies.

Later, after the Ekofisk blowout, Phillips Petroleum began construction of the first oil company fire-fighting and diving support vessel, a semisubmersible called the Phillips SS, which was to remain in this enormous Ekofisk field ad infinitum. Every North Sea dive contractor fought with no holds barred for the upcoming five-year extendable full services contract. At the time, this would have been the most valuable single contract ever let. Subsea International (Odeco owned), Comex, 2W (Taylor Brown & Root) and Ocean Systems had all invested heavily in perfecting the very demanding technology of underwater pipeline welding.
Oceaneering, although good at many things, had never attempted underwater welding. Yet once the smoke cleared, Oceaneering was selected and its future was further strengthened.

**INDUSTRY IN THE TANK**

In 1976 the industry took a nosedive. Seemingly overnight, drillships were docked (along with OI dive systems stashed), new construction budgets were slashed, industry service companies were taking a beating and by 1977 many were having to sell out or go under. Oceaneering lost its source of its biggest revenue producer, drillship contracts. The catch 22 was that in early '76, in order to keep pace with the number of newly ordered drillships, Oceaneering placed orders for $11 million worth of new dive systems and $3 million worth of construction barges. By the time this equipment was actually delivered, the projects that were going on were so heavily competed for that rather than lose money, huge amounts of inventory (drillships, supply ships, dive systems, etc.) were "stacked." The result was that after a decade of astonishing growth topped off with 1975's record $7 million after-tax profits, when the major sources of income declined, so did OI's profits. Still, OI made over $3 million in profits for 1976 and 1977. Lad's struggle to put OI on top again was knocked off its tracks. Instead of leading a recovery cycle, Lad found himself embroiled in an unexpected battle with giant Chicago Bridge & Iron, covertly planning a takeover.

This is an untold story which according to Lad is too ugly to describe in detail, even now. While Oceaneering's management was struggling to survive a down market, a large and very powerful inside takeover effort was waged behind the scenes.

The almighty Chicago Bridge & Iron had set its sights on having Oceaneering become its entry point into the lucrative offshore market. Through a series of stock purchases, CB&I went from taking a seat on the board to taking over the chairmanship – having unlimited access to all company information. Lad was promised by CB&I's highest executives that there would never be a takeover attempt. Nevertheless, once in place, the new CB&I chairman was making tentative deals with some of the venture capital investors to privately purchase what would have been enough shares to control the company, thus eliminating any stoppage of a CB&I acquisition. In the position of company chairman, CB&I's man was using insider knowledge - which is an absolute conflict of interest. Lad, once learning of this move, reported it as such and ultimately the CB&I guy was removed. But having their chance to cash in their chips be blocked by Lad did not sit well with those involved board members. No love was lost between the board and Lad.

In the end, thanks to killing the CB&I takeover attempt Oceaneering survived as an independent entity, but Lad had alienated himself badly with the controlling board members. There would be no going back. The company needed a CEO strictly devoted to company business and who didn't carry fresh wounds from his battle with several board members. Bringing in a new CEO was needed. Lad actually helped recruit him. Lad was out! His emotions ran high! Oceaneering had been his baby!

"Without a second thought after my tempestuous departure from Oceaneering," said Lad, "I called my broker at Lehman Brothers on Wall Street (they were Oceaneering's underwriters) and instructed her to sell my Oceaneering stock, all 300,000 shares, all the next day. She was flabbergasted and told me that no decision could be worse, to have the CEO dump all his own stock like this would absolutely trigger a huge drop of the stock price, perhaps to 1/3 of its actual value. I finally convinced her that what it was about was me having a clear mind to go forward, that for me it had never been about the money. All those around me, then and since, have told me how stupid this was. I respond, it may have been stupid for you but not for me. To this day, I am happy with my decision."

He needed to let go and think ahead without conflict. Lad’s position today is that it had not been for the yearlong takeover bloodbath, having to fight off internal fires, that same effort could have been put operationally and perhaps the 1978-79 loss period would have been mitigated. In any event, even though the new CEO was soon to resign and be replaced, the company’s roots proved strong and as the industry came back, so did Oceaneering.

Lad’s struggles with the board triggered other high-level resignations: Don Sites, executive Vice President, John Swinden, Vice President, Asia and Mideast, and Rick Foreman, Office of the President, handling all executive and financial matters. Key executives as they were,
came back to manage the Cal Dive partner, Bob Ratcliffe, returning from Australia, ex-at least reasonable. Then, Morse, the challenge appeared world expert, Dr. Daniel Island and the guidance of a grant, collaboration with USC's to a $250,000 government interesting challenge. Thanks from scratch was a most spawn and grow abalone to me and now the least I could opened up a whole new world said Lad. "That industry had stocks of abalone in the wild," California's diminishing time to pursue my longtime cheerleader. Lad was happy being a great money was coming in again. contracts were landed and these guys never rested until in the world. Sure enough, than any other like-group industry and its key players Foreman knew more about the Sites, John Swinden and Rick Foreman. Lad's partners, Don Sites, John Swinden and Rick Foreman knew more about the industry and its key players than any other like-group in the world. Sure enough, these guys never rested until contracts were landed and money was coming in again. Lad was happy being a great cheerleader.

"Most of all I had ample time to pursue my longtime dream of replenishing California's diminishing stocks of abalone in the wild," said Lad. "That industry had opened up a whole new world to me and now the least I could do was a little payback. Putting together a combine that could practically research and then spawn and grow abalone from scratch was a most interesting challenge. Thanks to a $250,000 government grant, collaboration with USC's Marine Laboratory at Catalina Island and the guidance of world expert, Dr. Daniel Morse, the challenge appeared at least reasonable. Then, returning from Australia, ex-Cal Dive partner, Bob Ratcliffe, came back to manage the operation.

"I was fascinated when using the Laboratory's microscopes that I could witness microscopic-sized newly spawned abalone bouncing along an invisible moonscape trying to escape bigger microscopic predators," said Lad. "Of three million new spawns, only 30,000 or so escaped the first few weeks. By the time they were big enough for planting, we were lucky if 3,000 had made it. Having obtained California's very first open-ocean four-acre lease at San Nicolas Island followed by the planting, nothing could be more exciting than to picture an abalone-built causeway running between the island and Long Beach. Then, in its typical wisdom, the US Fish & Wildlife Service chose the same area at San Nicolas to helicopter in about 200 sea otters, theoretically as a reserve colony in case of an oil spill hitting their Monterey protected range. (Sea otters are prolific eaters of shellfish, abalones in particular.) Not only was the government plan a complete disaster, but its other effect was to kill any further interest on my part on planting abalone in the wild."

New Cal Dive's first success was landing a couple of two-year contracts with the Egyptian oil company, Gupco. Meanwhile, Sites had been scouting the US Gulf Coast and had met Don Terry, the owner of International Oilfield Divers, a growth-minded company in Lafayette, Louisiana. The year before, International Oilfield Divers had done about $3 million worth of construction diving and had built a solid reputation for having the best divers in the Gulf. A deal was struck to have Don's company IOD merge with Cal Dive and for Don Terry to have a seat on the board as a full partner. In the winter of 1980–81, Cal Dive moved its headquarters to Lafayette. The following summer Lad did what he did best and convinced Marianne Galletti to throw her J & J Diving Company of Pasadena into the pot. Cal Dive then had a new operating base in Texas. The company was now firmly rooted. The next feather in Cal Dive's cap was Sites and Lad getting in bed again with their old friends at Occidental Petroleum and walking away with a lucrative five-year contract to build and operate a 1,000-foot saturation system for a new Penrod rig. This was a special coup since Cal Dive did not even own a diving bell at the time, let alone a 1,000 foot saturation system. The next event was getting an almost identical contract with Cities Service. What the dive world was not aware of was a behind-the-scenes deal that Lad had struck up with Delauze / Comex. Cal Dive was only too happy to pay Comex below bargain rates to put Comex's stockpile of idle equipment to work. It was a win-win situation. A contract for a third 1,000-foot system, with Union Oil in Spain, followed.

Within four years Cal Dive was operating in five countries and doing $11 million in sales. Lad and John Swinden were busy seeking joint venture DSV arrangements for a North Sea break-out. Financials were outstanding and prospects were bright. Knowing how quickly things change in the world of oil, the partners decided it was time to cash in – to enlist the services of Simmons & Co. Everyone knew everyone, and Simmons drew up a prospectus and within short order four potential buyers were chomping at the bit. Ten days later Cal Dive had a letter of commitment from Diversified Energies, a large public utility company in Minneapolis. As a testament to the absolute integrity of Simmons & Co, both the seller and the buyer were represented by Simmons (partner Nick Swyka versus partner Matt Simmons). When the dust cleared, Cal Dive maintained its identity, board members, management and all, but as a separate subsidiary of DEL. The Cal Dive partners were cashed out and so long as they continued to perform, had well-paying positions.

**SUDDEN CHANGES**

In January 1985, Lad had a devastating skiing accident, which put him permanently in a wheelchair and changed his involvement with Cal Dive. Lad elaborates: "Having transferred to Santa Barbara Rehabilitation Hospital still with a halo attached to my head, by long distance phone calls and occasional meetings in the hospital with my Cal Dive partners, I kept in the thick of things and then against traditional hospital regulations, flew off to Minneapolis to attend an important Cal Dive Board meeting. As it happened, my lifelong Singaporean friend, Brian Chang, had flown to Santa Barbara to surprise me, only to find out I had just left for Minneapolis. Not giving it a second thought, Brian caught
belongings and wheelchair were in the cargo hold of the United airplane. From that point on, climbing up and down plane exit stairs and then through the airport(s), Brian carried me over his shoulder, and finally threw me in a rental car so we could make our exit to the Albuquerque terminal to catch a different airline. The only problem was that my belongings and wheelchair.

“Having Linda as my life partner makes life worthwhile,” says Lad.

“Right after surgery to reattach my head to my vertebrae, and when I first regained my voice, I occupied myself having long distance phone calls with the NOVA group concluding a plan to salvage the Spanish gold-carrier, The Capitana San Jose, carrying a documented $3 billion in gold bullion,” said Lad.

“An arrangement between the Columbian government and the Swedish government got finalized, and Cal Dive began organizing the recovery effort. At that time, the Columbian Cartel war broke out and all plans were kiboshed. The gold bullion still rests in 850 feet of water four miles offshore of Cartagena.”

Much later, after DEI had appointed Jim Nelson to oversee their investment, they offered to reimburse Lad as president, wheelchair and all, if he would agree to spend two weeks per month working full time in Houston. Lad declined.

I enjoyed three days of the Offshore Technology Conference,” said Lad. “Then, while flying along on Houston’s Loop 610, my Chinese helper who had learned to drive but not understanding the rules of the road, side-slammed another vehicle trying to exit, spinning both cars on the freeway and onto the shoulder. Thank God no one died and thank God for dear friend Peter Barbara, who once again made sure that his insurance company paid the bills. Considering what risks I was putting others in, I quit doing my monthly trips to Houston.”

Needing something worthwhile to put his energy into, he co-founded two hyperbaric oxygen therapy companies, Oxycare and later Clinical Hyperbaric Technologies, to provide oxygen treatment services to hospitals, saving affected individuals from non-healing wounds and amputations. He also co-founded the Marine Mammal Consulting Group with Peter Howorth, arguably California’s foremost marine mammal and wildlife expert, hired by industry and government to protect marine mammals from harm during offshore projects.

Lad founded Outlook, a wheelchair-bound support group, in 1987.

NOT SLOWING DOWN
His latest and most interesting project has to do with a new breakthrough technology aimed at lessening one of life’s most debilitating issues, bone health preservation, bone fracture prevention and bone healing. The inventor of the atomic microscope, Dr. Paul Hansma, exclusively assigned this technology to a young start-up group he trusted to convert the technology into hand-held medical devices capable of measuring/diagnosing bone strength condition within the human body – never before possible.

Called Active Life Scientific, these game-changing tools are now being employed in select laboratories and research centers around the globe. FDA approval is being sought. Lad was made Chairman of the Board in 2014.

Mindful of his youth in the Bronx and the impact the Boys Club had on him, in 1999 Lad became a member of the Board of Trustees of the Santa Barbara United Boys and Girls Clubs, serving 6,000 at-risk youth throughout Santa Barbara County.

Getting tired of having oil companies blamed for polluting Santa Barbara’s pristine beaches, Lad not only spoke out, he co-founded an educational advocacy group first called “BOB” (Bring Oil Back), later renamed “SOS California” (Stop Oil Seeps) committed to providing the public with the truth about where beach and air pollution actually come from – natural oil seeps – and that by draining the high pressure oil reservoirs, the natural seeps would stop and the pollution problem would disappear.

He says, “Even though new offshore drilling is still banned, at least the industry is not longer blamed for pollution.” SOS California still fights the good fight.

As the Historical Diving Society USA began to form in Santa Barbara, Lad attended the 1992 Inaugural Meeting and was appointed to the HDS Advisory Board, where he has dispensed wisdom and advice for over two decades.

For his services to the diving and oilfield industries, Lad has received the Historical Diving Society Pioneer Award, the Offshore Energy Industry Pioneer Award, and was inducted into the Association of Diving Contractors International Commercial Diving Hall of Fame.

Other awards include the Coalition of Labor, Agriculture and Business Lifetime Achievement Award, the Santa Barbara United Boys and Girls Clubs Lifetime Achievement award, the City of Santa Barbara Citizens Award, and the Academy of Underwater Arts & Science’s 2014 NOGI Award for Distinguished Service.

Quite a list of accomplishments, to be sure. However, as Lad points out, “Were it not for the 25 years of support and counsel of my partner in crime, Patricia Putnam, there would not be a list of accomplishments.”
The 2014 event began during the first days of the soccer World Championship in Brazil, nonetheless it was attended by more than fifty collectors of vintage diving gear from nine different countries, who definitely knew where their priorities in life lay. Seven different languages could be heard, but as most of the guests spoke English communication amongst them was not a major problem.

Several European Historical Diving Societies were represented by directors or officers: Jean Gerpinet, Chairman of HDS France;

Bjørn W. Kahrs, honorary secretary of HDS Norway; Jirka Lukeš, Chairman of HDS Czech Republic; Wieslaw Wachowski, Chairman of HDS Poland; Franz Rothbrust, Chairman of HDS Germany; and Peter Dick, Editor of the Historical Diving Times of HDS UK.

The meeting began on Saturday afternoon, in the large historic vaulted wine cellar of hotel Palatina in Neustadt. It was a wonderful meeting place for a general get together, which was followed by four lectures.

IMPRESSIVE SPEAKERS

The evening was opened by Dieter Harfst, HDS Germany, a retired professional diver, with his presentation: “It Does Not Work Without Divers - The Work Carried Out by Divers in Hydraulic Engineering.”
Dieter gave a one-hour Beamer presentation, showing pictures he had taken at underwater construction sites around the globe during his 45-year professional working life. There were many professional divers among our guests and I am sure they all enjoyed Dieter’s lecture and pictures.

Jens Höner, HDS Germany, navy diver’s presentation was: “Diving Rebreathers.”
Jens gave a comprehensive survey of the different rebreather systems, grouped into circulatory and pendulum systems. He explained the way each system functioned, their technical components and the control systems involved, and demonstrated everything by way of pictures and charts. After the technical part of the talk there came an interesting exploration of “Dive times in relation to diving depth” and “Critical oxygen partial pressures.” Jens then finished with the use of oxygen rebreathers by military, science and private persons and a presentation of modern and vintage rebreathers.

Bjørn W. Kahrs, HDS Norway’s presentation was “A History of Diving in Norway.”

Bjørn started with Corfitz Braem’s description of dive with a bell in Killstömmen, north of Bergen, in 1673, which was used by diver Jacob Vinschaenk to salvage 500 copper ingots. He then showed pictures of a reconstructed diving dress and bell. Moving on to early bell diving in Denmark and Norway, which were a united kingdom between 1380 and 1814, Bjorn covered both salvage and under water construction and explained Marten Triewald’s two different bells. Bjørn then covered some early bell diving research, which took place at the Norwegian Underwater Institute at Stavanger, where he made a 30-meter dive in a replica of Triewald’s bell. During this dive he carried out some experiments covering the level of CO² and water level in the bell in relation to depth and dive time, and also diver visibility when looking out under the bell rim in relation to diving depth.

Other subjects and historical dates that he covered included: Hard hat diving in Norway from 1845 to 1850 with gear from the UK and 1867 from France; German military hard hat diving during WWII; the 1950s, when there where about 200 hard hat divers working in Norway; 1953, when Norwegian combat divers came into being, using Dräger and Pirelli rebreathers; 1966, when Norwegian oil platforms first began being used in the North Sea - a form of commercial diving that still continues in the North Sea.

The final presentation was by Peter Dick, of HDS UK: “Boyle, Hooke and Halley Diving Advancements in Late 17th Century England.”

This presentation covered the work of the Royal Society of London by first looking at the introduction of Boyle’s Law and how his assistant, Robert Hooke, who, on becoming the Society’s curator in 1663, introduced experiments for supplying a diving bell with air while it was underwater.

Hooke also introduced ideas for a diver to be able to leave a bell and work outside (an early ‘diver lock-out’), including one where the diver breathed
from a (self contained) air supply. They hired a diver and it appears to have been tried out a number of times - the first SCUBA? In the 1680s diving came to the fore again with Capt. William Phips's successful salvage of a vast treasure from a wreck off Hispaniola.

Consequently, the 1690s saw some 30 patents for diving apparatus in England, many with associated projects. Edmund Halley, of comet fame, was a partner in one and, in 1692, he attempted to salvage elephant tusks from a wreck off the south coast of England. Unsuccessful, he was still to send letters to the society describing his personal descent and the experiments on light and sound that he carried out underwater. This included an undated method of supplying the bell with air, which he borrowed from Hooke without crediting him.

Halley went on to perfect his ideas on diving in letters to the Society in 1717 and again in 1721, when, again expanding on Hooke's ideas, he described a method of a diver leaving a bell underwater while breathing from a hose connected to an air supply attached to the bell (bell 'lock-out' with an 'umbilical' supply). This we know was later to be used successfully on the wreck of the Royal George (sunk 1782). Unlike most society members, Robert Hooke was a poor man and he was treated very badly. He died in 1703 and when Isaac Newton became Society President in 1704 he had all of Hooke's work and pictures of him destroyed, as the two had argued. It is only now that Hooke is being recognised as a polymath and almost certainly an equal giant among the famous scientists of his age.

Bjørn and Peter lectured in English, without using German sub-titles in their Beamer presentations. I later heard from a guest who does not understand English very well, that he could follow the lectures by looking at the pictures and, most importantly, the "body language" and "facial expressions" of the lecturers. The lectures were followed by an excellent dinner, where the local wine
and beer were put to the test, on what was a beautiful warm summer evening.

On Sunday we gathered at Lake Marx to show our collections, trade, sell and dive. If there were any worries that the equipment shown would be the same as last year, then they were not well founded as it turned out that quite a lot of the gear on show had never been seen before. All kinds of vintage single and double hose regulators, vintage under water cameras and many other kinds of gear were used for a dive in Lake Marx. Dr. Thomas Müller and friends took an under water walk using his Dräger DM 40. We had a large public audience this year and it seemed that they were very attracted by our exhibition and activities, as many guests took pictures or were filming.

Every year of course has its special highlights and it must be pointed out that our friends from the HDS Czech Republic brought a wonderful barrel of Czech Pilsner again and set up their own pub. This has to be a very good tradition.

Needless to say, Sunday wound up in the evening at a restaurant near Neustadt, where some 35 of us sat down for an open-air meal. Good food, good wine and good company. Monday morning saw some of us meeting up for a guided tour of the ancient town of Neustadt, which has many historical buildings and an interesting history. This finished by sampling local white wine, followed by lunch in one of the town squares.

I would like to thank all exhibitors for bringing their collections. Only very few can be shown in this magazine. All collections have added up to the success of the event. Our special thanks to all helpers in the back ground, without their engagement the event would not have been possible. Another big thanks to my dear friend Peter Dick who has corrected my English spelling a bit.

The 2015 meeting will be held on June 20 - 21, so mark the dates in your calendar.

Michael Müller of HDS Germany set up an impressive alley of vintage and modern rebreathers which included: Dräger Kleintauchgerät 138 made about 1952; Medi Nixe, first version made in 1954; Medi Nixe, second version, made in 1955; Dräger Lt. Lundt rebreather, 1954; Dräger LAR I rebreather, probably made in 1965; Dräger LAR II rebreather from 1966; Dräger LAR V rebreather made after 1975; Dräger LAR VI.1 rebreather, modern version; Dräger LAR VII Combi , modern version; Russian IDA57 rebreather made about 1957; Russian IDA 76 rebreather made about 1976; East German RG-UF/M rebreather built about 1970, self modified version.

Pierre Meier, from France (left), explaining his helmets to Jaroslav Knotek, from the Czech Republic. From left to right they are: Rare Siebe Gorman Admiralty type, six bolt and hinged front light (only very few models like this are known to exist). Helmet number 8963, made in 1920 and Siebe Gorman never stamped the whole number on the brails, only the two last digits, i.e. “63.” The number 8963 is stamped on the helmet. Origin: E. REIMANN A.G. BASEL (Switzerland) a civil engineering and diving company. Middle: French no-bolt helmet produced by Charles PETIT, Paris. Not many were produced as the divers did not like the style because of safety issues as its closing mechanism could open under water by accident. The helmet came from the Rhine river port of Strasbourg which had employed divers. Right: A Brazilian helmet produced by PERSON in Sao Paulo. It was purchased at a marine antique dealer in Sao Paulo with the help of our friend Adair Ribeiro. This helmet was mainly used by Brazilian divers in the Amazon River looking for gold.
Louis Boutan and His Wonderful Book

By Sid Macken

La Photographie sous-marine et Les Progrès de La Photographie in an unusual hard binding. The binding (right) shows the Bureau of Fisheries stamp.

Normally, I cover cameras and housings in this column, and Nyle Monday does the book reviews. I can’t write about underwater cameras very long, however, without Louis Boutan coming into the conversation. Most underwater photographers know, or should know, that Louis Boutan is the man who established the science of underwater photography.

The culmination of his efforts in this field was a book on the subject published in 1900, a scant 114 years ago. So, this column is devoted to Louis Boutan’s wonderful, rare book, La Photographie sous-marine et Les Progrès de La Photographie. Since Nyle does the book reviews, this will be the history of a particular copy of Boutan’s book.

Louis Boutan, a highly respected French naturalist, was a veteran of expeditions to Australia (1880) and the Red Sea (1890), had published works on gastropods and reptiles, and held prestigious positions at the University of Lille and the University of Paris. To the benefit of all underwater photographers, he was posted to the University’s Arago Laboratory at Banyuls-sur-Mer on the southern coast of France in 1892. Also to the benefit of all underwater photographers, the director of the laboratory had the foresight to equip the lab “with all necessary apparatus, including aquariums furnished with continual streams of sea-water, a steamboat, various sorts of fishing-craft, a workshop, etc.” and a diving suit for the study of marine life in its natural habitat. Louis soon was taking his studies to the sea floor.

Boutan recorded the catalyst for his concept of underwater photography in an article for Century Magazine written in 1898:

“The strangeness of these submarine landscapes made a very deep impression on me, and it seemed a lamentable fact that they could not be reproduced in any other way than in a description which, however exact, was necessarily imperfect.”

He tried to make sketches while underwater but was unhappy with the result. Frustrated by the difficulties, he decided to attempt photography. Addressing his initial attempt he stated, “As it is not difficult to take a landscape in the open air, why, I asked myself, could I not succeed in making a photograph at the bottom of the sea? ... But when
I tried to pass from the dream to the reality I experienced some difficulties”.

This put Boutan on a ten year quest to perfect his ability to take photographs underwater. His book, *La Photographie sous-marine*, chronicles the first seven years of that quest. An amazing aspect of Boutan’s effort, considering that no one prior to him had done any extensive studies, is that although he had little to base his work on, by the time the book was published he had touched on almost every technical subject that modern underwater photographers contend with: camera and housing design, film emulsions (now replaced by imaging chips), natural light photography, artificial light photography, and the use of filters. In a short seven years, he had gone from thinking it might be possible to take pictures underwater, to successfully taking photos at
depths of 50 meters (165 feet) with the aid of electrical carbon-arc lamps. Among the other “firsts” that resulted from Boutan’s experiments, was the design, by an electrical engineer named Chauffour, of the first enclosed flashbulb.

Besides documenting Boutan’s work underwater, a full one-third of the book is a treatise on the advancement of photography in general. That’s the “et Les Progrès” part of the title. He discussed daguerreotype, collodian, and Bromine emulsions, as well as how color prints are produced. It is not too surprising that these subjects were included since the science of photography was still quite young and undergoing much study.

Several years ago, a copy of La Photographie sous-marine came into my possession. Although the book was
originally printed as a paperback, this copy is hardbound. It was purchased in 1903 and went into the Library of the US Bureau of Fish and Fisheries (now the US Fish and Wildlife Service) on May 2nd.

I marveled at the color plates, diagrams and photos. Then, I found the little sleeve affixed to the inside back cover containing the library card. Which marine scientists would have perused these pages? Which world famous ichthyologists, naturalists or oceanographers were inspired by these pages to follow Boutan into the sea with a camera?

I pulled the card out and quickly checked both sides.

Blank!

The book had sat on the shelf in the library of the Bureau of Fish and Fisheries for well over 100 years and had never been checked out!

There is a parallel which can be drawn between *La Photographie sous-marine* and another rare, early diving-related book. The other book, *The Compleat Goggler*, 1938, was the first book written on the subject of recreational diving. It eventually became so difficult to find that, in 1957, *Skin Diver Magazine* had the book reprinted. Likewise, *La Photographie sous-marine* has become very difficult to find, though interest in it has grown. In 1987, *La Photographie* was also reprinted. For both books, reprints as well as original copies are, today, highly sought after by collectors.

(Left) The official stamp of the US Bureau of Fish and Fisheries shows that the book was entered into the library on May 2nd, 1903.

(Right) The unused library card inside the back cover of a 114 year old book.

The cover of the 1987 reprint of *La Photographie sous-marine*. 
In the late 1940s a small group of divers came together to discover a way to continue spearfishing throughout the winter. They put together what would become the first dry suit. And today, in the new millennium, Aquala is still here, expanding and developing dry suits from sport and commercial divers.

Proud Sponsor of the Historical Diving Society USA
HELMETS OF THE DEEP

The U.S.N. Mark XII, Part II

This issue features a three-page update on the Mark XII diving helmet from the Summer 1976 issue of *Faceplate*, the U.S.N. divers magazine. Part I was featured in issue 79 of the *Journal of Diving History*.

The Mk 12 SSDS consists of a helmet assembly, a recirculator assembly, a dress assembly, and support equipment. The helmet, of fiberglass construction, may be used with either air or mixed gas as the breathing medium. The recirculator, using baralyne as a CO₂ scrubbing agent, is a modular add-on component of the mixed gas mode. The diving dress includes a dry suit, an outer chafing garment, a jocking harness, and lightweight diving boots. Two- and 4-pound lead weights, to a maximum of 40 pounds, fit into the thigh and shin pockets of the outer garment. A waist-located weight belt is provided for use when the diver is working in a current or turbulent water. Support equipments consist of a system test set, a system repair kit, a diving station flow meter, and an improved communication/strength cable.

In the air mode, gas is supplied from the surface umbilical through a non-return valve and tubing to the helmet supply valve. It then goes to the air supply diffuser and into the helmet, flushing CO₂ away from the diver’s mouth area, and then out the exhaust valve. The exhaust valve can be adjusted to provide a helmet ΔP of 0.3 psi to 2.5 psi at an average flow of 4 actual cubic feet of air per minute (acfm).

In the mixed gas mode, the breathing medium from the surface umbilical enters the recirculator manifold and is directed through a venturi into the helmet mixed gas ducting. The gas flows down across the faceplate and flushes CO₂ away from the diver’s face and into the recirculator return ducting located at the lower sides of the helmet interior. The mixture leaves the helmet by the return adapter, is “scrubbed” through a baralyne bed, and then is sucked back into the ventiluri stream. This scrubber system is designed to recirculate 90 percent of the gas mixture flowing through the helmet. Only 10 percent exhausts through the exhaust valve, while maintaining helmet CO₂ levels below 2.0 percent surface equivalent.

Two thermal protection diving suits are available with the air mode. For shallow, warm water conditions, a wet suit can be interfaced with the Mk 12 helmet fitted with an ambient exhaust valve and a neoprene neck dam. However, for colder and deeper applications, a Mk 12 helmet fitted with a variable exhaust valve and interfaced with a complete dry suit will provide better thermal protection.

In the mixed gas mode, a dry suit will be the standard configuration. However, it is planned to investigate the possibility of interfacing the Mk 12 helmet with the standard hot water suits used by the U.S. Navy.

The first prototype Mk 12 SSDS underwent technical evaluation (TECHEVAL) in the summer of 1973, during which time numerous problem areas were identified that required correction. By December 1975, new components—principally supply and exhaust valves, the basic helmet shell configuration, and the dry suit, outer garment, and harness arrangements—were redesigned or adapted to correct system defects. During the same...
period, new electrical connectors were identified and a system test set and a shipping and stowage container set were developed. Finally, a new Navy diving hose (MIL-H-2815E) was introduced, which will become the standard breathing umbilical for the Mk 12 system. In mid-1975, it was determined that the next TECHEVAL would be done in two phases, the air mode in the period of January to March 1976 (discussed below), and the mixed gas mode early in 1977.

The air mode test and evaluation plan is detailed in "TECHEVAL Test Plan, Mark 12, Surface Supported Diving System, T/S 283" (December 1975), prepared by the Navy Experimental Diving Unit (NEDU), Panama City, Florida.

OPERATIONAL FINDINGS:

System Characteristics: A summary of the test results compared to system evaluation criteria for both operational and technical characteristics is provided in Table 7. Physical characteristics are compared in Table 2. Test data to derive these tables came from all of the test dive series.

Unmanned Test Series: In this series helmet flow, ΔP, CO₂ level, and noise level were measured at depths from the surface to 300 feet of seawater (fsw) using NEDU's Ocean Simulation Facility (OSF). All design parameters were met with the exception that mid-frequency noise level exceeded the desired limit at depths below 100 fsw. This subject is further addressed in the DEFICIENCIES section.

Tool Test Series: Underwater tool testing was conducted using the hydraulic impact wrench, grinder, and cutter. In addition, underwater welding and cutting were demonstrated. All tasks were completed satisfactorily. Actual welding/cutting time was 2 hours and 51 minutes, with no apparent effect upon the diving system from electrolytic action. The welding shield allowed good vision underwater and was simple to use. When using certain tools, e.g., grinder, it was found that the diver required additional weight to remain planted on the bottom and to overcome the rotational forces of the grinder.

Maximum Limits Test Series: This manned dive series was a group of progressively deeper dives (50, 100, 150, and 200 fsw) and was performed under controlled conditions in NEDU's Ocean Simulation Facility.

Reliability Test Series: These manned dives were a sustained diving effort conducted from the Naval Coastal Systems Laboratory's Stage II, located 2 miles out in the Gulf of Mexico off Panama City Beach, Florida, in 60 fsw. Two new fly-away compressors were used to provide low pressure air to the fly-away diving console. In a 2-week period, 95 dives were conducted in the wet suit (swimming) configuration using the ambient helmet exhaust valve, and 96 dives were conducted in the dry suit (plodding) configuration using the adjustable helmet exhaust valve. All dives were satisfactorily completed.

Training: During TECHEVAL, two separate 2-week training periods were conducted for TECHEVAL divers from NEDU (Tool and Maximum Limit) and fleet divers (Reliability). Representatives from the Naval School of Diving and Salvage (NSDS), Washington, D.C., participated as members of each group. This 2-week period proved adequate to cross-train Mk V divers to the Mk 12 system.

DEFICIENCIES:

Helmet:

Noise Level: The single major discrepancy of the Mk 12 SSDS helmet is the excessive noise level at depths greater than 100 fsw, as previously noted. A new helmet liner material and an improved air supply diffuser will probably reduce the helmet noise level to acceptable limits. These components are presently being tested. On the other hand, considering the maximum length of the dive profile (5 hours), the Mk 12 helmet is almost within the desired sound levels now, since the basic noise level standard of 90 dB is established for an 8-hour period.

Breech Ring Latch Mechanism: On several occasions the breech ring latch was difficult to release. In the latch area, tolerances have been eased, and the problem is now corrected.

Metal Finish: The black chrome coating used on all external metal surfaces deteriorated in high wear areas, i.e., supply and exhaust valve handles. A new metal finishing technique called Impreglon™ is being...
investigated. Initial tests of Impreglon coated metals have shown exceptional resistance to salt water and dissimilar metal corrosion while providing a tough anti-friction surface.

Air, Electrical, and Mixed Gas Adapters: The compression O-ring seals used in these adapters leaked when not adequately tightened down, and they were responsible for some “down” time during TECHEVAL. These adapters have been redesigned to barrel O-ring seals, which will eliminate this problem.

Dress:

Harness Latch Mechanism: The harness latch mechanism became unfastened underwater in two instances during TECHEVAL dives. A positive securing device is presently being tested.

Dry Suit Sizing: The dry suits used during TECHEVAL were not sized for the U.S. Navy diver population. This required a one size down grading for all of the dry suits, i.e., medium became small, large became medium, etc. In a very few instances, it was determined that an extra, extra large suit size was required. This will be a subject for further review.

Boot Sizing: Two types of boot (off-the-shelf) were evaluated during TECHEVAL. In general, the boots were too narrow and sized too small. This problem will be corrected in future orders.

Support Equipment:

Communication Cable/Line Covering: On several occasions the polyurethane jacket covering the cable was severely cut by barnacles and the neoprene coating of the breathing umbilical was scraped but not badly damaged. This is the first recorded instance of damage to this coating in 4 years of Mk 12 diving. Careful reevaluation as to the suitability of this cable is required. It is likely that a substitute cable will be required.

CONCLUSION:

The Mk 12 SSDS air mode has completed TECHEVAL in a satisfactory manner and is ready in all aspects for operational evaluation (OPEVAL). Procurement of the Mk 12 SSDS air mode should proceed as scheduled.

The Mk 12 SSDS is a major step forward for the U.S. Navy compared to the Mk V system. The Mk 12 is lighter, has better visibility, is safer, is designed to meet the current physiological standards, and uses modern materials and fabrication techniques.

---

### TABLE 1

<table>
<thead>
<tr>
<th>Operational/Characteristics</th>
<th>Mk 12 Developmental Objectives</th>
<th>TECHEVAL Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Working Dive Limit (NWDL)</td>
<td>200 fsw</td>
<td>200 fsw</td>
</tr>
<tr>
<td>Maximum Dive Limit</td>
<td>250 fsw</td>
<td>200 fsw</td>
</tr>
<tr>
<td>Total Time of Dive Limit</td>
<td>5 hours</td>
<td>5 hours</td>
</tr>
<tr>
<td>Lower Temperature Limit</td>
<td>29° F</td>
<td>27.8° F</td>
</tr>
<tr>
<td>Higher Temperature Limit</td>
<td>120° F</td>
<td>120° F</td>
</tr>
<tr>
<td>Sea State</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maximum Water Current</td>
<td>2 kts</td>
<td>1.5 kts</td>
</tr>
<tr>
<td>Noise Level</td>
<td>&lt;90 dbA/hr</td>
<td>&lt;90 dbA/hr</td>
</tr>
<tr>
<td>CO₂ Ventilation, Surface Equivalent</td>
<td>Max. 2%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Flow Capability at All Depths</td>
<td>6 acfm</td>
<td>6 acfm</td>
</tr>
</tbody>
</table>

**NOTES:**

1. SOR 46-54 states NWDL as 200 feet of seawater (fsw); the Diving Manual states NWDL is 190 fsw. This latter value is the acceptable normal working dive limit.
2. Manned dives to 250 fsw were planned on two separate occasions. However, they were not accomplished due to the non-availability of the test facility. The system was tested during the unmanned tests to 300 fsw successfully.
3. Unmanned testing. Manned diving was limited in the lower temperature range to 35° F due to a cooling equipment malfunction and in the upper temperature range to 93° F by order of the NEDU Senior Medical Officer.
4. Limited by sea conditions prevalent during the test period.

---

### TABLE 2

**PHYSICAL CHARACTERISTICS**

**Buoyancy:**

Required: The system when manned is to be neutrally buoyant with minimum weight addition under normal operating conditions. Diver buoyancy control, both positive and negative, is required.

Actual: The Mk 12 SSDS (air mode) has proved to be neutrally buoyant with weight variations determined by diver preference. All TECHEVAL divers were able to demonstrate buoyancy control, both positive and negative. Some divers developed skills to provide very fine vertical positioning (hovering).

**Weight:**

Required: Dry weight of the system should be minimized. A system dry weight of less than 115 pounds in the operational air mode is desirable.

Actual: The Mk 12 SSDS (air mode) dry weight is 100 pounds, including normal diver weights of 40 pounds. This weight is approximately ½ the Mk V (air mode) dry weight of 195 pounds.

**Envelop Dimensions:**

Required: The diver, when fully dressed, will be able to pass through submarine and dive system hatches or climb, unassisted, through a cylindrical trunk 30 inches deep and 24 inches in diameter.

Actual: This has been successfully demonstrated in the air mode.
Dive the Big Blue: A Historical Affair, Volume II

Produced by the Historical Diving Society, Asia
Singapore: Asian Diver/Asian Geographic Society 2014
Reviewed by Nyle Monday

It was with pleasure that our offices received the second volume of Dive the Big Blue: A Historical Affair from the Historical Diving Society, Asia. The first volume set high standards with good-quality paper, beautiful photography, and excellent content, and the second “dive” into publishing proved just as successful. It is certainly a publication anyone interested in diving would want on their bookshelf.

Dive the Big Blue: A Historical Affair is neither a book nor a magazine in the traditional sense. It could be characterized as a cross between an academic style journal and National Geographic Magazine. Since the Asian Geographic Society manages the HDSA, the similarity is hardly surprising. The layout is professional and the content lives up to the presentation. Each issue contains an eclectic mix of materials, holding something for everyone.

The second volume of the publication is loosely divided into three subsections: The first section discusses the art of the underwater world, while the second section describes and illustrates diving helmets used in the Asia Pacific region. The final section addresses specific aspects of technical diving. Dive the Big Blue: A Historical Affair, Volume II’s first article, “Paintings of Cerulean Journeys,” was authored by Leslie Leaney. For those of us with a less-than-classical education, the term cerulean is derived from the Latin word caeruleus, meaning “dark blue, blue or blue-green.”

The article provides a survey of some of the earliest painters of the undersea world, ranging from Eugen von Ransonnet-Villez in the mid 19th Century to modern artists like John Steel. Images of the art are reproduced in full color, making them a veritable feast for the eye.

The artistic theme of the first section of the volume is continued with a timeline of the work of Wyland, an internationally known artist who also wrote the foreword to this publication. Seeing how the artist has developed from his earliest works in the 1960s to his current projects is revealing and insightful.

Wyland has been an active supporter of the Historical Diving Society for many years and, through the Wyland Foundation, supports many environmental art and education programs. Looking at his works, it is easy to understand why he is considered to be a major figure in the art world.

The volume’s first section is rounded out by “Out of the Blue: A Gallery,” a visual survey of the work of select diving and underwater artists. Ranging in time from the late 1980s to the present, the works of not only well-known names but also those readers may not be familiar with show a wide variety of painting styles, beautifully conveying the broad spectrum of emotions the sea has inspired over time.

The overarching theme of the second section of the
volume is the history of diving in the world, focusing specifically on the Asia/Pacific region. Presented as an extensive article that is subdivided into five individual yet interconnected chapters, diving historians Leslie Leaney and Bob Ramsay utilize Chapter 1 to introduce the topic. Chapter 2, “The Beginnings of Diving Helmet Manufacture,” cover the early days of helmet development by Augustus Siebe, as well as the Deane brothers.

This short, educational essay is accompanied by the beautiful full-page photography of several classic helmets. Chapters 3 and 4, titled “International Helmets Used in Asia” and “Asia Pacific Helmets,” feature large color photographs that illustrate well the types of helmets that were either used or manufactured in the Asian region. Brief descriptive passages accompany each illustration. Chapter 5, an excellent essay on “The Pearler Helmets,” completes the helmet survey with descriptions and full color photographs of a range of European and Asian helmets used in that regional industry. The photography is comparable to that of the best books on diving helmets, making this journal a valuable addition to any collector’s reference library.

The third section of the volume discusses aspects of technical diving. “Talking Tek,” a chapter by David Strike, discusses the history of mixed gas and oxygen open circuit and rebreather technology from the time of Henry Fleuss to the present day. At its core, the article also asks important questions about precisely how “technical diving” is defined, how it has been viewed in past and present by both individuals and various training agencies.

Additionally, it seeks to address the proper role of equipment in all of the previously mentioned instances. Strike does not shy away from controversy, positing the question as to whether some individuals allow the equipment to determine the dive rather than allowing the dive to determine the equipment used. This is a question that could (and should) be asked about the myriad types of technology increasingly utilized in our modern world. It is in some ways reminiscent of the ancient Chinese parable of the finger pointing at the moon: If you focus on the finger, you miss the beauty of the moon. Exploration should be the real goal, not merely the use of the latest gadget; the equipment is merely the tool that makes it possible.

The second chapter of the third section concludes the book. It is a timeline of technical diving, ranging from Cornelius Drebbel in 1624 to the present day. When reading through this well-illustrated timeline, it is interesting to note how much of what we may think of as “new” technology has been in existence for a long time. It is the combination of new materials and technology, combined with our ever-increasing understanding of the laws of physics, that have made the “old” methods if not possible in the first place, safer and more effective.

The Historical Diving Society Asia should be congratulated on yet another fine publication. Whatever the reader’s particular focus in diving may be, there is likely to be something contained within the covers of the reviewed volume that will be of interest. *Dive the Big Blue: A Historical Affair* is well worth reading and fills a unique niche in the field of underwater literature.
Europe

By Peter Jackson

As we have shown before, particularly in the French Collection series, boys’ books about divers and diving are not the province of the English speaking world. They come from all over Europe, and doubtless from other, more remote, parts of the world. Here we present the pictorial covers of some of the European books in our collection. I hope you like them.
In November 1888 Andrew L. Dutton of Racine, WI applied for a patent for a Submarine Searchlight. This was granted as Patent No. 404,390 on 4 June 1889. Although not mentioned in the title the patent included provisions for an underwater camera which to my mind is more important than a patent on an underwater light.

This is the first United States Patent that I have found for an underwater camera. There may have been earlier underwater camera patents but they are not listed in the usual underwater and diving categories in the Patent Office.

This is a very simple system as will be seen by the following. The basic structure is an assembly of three sections of cast iron bolted together with appropriate watertight seals which together form a housing for the light, camera, and associated mirrors for viewing from the surface and for taking photographs. These three sections are labeled in Fig.1 as B1, B2, and B3.

Section B1 holds a standard incandescent light bulb and a mirror, F, to concentrate light through a glass port, E, to the area outside the assembly.

Electricity was to be provided from the surface through a wire attached to tube A.

B2 holds adjustable mirrors to reflect an image of
the selected area seen outside the apparatus through a glass 2 port, G. The view is reflected from mirror H to mirror H1 and then to the camera and upwards through tube A to the telescope and operator on the surface.

All the mirrors were to be mounted on hinged supports with a movable arm and set screws so they could be adjusted to give the best image.

Section B3 was designed to hold any “standard camera” which was to be bolted to a plate attached to the outer shell with bolts and watertight shield.

The camera lens was to extend into section B2 which would allow the camera to be focused on the image appearing on mirror H1.

The entire assembly was attached to the tube A through a sealed gland at the top of the assembly.

The tube was made in sections so that the length could be altered depending on the depth of the water or area to be observed. The camera shutter was to be operated by an electrical signal transmitted through a wire connected to the tube A, and then by an electromagnet causing it to trip.

A large iron base-plate P was to be provided which connected to the case by a ball and socket joint so that the case could be rotated and tilted.

This patent was a credible attempt, for the time, to solve the problem of underwater observation and photography without the use of a diver.

There is no evidence that this system was ever built. I think it would be an ungainly apparatus to operate from a boat especially at more than shallow depths.

The shell must have been very heavy since it had to be large enough to hold a bellows camera, which were not small affairs at the time, plus the weight of the cast iron pan and tilt base.

As far as I can tell it was designed to be used only with the apparatus resting on the bottom. I cannot imagine that it could have been used in mid-water as there is no way the operator could have controlled it while looking down through the telescope.

As with William Thompson’s underwater camera (another camera in a housing on a pole) used to take the first underwater photo in 1856 it required hoisting out of the water to advance or change the film or change the size of the lens opening.

One advantage of this system was that the camera focus did not require changing since the image was always on the mirror at the same distance from the lens.

It also did not have to rely on ambient light, as did Thompson’s and later cameras did.

Unless one of the readers knows of an earlier patent, I think Dutton deserves credit for the first United States design for an underwater camera, whether ever built or not.
Guadalupe Island, Mexico
Guest Host: Dr. Sylvia Earle

By Dan Orr
Chairman of the HDS Board of Directors

Guadalupe Island, Mexico is a volcanic island located approximately 250 miles (400 km) off the Pacific Coast of the city of Ensenada, Mexico. Guadalupe Island is considered to be one of the best and most reliable locations for sightings of Great White sharks in the world. From a divers perspective, the conditions are almost perfect with water temperatures averaging near 70 degrees F (21 degrees C) and visibility sometimes well over 100’ (30.5 meters).

Each year, the Historical Diving Society has sponsored a fundraising trip to Guadalupe Island aboard the Nautilus Explorer. These trips have been organized by well-known California diving educator and dive trip organizer, Ed Stetson. Ed generously donates the proceeds from these trips to support the mission and activities of the HDS. Each of these HDS trips is hosted by a well-known personality in the diving world. Past hosts have included Stan Waterman, Ernie Brooks, Rodney Fox, Bob Hollis and David Doubilet. This year, the HDS offered two back-to-back trips the first hosted by Dr. Sylvia Earle and the second by Zale Parry.

Guests for these trips meet in San Diego and are transported by bus to the city of Ensenada, Mexico to meet the Nautilus Explorer. Once all our luggage and equipment was loaded on our bus, we found our comfortable seats and headed south to the US/Mexico border crossing. Soon after our arrival at the border, we completed the Mexican Customs paperwork and were on our way to Ensenada. We were greeted by the Nautilus Explorer’s fantastic crew with refreshing margaritas as they directed us to our vessel while they took our luggage directly to our pre-assigned state rooms.

Once onboard, we gathered in the Nautilus Explorer’s spacious lounge for a brief introduction to the vessel before we settled into our comfortable staterooms for a good night’s sleep. The gentle rocking of the boat made sleeping easy, while the Nautilus Explorer made its way west out into the Pacific during the 20-hour trip to Guadalupe Island.

The following morning we enjoyed a sumptuous breakfast (actually there are two breakfasts onboard). The first is a cold continental breakfast followed by a second hot breakfast. I felt strangely like a Hobbit enjoying first breakfast and second breakfast. The Nautilus Explorer crew is so accommodating that if you are busy diving and cannot take time for ‘second breakfast’, they will have it ready for you in the dining room so you can enjoy it at your leisure.

The first morning underway, we gathered in the lounge once again for crew and guest introductions and details of the general plan of daily activities. Following the mandatory lifeboat drill, the guests went about readying their photography equipment and diving gear (you only need an exposure suit and mask with weights and breathing equipment supplied by the boat). As we neared the end of the first day afloat and the sun approached the distant western horizon, we sighted the distinctive form of Guadalupe Island. As the sun settled below the horizon, we approached the protected cove that would serve as our anchorage for the coming three days of diving.

Once securely anchored, the crew went about putting the four tubular aluminum shark cages in the water. One cage is secured at the surface, a second secured approximately 18’ (5.5 meters) below the surface with an enclosed ladder leading down to it and the other two were submersible going to a depth of approximately 30’ (9.1 meters). Three of the four cages could accommodate 4 divers each and one submersible cage took 2 divers on each descent. Breathing air was supplied through regulators with hoses coming from the surface. As a back up, each cage is equipped with filled scuba cylinders and regulators. The back up scuba cylinders in the submersible cages are also used by those with dry suits to prevent suit squeeze during descent. The two fixed cages (surface and...
18') are open on a first-come basis from 6:30 AM to 5:00 PM while the submersible cages have pre-assigned time slots for each diver giving each person at least three submersible trips a day. The fixed cages are open and available to anyone who wants to use them. The two submersible cages, however, have assigned time slots for each diving guest. On most trips, each guest is assigned three submersible cage dives each day split between the two and three person cages. These assigned times are posted each morning in the lounge.

As the sun rose on our first morning at Guadalupe Island, there was a flurry of activity as divers queued up for the fixed cages and teams of divers readied themselves and their camera gear for the trips in the submersible cages. The conditions were ideal with visibility around 100’ (30.5 meters) and water temperatures an unusually warm 74 degrees F (24 degrees Celsius). Although there is never a guarantee that you’ll see lots of Great Whites on these trips, in the seven HDS trips I’ve been on, I’ve never been disappointed. The sharks on this particular trip were a little slow in arriving but when they did, they were exceptionally curious giving us some fantastic photo opportunities.

There was not a day when there wasn’t lots of shark activity with Great Whites in the 14’-16’ range coming very close to the cages occasionally bumping them with their noses, backs or tail fins.

With Guadalupe Island being a Mexican Biosphere Preserve, there are very strict rules regarding baiting and chumming (both of which are prohibited), the crew did an exceptional job keeping the sharks around the cages. Photo opportunities from the submersible cages were some of the very best any of us had seen with just about everyone getting their share of ‘up close and personal’ photo opportunities of Great Whites exhibiting various kinds of behavior. There were times when we would see one large male or female Great White circling the cages while at other times there would be 2, or even 3 Great Whites coming within visual range.

Most of the shark sightings were large females (when I say ‘shark’ I mean Great White since very rarely are any other sharks seen in the waters around Guadalupe Island) with an occasional smaller, but
no less curious, male. When more than one shark was in the vicinity of the cages, they’d swim side-by-side as a way to show who was biggest and, therefore, dominant.

During each trip to Guadalupe Island, guests have an opportunity to hear a lecture by leading researcher of Great White sharks at Guadalupe Island, Mauricio Hoyos. These lectures are a unique opportunity to hear details about the life history and behavior of these apex predators. We were also fortunate during this particular trip to have Mauricio bring onboard with him a team of free divers who he was working with to participate in his shark tagging activities. Believe it or not, these free divers would dive down on a single breath to these Great Whites; insert a tag near their dorsal fin, all without the benefit or protection of any cages!

The second night of our trip, we were treated to a rare opportunity. Dr. Sylvia Earle and her producer Robert Nixon shared with us their recent and award-winning production of “Mission Blue.” Mission Blue is a global initiative of the Sylvia Earle Alliance, a non-profit organization. Through her alliance, Dr. Earle urges everyone “to use all means at your disposal — films, expeditions, the web, new submarines — to create a campaign to ignite public support for a global network of marine protected areas; Hope Spots large enough to save and restore the blue heart of the planet.”

In preparation for this special showing, the crew created a theater on the upper deck and Dr. Earle and Robert Nixon, invited all the guests and crew to what they were calling, the Mexican Premier of “Mission Blue.” It was a fantastic and very moving production clearly demonstrating the state of our oceans and Dr. Earle’s personal quest to bring the plight of the planet to the public consciousness. Everyone fortunate to have seen this film was clearly and visibly moved by the experience. There wasn’t a dry eye onboard when the lights came back on.

On another evening, we gathered in the lounge, for a special presentation by HDS Patron, Ernie Brooks. The legendary underwater photographer put together a special presentation he had created in Dr. Earle’s honor. It was truly moving and clearly showed Ernie’s love for the sea and for Dr. Earle. We were all moved by his eloquence and photographic prowess as he talked about Dr. Earle’s contributions to our aquatic world. Also, that evening, I was surprised by Ed Stetson with a gift. As we sat around talking about these exciting trips, Ed asked me about my retirement and the contributions I had made to the HDS. He asked where Betty and I had retired to and I told him the ‘Western Side of the Tetons’ in Idaho. He then thanked me for my contributions and presented me with a Stetson Cowboy Hat!! This was a complete surprise. To be presented a Stetson by a Stetson (the founder of the legendary Stetson Hat Company is Ed’s Great Uncle) was truly over-whelming!

These trips are, indeed, a unique opportunity to spend some quality time with legendary figures in the diving world and very few more legendary than “Her Deepness,” Dr. Sylvia Earle. At the same time, these trips support the mission and efforts of the Historical Diving Society. Besides the camaraderie, guests share a seemingly never-ending series of sea stories and tales of their experiences on other trips aboard the Nautilus Explorer. Most trips include guests who have been on many previous trips. There were also many discussions of future trips aboard the new and larger vessel, Belle Amie.

Besides fantastic and once-in-a-lifetime diving experiences, guests have an opportunity to celebrate the history of our sport and share the experiences with some of the true legends of the sea and our sport!

Please join us on our 2015 trip aboard the Belle Amie, hosted by underwater photographic legend, Chuck Nicklin.
TheJournalofDivingHistory
www.nautilusexplorer.com
www.ScubaHallofFame.com

Proud to support the Historical Diving Society.

Joel Jacobs at Land And Sea Collection specializes in buying and selling hard to find quality vintage dive helmets. Email joeljacobs@bellsouth.net or call 561-339-3383 Palm City, FL 34990

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1972 DIVING EQUIPMENT & SUPPLY CO. (DESCO) MK V HELIUM HAT

SOLD

In Never Dived condition. Made available for the first time in 32 years. All matching numbers. From the Estate of US Navy Seaman to Commander. To learn about items like this before they’re sold, join our mailing list.

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HELMET AUCTIONS

By Leslie Leaney

A review of recent internet auction results. While every effort is made to accurately describe the lots, vendors’ opinions of what the items are, and what their condition is, are not consistent. These results are published in good faith for the interest of members, and the HDS and JoDH are not responsible for any errors in descriptions, listings, or realized prices.

C. E. Heinke & Co. Ltd. 6 bolt, 3 light, serial number 41. This helmet was a Live Auction listing from South Bay Auctions in New York. The helmet appeared in good condition but had apparently been in storage for some time as it showed some heavy patina on both the bonnet and breastplate. On close inspection the bonnet appeared to be covered in numerous scratches that looked like they could have come from a wire brush that may possibly have been used to remove the tinning. It was difficult to tell. The helmet looked complete apart from the protective grill that would screw into the faceplate. It sold for $5,500 on 32 bids. This price may seem low for this model of Heinke but as this was an actual physical auction house listing, a Buyer’s Premium of 20% was added to the winning bid, plus possibly New York sales tax of 8.625%, and possibly shipping costs.

Advanced Swindell Model 2000 with breastplate. A very good looking blue colored helmet that appeared to be in excellent condition, as shown in the photographs. Two of the chromed breastplate nuts were missing. 20 bids took it to $2,225.

Advanced Swindell Model 2000 with breastplate. This was the second model listed by the seller and featured a red bonnet on a black breastplate. The helmet appeared to be in complete excellent condition and sold for $2,100.
Miller Dunn U. S. Navy Mark V serial number 594, date 9-1-44. The helmet appeared to be in very good condition with matched serial numbers but without tinning. The seller noted that the comms elbow was slightly pushed into the bonnet shell and that the helmet had been recently serviced by Morse. The faceplate and rear straps looked like replacements. As usual, the seller provided excellent photos with a good description of the helmet. 43 bids took it $8,852.

DESCO U. S. Navy Mark V serial number 411, date 6-16-1943. An early small volume DESCO that had been found in a basement in Texas and showed a very heavy patina. Missing locking gate pin and chain but otherwise complete. Some components were frozen due to the helmet being stored and unused for so long. The seller is an HDS member and is to be commended for not cleaning the helmet and the patina gave it a very appealing look. Well described and well photographed it sold for $7,200.
SCUBA AUCTIONS

REGULATORS

US DIVERS—Aqua Lung “trade mark” RED LABEL serial number 5117 circa 1951/52. Only 1,000 were made. Many went to the US Navy, making it difficult to locate one for private collections. Complete with original hose and mouthpiece assembly. SOLD for $850.


US DIVERS “Royal Mistral” serial number RM-1028 circa 1965-1967. The serial number indicates this regulator was manufactured in 1965. Overall in fair condition, all original. SOLD for $550.


US DIVERS—DY “Jet Air” circa 1956. The first of the Jet Air models was made from casted red-ish phenolic material, and was soon thereafter replaced by black phenolic, making this one very desirable. SOLD for $365.

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UDT and EOD military issue non-magnetic knife. Made by Imperial knife Co. circa 1961 and remained in service well into the 1980s. Serial number 824. SOLD for $1,455.

(No Photo) Imperial non-magnetic with a very low serial number of 143, "knife only" in fair condition due to heavy wear on serrated teeth. SOLD for $760.

Randall model 16 knife sheath with rare sheath manufacturer stamp “Sullivans.” This pancake sheath was made for both military use and commercial, with limited numbers for both and short lived in custom production. Circa 1970. SOLD for $150.

LITERATURE


1952 March-April The Skin Diver magazine, this is only the 4th printing for the young publishing company, and the only copy that covered two months in one issue for that year. This copy is in fair condition. SOLD for $236.50.

Assortment of catalogs, books and magazines from the early to mid 1950s. The main valued item in this grouping was the 1953 Aqua Lung catalog with the Biscayne Blvd. Florida address. The assorted lot SOLD for $404.

MISCELLANEOUS


La Spirotechnique “AQUALUX” flashlight, circa 1957 and into the 60s. Like new condition, SOLD for $299.

By Sid Macken

Calypso camera, flash unit and, accessories. Sold $2,000.

Bolex housing with wooden case and accessories. Sold $999.

Bolex housing and H16 camera. Sold $999.


Aqua-Cam with flash attachment. Sold $149.

(Right) Mako Products plexiglas housing, appears to be for Rolleiflex, still has Mako label attached. Sold $200.
Rolleimarine housing. Sold $1475.

Sampson motion picture housing with Bell and Howell camera, attachments on top of housing for mounting under spear gun. Sold $661.

Rolleimarine housing, flash, and accessories. Sold $500.

Bolex housing. Sold $405.

Flip Schulke housing for Nikon wide-angle lens. Sold $422.

Calypso camera and accessories. Sold $899.

Bolex housing modified with dome port corrective lens. Sold $441.

Calypso camera with Som Berthiot lens, missing housing lifters. Sold $400.

Calypso camera with sport frame finder. Sold $452.

Rolleimarine housing and flash. Sold on eBay France $460.

Rolleimarine housing and Rolleiflex camera. Sold $700.

Rolleimarine housing. Sold $500.
Welcoming New Members and a New Director

The DEMA Show in Las Vegas brought many new members into the HDS ranks. Forty-three new members signed up at the show and nine members renewed their memberships. A great help in their decision to join, or rejoin, was the DEMA Decades booth, located just across the aisle from the HDS booth. HDS member Ed LaRochelle has worked with DEMA for the past several years to present an outstanding dive history display. This year’s theme focused on years ending in 4, beginning with 1574. Thanks to Ed LaRochelle, Ed Uditis, and Pat Willoughby for lending a hand in the booth.

Speaking presentations – In October, HDS and North East Diving Equipment Group member Fred Barthes represented the HDS at the annual meeting of the North East Chapter of the Underwater Hyperbaric Medical Society in Boston, Mass. Fred provided a lecture on diving history, along with a display of vintage equipment for the attendees to view. Thank you, Fred, for your time and effort.

Part of the HDS mission is to disseminate information. Speaking engagements at dive shows and meetings is a great way to fulfill that part of our mission. If your organization is looking for a unique presentation for your members, contact us at hds@hds.org. We will do our best to provide you with an enjoyable and educational offering.

Legacy Society – Elsewhere in this issue, you will find Dan Orr’s introduction of the HDS Legacy Society. This is an exciting new program intended to provide a means for donors to establish long-term financial support for the society. The first
New Director – We welcome Ed Uditis to the HDS Board of Directors. Ed holds member number 95 and has volunteered at the HDS booth at dive shows for many years. You may have seen him in front of the HDS booth selling memberships and raffle tickets. Cheaper than a hamburger is his description of a chance to win the Mark V diving helmet. Ed has a serious side and a long career in the diving industry, as can be seen in his bio elsewhere in this issue.

My bad! – Speaking of volunteers who assist us at dive shows, I neglected to mention two who go to great lengths to provide unique displays at the Beneath The Sea show held in New Jersey in March. At the 2014 BTS show, HDS members Bob Rusnak and Gene Ritter wrangled a US Navy Seal Swimmer Delivery Vehicle onto the showroom floor for attendees to check out. A few actually got to sit in the driver’s seat. Over the years, Bob and Gene have brought such amazing artifacts as William Beebe’s Bathysphere, and a JIM one atmosphere dive suit to the show. The efforts of volunteers such as Bob and Gene are extremely important to the mission of the HDS, and they go a long way to supporting the shows which the HDS attends.

2015 – We are starting the 2015 dive show circuit at New Orleans for Underwater Intervention, the commercial dive industry’s big show held in February. That show is followed quickly by Our World Underwater, then by Beneath The Sea, Long Beach Scuba Show, and finally DEMA in November.

This year, 2015, is considered the 100th anniversary of the iconic US Navy Mark V diving helmet. In a slight change from previous years, the 2015 raffle grand prize will be a Mark V built by Morse Diving to the 1915 US Navy specifications. Several events are scheduled to commemorate the Mark V’s centennial. The US Navy has declared 2015 the Year of the Diver, with a large event to be held this coming May at the Navy Diving and Salvage Training Center in Panama City, Florida. In keeping with this theme, the HDS has scheduled its annual conference for Panama City in September. Watch this magazine, the HDS website and Facebook page for more information as this develops.

As always, dive safe!
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HARD HAT DIVERS WEAR DRESSES
BY BOB KIRBY
The legendary Bob Kirby's autobiography covers his development of Kirby Morgan dive equipment and his work in commercial, military and Hollywood diving. Contains numerous unique photos from Kirby's career including some of his helmets. As the story of one of diving's few living legends, it will stand as a personal record of one man's unique journey through an industry at its prime. Self published by Kirby, with warts and all. Limited to only 1,000 copies. Perfect bound volume, 262 pages, b&w photos, $40.00, plus $12.50 domestic p&p.

Also Available from HDS USA

DEEP DIVING AND SUBMARINE OPERATIONS
BY SIR ROBERT H. DAVIS
Referred to during last century as "The Bible of Diving," the first edition of this book appeared in 1909, as was gradually revised and expanded through the 20th century. This ninth edition celebrates the 175th Anniversary of Siebe Gorman. Part One is essentially a diving manual and covers all aspects of diving technology, physics, physiology. Part Two contains accounts of notable diving operations and a history of all forms of diving apparatus. Two-volume set in a reflex blue presentation slip case. Probably the most famous diving book ever printed. "The best book on diving I have ever read," says Bev Morgan. Reviewed in HDM #6. 712 pages, over 650 b&w photographs, line drawings and illustrations, index. $115 plus plus $18 domestic p&p ($60 international).

SEALAB: AMERICA'S FORGOTTEN QUEST TO LIVE AND WORK ON THE OCEAN FLOOR
BY BEN HELLWARTH
An extensive and detailed record of the triumphs and tragedies of the SEALAB program, based upon Hellwarth's painstaking research. Hellwarth, a veteran journalist, interviewed many surviving participants from the SEALAB experiments and conducted extensive documentary research to write the first comprehensive account of one of the most important and least known experiments in US history. His compelling narrative covers the story from its scrappy origins in Dr. Bond's Navy laboratory, through harrowing close calls, historic triumphs, and the mysterious tragedy that brought about the end of SEALAB. Hardbound in dust jacket. 2012, 388 pages b&w photos, index, 19 pages of reference notes. $28 plus $7.50 domestic p&p.

BETWEEN THE DEVIL AND THE DEEP
BY MURRAY BLACK
As one of the early pioneers of commercial oilfield diving, Murray Black was an industry leader with an abundance of natural bravery. After graduating from E.R. Cross' Sparling School of Deep Sea Diving, Black progressed through the colorful ranks of the abalone diving and eventually founder DIVCON. History was made with DIVCON, with surface bounce dives past 500 feet as Black consistently pushed the envelope. The book also contains details of Blacks post diving career with friends like John Wayne and other characters. nd, 189 pages with b&w photos. $25, plus $5 domestic p&p.

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CA residents add 8.75% sales tax
The Stan Waterman Film Collection

The Historical Diving Society USA proudly presents the Stan Waterman film collection on DVD. Stan Waterman, one of America’s best known and most beloved underwater cinematographers, has spent nearly sixty years filming on, under, and around the sea. From the late 1950s into the 1970s, Stan took his films on the lecture circuit across the United States.

Announcing the addition of Volumes 9 and 10 to the Stan Waterman Collection of Waterman films on DVD, adding 7 films to the collection!

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THE LOST TREASURE OF THE CONCEPCION: Burt Webber’s search for, and eventual discovery of, the 17th Century Spanish treasure galleon lost in a storm on the Caribbean’s Silver Shoals. The film traces the expedition from concept to conclusion and provides insight into the life of a treasure hunter.

**Volume 2 $15**

OFF THE WALL: Follow Peter Benchley and his family on a diving adventure that includes pirates, shipwrecks, and giant moray eels.

**Volume 3 $15**

BEYOND JAWS: Includes clips from Stan’s earliest dives in 1958 through filming Great White Sharks in Australia with friends Peter Benchley and Rodney Fox. Sharks are the center of attention on these dives.

**Volume 4 $15**

ROUGHING IT IN THE CORAL SEA: A tongue-in-cheek expose of life aboard a multimillion dollar “hell ship.”

**Volume 5 $15**

MORAY WHEELS: This is the story of the Moray Wheels a Boston-based Scuba club for divers with disabilities. Produced in the early 1970’s. Stan follows two students as they undergo their initial dive training in the pool at M.I.T., then make check out dives at M.I.T., then make check out dives at M.I.T., then make check out dives at M.I.T., then make check out dives at M.I.T.

**Volume 6 $15**

THE WAR REEFS: In 1942, the small, South Pacific Island of Guadalcanal became the scene of a decisive, World War II, air-sea battle between the United States and Japan. It was a turning point in the war for the US and its allies, but a resounding defeat for the Japanese. The terrible cost of the battle can be found enumerated on the sea floor in what is now called Iron Bottom Sound for the scores of ships and aircraft that lie there. Stan and his companions visit the waters surrounding Guadalcanal, and as they explore Japan’s sunken fleet, they discover that the debris of war has, over time, been changed, softened by the sea, and is now the home of a fantastic array of marine animals.

**Volume 7 $15**

PETER AND THE SHARK: Stan, Peter Benchley, and crew travel to Australia to dive with Great White Sharks. Along the way, they encounter Manta Rays, sea turtles, Bronze Whalers, Tiger Sharks on the Great Barrier Reef, and then, at Dangerous Reef, the big guys showed up. Originally aired on the American Sportsmen Show.

**Volume 8 $15**

THE BEST OF CAYMANS: Stan visits the Cayman Islands aboard Wayne Hasson’s Aggressor Fleet liveaboard dive boats. Along on the trip are Stan’s good friend Peter Benchley and his family. They dive the wreck of the Ore Verde; visit Jew Fish, Barracuda, and Grouper; dive reefs, walls, and visit a shallow sand patch filled with sting rays.

**Volume 9 $15**

JACK’S WORLD: The Island is Virgin Gorda, in the British Virgin Islands. The subject is Jacki Kilbride. Her love of the sea and devotion to protecting and sharing it make Jacki’s World a very special place.

**Volume 10 $15**

A SIXTIETH AT EIGHT: Underwater photography is all the rage, and Stan takes us to class on the Bahama Island of San Salvador at the Paul Tzimoulis Underwater Photography College. Look for appearances by Paul, Geri Murphy, Peter Benchley and his family. Includes a dolphin sequence filmed by Jack McKenney.

**Volume 11 $15**

SCUBA: A lesson in diving history, with Stan as our professor, traces the advance of man’s efforts underwater from Leonardo da Vinci to Cousteau. Includes a visit to the Dacor Company and film sequences by Al Giddings and John Ernest Williamson.

**Volume 12 $15**

SHARKS: A glimpse into the world of sharks and their relationship with humans. Includes interviews with Dr. Don Nelson, Dr. Eugene Clark, and Rodney Fox, plus film from of Ron and Valerie Taylor. Produced by Stan and Howard Hall as part of a World of Audobon television special.

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The Story of the Diamond Knot set is available for $25 (US shipping included). www.hds.org

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– Leslie Leaney


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