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HISTORICAL DIVER Vol. 8 Issue 3 Summer 2000
Diving is a potentially hazardous practice and if practiced incorrectly or with incomplete planning and procedures can expose a person to considerable risks including serious injury or death. It requires specialized training, equipment, and experience. HISTORICAL DIVER is not intended as a substitute for the above or for the diver to abandon common sense in pursuit of diving activities beyond his or her abilities. HISTORICAL DIVER is intended as a source of information on various aspects of diving, not as a substitute for proper training and experience. For training in diving, contact a national certification agency. The reader is advised that all the elements of hazard and risk associated with diving cannot be brought out within the scope of this text. The individuals, companies, and organizations presented in HISTORICAL DIVER are not liable for damage or injury including death which may result from any diving activities, with respect to information contained herein.
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Tickets are $5 each or 5 for $20. Make checks payable to HDSUSA Fund Raiser and mail to 340 S. Kellogg Ave Ste. E, Goleta CA, 93117. Tickets available from HDSUSA at the preceding address and from supporting organizations.

Winning ticket drawn at DEMA in New Orleans on January 27, 2001
Winner need not be present to win.
All proceeds benefit HDSUSA and other diving related non-profit organizations
See ticket for other details

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September 30 – October 1, 2000, Santa Barbara, California
Sponsored by:
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Skip Dunham
“The Evolution of the Full Face Mask”

Former UDT Officer
Dr. Hugh Greer
“Combustion, Convulsions and Commandos”

| EVENTS |
|-------------------|-------------------|-------------------|
| **September 29**  | **September 30**  | **October 1**     |
| 7pm-10pm Friday   | 9am Saturday       | 10 am Sunday      |
| The Endless Summer Grill | Santa Barbara City College | Santa Barbara Harbor |
| Santa Barbara Harbor | PRESENTATIONS     | Classic Diving Exhibition |
| No-host bar diver’s reception | Business Center Forum | by Central Coast |
|                   | West Campus       | Working Equipment Group, and |
|                   | SBCC Marine Technology Dept. | California Classic |
|                   | Exhibits, SBCC chamber runs, swap meet | Equipment Divers |
|                   | $20 including BBQ lunch | $40 Limited tickets |
|                   | Limited tickets. BOOK EARLY | |

7 PM SATURDAY
HDSUSA Banquet
with pioneer diver, filmmaker, equipment designer, author, etc.

Dick Anderson
Santa Barbara Maritime Museum
Santa Barbara Harbor

For tickets contact HDSUSA at 805-692-0072 or send your check or money order, payable to HDSUSA to 2022 Cliff Drive PMB 405, Santa Barbara, CA 93109
All Tickets are limited and on a first come first served no refund basis.
For hotel accommodations contact 800-422-7180 or andrew@travelworld.org
Very first patent for a diving apparatus found. During his investigations, HDM’s German editor Michael Jung has found what may be the very first patent (“privilege”) for a diving apparatus. The patent was granted to the Abbot Gabriel de Guzman from Netherland in 1549 by the German Emperor Karl V for a “diving apparatus for work under water.” The paper described a diving bell “for 10, 20, 100 or more people” who can “stay up to 12 hours” under water. After the death of Karl V, the “privilege” was prolonged in 1559 by Emperor Ferdinand I. The place of issue is Brussels. During that time Emperor Karl V was not only German King but also King of the so called “Spanish Netherlands.” The original patent is now in the Hofarchiv in Vienna.

Inland/Coastal Commercial Diving Conference 2000. The East Coast Chapter and Midwest Chapter of the A.D.C. are hosting a commercial diving conference at the Best Western Parkway Center Inn, Pittsburgh, PA, on October 28-29. The conference will feature 20 exhibit booths, 14 technical sessions, 4 workshops, various Chapter meetings and social functions. Here is a chance to meet up with some of the 150+ inland diving firms in the two ADC Chapter regions. For more information contact Rick Jager at 203-368-4611.

Dick Anderson. Pioneer American diver Dick Anderson will be the guest speaker at the HDSUSA Banquet on Saturday September 30. Known for his humorous insights and recollections from his 50+ year diving career, Dick recalls his friend Al Hanson in a small article in this issue. The article was submitted on Dick’s personal stationery which features a saying credited to Mark Twain. Given the blend of American-English, Australian-English, English, and English-translated French, German, Mexican, Spanish and Russian that regularly appears in Historical Diver, we found Mr. Twain’s observation both amusing and comforting. “I don’t have much respect for the man who doesn’t have the imagination to spell a word at least two ways.”

The Last Dive. Immersed Magazine publisher and HDS member Bernie Chowdhury has written a book documenting the events surrounding the tragic deaths of the father and son diving team of Chris and Chrissy Rouse. The team lost their lives investigating an undocumented WWII German U-Boat that lies under 230 feet of water off the coast of New York. Titled The Last Dive, the book is published by Harper Collins and is available nationwide on October 6.

Missing helmet. The bonnet from DESCO Mark V #216, dated 3-25-43 was stolen last year in the Seattle area. The bonnet has no tinning and has a faded brown lacquer finish. If you have information on this item please contact Eric at 360-535-7486.

Heavy Gear Workshop. Santa Barbara City College Marine Technology Department and the Central Coast Working Equipment Group will hold a heavy gear workshop over the weekend of November 3 - 5. Instructors include Bob Kirby, Bob Christensen, Don Barthelmess, Scrap Lundy and Skip Dunham. Participants will get to work and dive with a U.S. Mark V helmet, a Kirby Morgan air helmet and a low-pressure Abalone hat. The cost of the workshop is $375. For more information contact Don Barthelmess at 805-965-0581, ext 2427.

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NAUI
40th Anniversary Reunion
1960-2000
Houston, Texas
November 10-12, 2000
Keynote speaker:
Jean-Michel Cousteau
with
Paul Tzimoulis,
Bill High,
and
Emory Kristof
For information contact www.NAUI.org

HISTORICAL DIVER Vol. 8 Issue 3 Summer 2000
HDSUSA Advisory Board Member

Robert Sténuit

Born in Belgium, Robert Sténuit has pursued his passion for diving and undersea exploration for over 40 years. In 1953 he set out on his first underwater treasure hunt in Vigo Bay in Northwest Spain and has been researching and locating wrecks ever since. Through his work at Vigo Bay he made the acquaintance of American Ed Link who was the driving force behind the Man In Sea program. Robert worked for André Galerne’s SOGETRAM before leaving to become chief diver for Link’s program. In 1962, Robert spent 25 hours at 60 meters on a helium-oxygen mix in a Link habitat. He thus completed the world’s first saturation dive at sea which was conducted off Villefranche-sur-Mer, France. In 1964 Robert and Jon Lindberg made the second ocean saturation dive at 130 meters at the Berry Islands of the Bahamas. An accounting of Link’s historic diving program and Robert’s involvement can be found in Robert’s book *The Deepest Days*, published by Coward-McCann Inc., New York, in 1966. Ocean Systems purchased the Man In Sea program in 1965 and Robert remained with the program as a researcher, and developed oxygen-helium decompression and saturation tables.

He continued his interest in wrecks and in 1967 his research took him to the coast of Ireland. Here, he and Marc Jasinski located the wreck of the Spanish Armada vessel GIRONA, which was lost in 1588. Robert’s success in locating ancient wrecks continued and in 1974 he located the SLOT TER HOoge in the Madeira Islands. The wreck had been worked by Devonian barrel-diver John Lethbridge in the early 1700’s (see HDM #8, John Lethbridge, the first inventor of a diving engine without communication of air). Robert also has an interest in diving history and the functioning of Lethbridge’s salvage equipment intrigued him. With support from HDSUSA Advisory Board member Henri Delauze of COMEX, he had a replica of the barrel built and test dove it. His attention was also drawn to the 1865 scuba system of Rouquayrol and Denayrouze and he visited Espalion to test this equipment also (see HDM #11, Musée du Scaphandre, Espalion, France).

Both of these tests of historical diving equipment were filmed by Ray Sutcliffe for the Discoveries Underwater television series that aired in the late 1980’s and can still be found on the cable TV networks. Robert is still researching wrecks and sharing adventures with his associate Henri Delauze. He has authored numerous books in several languages on his adventures and research. We extend Robert a warm welcome as the newest member of the distinguished Advisory Board of the Historical Diving Society USA.
New Members

The Board of Directors of the HDSUSA, DHSASEA and HDS CANADA wish to extend their thanks to the following new members for their support, and welcome them to the Society.

Robert J. Anderson
Mark Wimberly
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Roberto Dario PHILIPPINES
Steve Simmons AUSTRALIA
Russell Dehnert AUSTRALIA
Frog Dive Willoughby
AUSTRALIA

HDSUSA Exclusive
Ballerinas, by John Steel

There were only 500 of these prints issued in the 1980’s and the initial supply sold-out. These few prints were only recently discovered and are in mint condition. They are part of the original 500 issued and are all signed and numbered by John. HDSUSA has a VERY small supply of this original print by the late famed underwater artist who was the illustrator for the early Skin Diver Magazine covers. This is a rare opportunity for diving collectors to own one of these historic prints. For information on John’s career see “John Steel, Artist of the Underwater World,” Historical Diver Magazine, issue 19.


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HDSUSA E.R. Cross Memorial Service

The HDSUSA held a Memorial Service for our recently deceased Advisory Board Member E.R. Cross, on June 24, 2000 at the Los Angeles Maritime Museum, San Pedro, California. The service was conducted by Father Art Bartlett, and attended by numerous members of the Cross family and several of E.R.’s diving colleagues.

E.R.’s life and career were recalled in eulogies by senior American divers Torrance Parker, Murray Black, Lad Handelman, Kenny Knott, Norm Adams, Dick Anderson and Captain Ed White. Mrs. Dianna Cross spoke on behalf of the Cross Family and Leslie Leaney spoke on behalf of the HDSUSA. Attending HDS members included Charlie Orr, Jacko Robinson, Rick Eriksen, Barbara Allen, Eric Simmel, Leslie Jacobs, Sammy Oziel and 1998 E.R. Cross Award recipient Ed Stetson. Members of the Cross family included E.R.’s brother Ken and his daughter Judy Main, and Dianna’s family Carol Shervem, Candy Piccolotti, Laura Piccolotti, Joan Piccolotti and Brittany Leonard.

After the service Charlie Orr of California Classic Equipment Divers gave a tour of the two former locations of the Sparling School of Deep Sea Diving, in Wilmington. Torrance Parker and former Sparling employee Norm Adams recalled their time at the school and some of the rich history associated with it. Torrance is currently working on a local diving display at the Los Angeles Maritime Museum which will include items relating to the Sparling School.
Some mail may have been edited.

Thank you very much for publishing my notice about the formation of HDS Russia. The article about Kronshtadt Diving School is quite a good translation. However, it is not quite complete and has some minor errors but they are insignificant. We invite any diving historians with an interest in Russian diving history to contact HDS Russia. We have an agreement with the descendents of Ruben Orbeli to use his name. Also we are preparing a diploma, a big article, and trying to contact some organizations to establish a working relationship.

With best wishes,
Dr. Alexander Sledkov, Director, HDS Russia

I like your auction report section as it keeps me up to date on helmet values. Why don’t you list up coming auctions in the magazine? Keep up the good work.

C. D. Virgil, via email.

We have had several similar questions regarding auctions. We do not list them as we focus solely on the results of sales. The auction report section tries to keep up with the realized prices of diving related equipment as it is of interest to our members. Our main coverage is from Christie’s in London and Chuck DaLuca’s Maritime Auctions of York, Maine. We have found that most Society members who actively collect equipment and are interested in the upcoming sales of these houses subscribe to house catalogs. Chuck has placed paid adverts with us to promote his upcoming sales and we are always happy to have the extra advertising revenue in our cash-strapped operation. To subscribe to Chuck’s catalogs contact him at 207-363-4247. To subscribe to Christie’s catalogs contact Julia Chinnery in the UK at 011-44-20-7321-3152 or go to www.christies.com.-Editor

California’s lobster season starts in the fall each year and many divers participate in lobster hunting. The latest book from Hammerhead Press, *California Lobster Diving* provides all the information you need to participate in this adventure. The book includes information on lobster biology, regulations, gear selection, techniques, where to find lobsters, and lobster preparation. It is profusely illustrated with photographs, drawings, and charts. It also contains a comprehensive index and bibliography. The book is 107 pages long.

*California Lobster Diving* was written by Kristine and Steve Barsky. Kristine is a marine biologist with the California Department of Fish and Game. Steve is a professional underwater photographer and has contributed numerous articles to many different diving magazine.

*California Lobster Diving* is available now and can be purchased through quality dive and boating supply stores throughout the western states. The book has a suggested retail price of $11.95. For more information, or to order directly, contact Hammerhead Press, 2022 Cliff Dr. Suite 368, Santa Barbara, CA 93109. Tel. (805) 569-2143, FAX (805) 682-1956. Order on-line at www.hammerheadpress.com or through Amazon.com. Dealer inquiries are invited.
HDSUSA Affiliate

The Undersea Heritage and Exploration Society

In October of 1998, The Undersea Heritage & Exploration Society (UHEXSO) was established by John Hoover, Rick Kouns, Russell Miller, Randy Furr and Paul Schenk. UHEXSO sprang out of the Gulf Coast Working Equipment Group started by Paul Schenk when he moved from California to Texas. The mission of UHEXSO is similar to the other Working Equipment Groups (WEG's) around the country: To promote historical diving, the collection, restoration and preservation of historical diving apparatus and material, and to promote diving safety and education. However, UHEXSO brought into the mix marine archeology and environmental conservation. The marine archeology section of UHEXSO was created out of a growing need for trained volunteers to assist state and federal agencies with this type of project. Through Steve Hoyt, Chief Marine Archeologist for the Texas Historical Commission, UHEXSO has formed a close alliance with this agency which has proved beneficial for both the state and UHEXSO. In 1999, UHEXSO incorporated as a Texas non-profit corporation and received its IRS 501(c)(3) tax exempt status. This has allowed UHEXSO unique access to corporations and individuals with regard to donations and support and allows UHEXSO’s members the opportunity to take tax deductions for purchases needed to support the organization. The incorporation also helps UHEXSO’s members by reducing liability. With over 50 members, UHEXSO is positioning itself to assist the HDS by showcasing historical diving through projects ranging from factual editing of a children’s book on diving titled Deep Diving Adventures to the possibility of appearing on a Learning Channel series called Junkyard Wars. Through its web site UHEXSO has assisted students, researchers and media producers by guiding them to sources of information or individuals who can help on specific projects. But possibly the best achievement of UHEXSO is the friendships and family atmosphere we have fostered through the organization. Our latest venture was a series of dive rallies held at the Aquarena Center, San Marcos, Texas. This venue provided spectators and participants unparalleled access to view divers in classic equipment underwater through the sub theater. We also established communications from the diver to the sub theater so spectators could interact with the diver and ask questions. During the first weekend in July, Aquarena had over 1,600 spectators and an estimated 900 got to see and interact with the divers. Further dives and activities are in the planning stages. To find out dates, times and information about UHEXSO, please go to our web site at www.uhexso.org or e-mail us at uhexso@airmail.net

John Hoover, Executive Director
Australian diving pioneer, still hard at work.

Ted Eldred was the designer of the Porpoise single hose regulator which he started developing with early prototype models around 1949. Jeff Maynard and others are currently investigating the pioneering work of Ted and the impact that it had on other early regulator manufacturers worldwide.

Ted had a single hose regulator in regular manufacture by 1952. The balanced piston first stage was added in 1954-55 (See HDM #11, Swimming with the Sensational Porpoise, by Ted Eldred, and HDM #10, The Evolution of the Single Hose Regulator, by the late, great, E.R. Cross). While the evidence is still being collected, there is a strong body of facts to suggest that Ted Eldred was the father of modern regulator design, by designing and manufacturing the now predominant single hose regulator by 1952.

The impact of the Porpoise on the Australian Pearling industry was profound. There was only one season of lightweight gear divers using a “Hookah” (surface supply) in competition with the traditional dress divers. At the end of this first season, the era of the standard dress diver was over. He was out of business for good. Unfortunately Ted could not afford to patent his work to protect his intellectual property, and relied upon innovation to keep him ahead of those that followed his path. This lack of patent has essentially left him largely unrecognized for his pioneer work. Jeff and others hope to change this belief by further research.

Ted is also credited with a major involvement in the first formal recreational diver training in late 1953. “Aberdeen Amphibian” Ivor Howitt attended this first course, and recalled some of his own early adventures in HDM #20, Memories of an Aberdeen Amphibian. Ivor has now written a great book on this exciting time of diving history and he is currently looking for a publisher (contact the DHS ASEA office if you are interested in publishing Ivor’s book).

U.S.N. comes to town. HDSUSA member Tom Galloway of the U.S.N. visited with some members in Adelaide and Victoria when he was in Australia recently. In Melbourne Tom caught up with an old friend and dive system designer Eric Fink, who now builds the rectangular hyperbaric chambers. While being a very busy saturation system designer, over the years Eric worked on some U.S.N. projects. He has gained lasting fame as the designer of one of the re-breathers from Westinghouse usually called the “Fink Rig.” Eric would love to know if there are still any around?

Tom is pictured in the fine Adelaide winter sunshine with DHS ASEA member Derek Craig (left). The helmets are (left) a Siebe 6 bolt matched #15396 and a very polished Hienke Pearler corslet (breastplate) # 6599 with a Siebe bonnet # 15191. An interesting part of the Hienke-Siebe mismatch is the location of the neck ring locking threads. The interrupted threads on the bonnet and corslet are off-set by 1/8th of a turn so they cannot lock down together. In Australia four Hienke corslets of this vintage have been found that have the threads off-set by this 1/8 of a turn. Siebe Pearler # 10302 (see HDM #20, Helmets of the Deep, by Leslie Leaney) also has this placing of the threads. Dom Lamera of Geraldton, Western Australia is currently investigating this observation. Does anyone out there have any thoughts?
In January, 1995 I gave a talk at the TEK ‘95 conference in San Francisco — an annual forum for technical divers. Then I hung around to catch the DEMA (Diving Equipment and Marketing Association) show. The hot, new hardware at the show? REBREATHERS. Jeezz! I could hardly believe it! Dry suits and rebreathers, same as the fifties. Wait on, what about the other ‘new’ stuff — NITROX, for example? Nope, we knew about Nitrox — called it ‘High oxygen diving’— mostly commercial and scientific guys used it, but the ‘relative oxygen depth’ and the ‘equivalent air depth’ table calculations were available. Masks? The ‘Pinocchio’ of the fifties was virtually identical to most masks used today. Snorkels? Gee, I waited over forty years to see the ping-pong ball snorkel reappear in a snapperp format! Single-hose regs? Nope. Bin there, done that! At least six models of single hose regulators were available in the fifties. Fins? By God, I don’t believe that anyone is stupid enough to suggest that a better fin was ever made than Saint Art Browne’s (for, surely, he has been canonized by now!) gum-rubber miracle, ‘Super Extra Large Duckfeet.’

Some of you are probably rolling your eyes and circling your forefinger by the sides of your heads — still others may be just now turning the page. WAIT! WAIT! turn back. I am just about to recant! I was just being fiftyish.

The truth is, in my humblest of opinions, that there have been only a few really fundamental changes in diving equipment, but everything, absolutely everything, is easier, smarter, safer, more comfortable, more durable, more colorful, MORE BETTER! What a great time to be a diver! Cam was right when said that diving doesn’t get any better, but the equipment sure did!

And the few ‘fundamental changes’? Well, maybe ‘fundamental’ is a bit strong...I mean things that either didn’t exist before or improvements so great that they constitute a major break through. Think about it. If I had found a camcorder in my room, in the fifties, I would have thought that pygmy aliens had arrived to abduct my gerbil! And dive computers—Oh, my! Don’t even think about the single-orifice ‘Decompression meters’ of the fifties. They had ‘individual table tailoring,’ but it was by accident, not design! Look at your wrist computer next dive and think about how lucky you are. Today’s computers combine a watch, depth gauge, thermometer, maximum depth indicator, tank pressure gauge, decompression computer, pre-dive planner and post-dive recorder. That’s my idea of a major improvement! There are also a lot of not-quite-major-but-pretty damn good products: Like all of the things made out of silicone rubber. General Electric had ‘RTV liquid polyurethane— would have killed for it, in the fifties. And Haagen-Das ice cream... well you get the idea.

So, you may ask, what is the point of this article? There should be one. Be kind of foolish to take all this room and not have anything important to say. Let’s see...Baby boomers go diving? Sure, but... so what? Baby boomers diving less now but enjoying it more? No, Cam was right: the diving doesn’t get any better than it was in the fifties.

Hmmm...I know! The gear is basically the same. Yeah, right, like Mother Theresa is basically the same as Madonna! Perhaps the point is just a quinit back. Maybe a small pat on the back for the guys who started the sport of diving in British Columbia. The guys like Cam, who never dreamed they were laying the foundations for an activity that would bring joy to tens of thousands. The guys like Cam, who did it because it was just so great... “Way cool” the kids would say now. Only problem with that as a point is that I would then be giving myself credit and that makes me a little uncomfortable, because I’m normally very modest. Why are you laughing? You cheeky devils!

Anyhow, the sport of diving in B.C. was fifty years old in 1998. Now that’s an impressive achievement. The next fifty years promises as many innovations and ‘re-inventions.’

Pat Molony, Founder of the Vancouver City Police diving squad and B.C.’s first scuba instructor, 1952. ‘Dolphin’ front entry dry suit; Voit mask; ‘Belaqua’ capillary tube depth gauge; war surplus ammo belt with simple quick release strap; fins are modified ‘Barakuda’ by Dreaeger. The rebreather shown is one of Pat’s own design. It was his fourth unit, each one becoming simpler, better balanced, and more reliable. The set looks rather basic, but it is actually a clean, functional design that worked well. There were four members of the Vancouver Skin Divers club who used rebreathers fairly regularly in the early fifties. They were: Jack Logan, Phil Nuytten, Cam Porteous and Pat Molony. Jim Willis Photo.
Joseph August Schultes (1773-1831)
A short biography by Michael Jung

Joseph Schultes lived a very interesting, but at the same time, tragic life. After finishing his medical studies in Vienna, he became a professor at the tender age of 24. Political developments combined with his ruthless spirit made him leave Vienna in 1806 for Krakow, Innsbruck and finally Landshut. Since he was of Bavarian descent, he stayed the last two decades of his life in this Bavarian town.

In 1792, when still a student of medicine, Schultes conducted intensive research into the problem of human breathing and air consumption during diving. Working on a strictly scientific basis he did not just go by undetailed data he found in books. He actually conducted his own tests with diving bells in Vienna swimming pools, to research exactly how much air a human being consumed when under pressure. To enable divers or submarines to remain under water for longer periods, he proposed to equip them with containers of compressed air which would serve as an air supply. Even more time could be spent under water if oxygen was used instead of compressed air.

Schultes proposed to fill the compressed air into round containers, similar to those that could be found on air rifles or “Windbüchsen” (wind cans) as they were also called. This kind of weapon had just been introduced into the Austrian military. From the container, the air was to flow through a tube into the diver’s helmet. The helmet protected the diver’s head like a small diving bell and also extended down to the diver’s hip. Expired air was exhausted through a valve at the top of the helmet. The air supply to the diver was not continuous but controlled through a mechanism similar to that of a watch, which would regulate its delivery. This mechanism assisted in conserving the supply of compressed air.

Schultes was convinced that “this thing can become big,” but he did not construct his invention by himself. There were two reasons for this. Firstly, it was impossible to get the required compressed air containers in Vienna, because at the time they were seen to be essential to the construction of the secret new air rifle. Therefore it was not permitted to make them outside of military circles. Secondly Schultes was, regarding the instability of the time, worried that Austria could misuse his invention in a war against Napoleon’s troops.

In 1825 Schultes turned to Edward Church, an American Consul in France. For several years Church had been building steam ships which were used on European lakes and rivers. He was also a friend of Robert Fulton, the builder of steam ships and a submarine. Fulton praised Schultes’ idea and suggested that he should have it patented. Schultes however refused to do so, because this was against his fundamental beliefs in the freedom and equality of man.

Around the same time, Schultes came across an article in the English Mechanic’s Magazine describing a diving apparatus identical to that of his own. During his life Schultes had often become a victim of intrigue, and he now suspected that someone had stolen his idea. He quickly wrote an excited letter to Mechanic’s Magazine and to the German Polytechnisches Journal. In this letter, he demanded to be named as the real inventor of the described apparatus. The English magazine did not answer his letter, but the German one printed it and mentioned it again in further articles to the subject.

Weakened by an illness and disillusioned through many insults, Schultes had neither the strength nor the desire to further pursue his invention of a self-contained open helmet diving apparatus. He did however cement his claim to be the real inventor, when his relevant manifesto on the apparatus was published in a popular German magazine in January 1828. That is the last we heard from him until his death in 1831.

Today, Joseph August Schultes has to be regarded as an important technician and scientist, who, as early as 1792 had the idea to use compressed air in containers to provide divers, diving bells or submarines with fresh air. With this, as well as with his idea to use oxygen for diving, he was well ahead of many other inventors.

(For more information, refer to the book Joseph August Schultes, by Michael Jung, 1998.)
Go back to the 1960s; place yourself in Mexico; picture a small town with a lake, and now….look up! There is a group of men jumping from a miniature plane wearing, what is that?…..wet suits, fins, tanks! They hit the surface of the water and, they disappear!

The date is August 2, 1964. For the first time ever in Latin America people sky dive to scuba dive. The scenario was a town in the central region of Mexico known as Tequesquitengo. These pioneer sky diving scuba divers were Captain Luis Hurtado and Carlos Balderas.

“The path that led to this achievement was not an easy one,” recalls Captain L. Hurtado more than 30 years later. Hurtado is recognized amongst the pioneers of scuba diving in Mexico. His first immersion took place also at the Lake of Tequesquitengo, in 1951. Captain Hurtado recalls that he was “snooping around or better yet, spying” on three gentlemen who were going into the water with diving gear.

One of the divers, Juan Ibarrola, saw young Luis and noticing his interest invited him to dive. This first dive lasted no more than ten minutes, but it was all Captain Hurtado needed to fall in love with the underwater experience. From that moment on, Luis Hurtado pursued a dedicated career in scuba diving.

In 1962, he was an instructor of the marine infantry of the Mexican Army and it was then when he decided to form the first group of “parachuting divers.”

“I came up with that idea after reading the adventures of the scuba divers of the U.S. Marine Corps,” says Captain Hurtado.

He also remembers the highs and lows of that first Latin American group of parachuting divers. “There were a lot of peculiar moments during that time.” Everything from landing on top of cows, chickens, inside a church and even, on the patio of a women’s jail. Nowadays, Luis Hurtado is still diving in Cancun, where he works as a diving instructor and runs his own dive shop.

He says he will continue dedicating his life to share with the new generations the love and respect he feels towards the underwater world “in which we have the joy of sharing with it’s wonderful creatures.”

Captain Hurtado sits quietly. “We have also been witnesses of how day after day, the ocean has been deteriorating and we have shed many tears over that.” In a few words Captain Luis Hurtado recalls what a life dedicated to scuba diving has given him. “…being underwater, discovering a whole new world where there is no evil, everything is pure, nature herself.” And that, as we all know, is not easily found in the ordinary world.
National Association of Underwater Instructors

Instructor's Training Course

Shamrock Hilton Hotel
Houston, Texas

August 22 through August 26, 1960

Monday, August 22
8-9 a.m.—Introduction and N.A.U.I. Organization, Neal Hess.
9-10 a.m.—Teaching Techniques, Capt. Behnke.
10-12 noon—Medical Aspects, Capt. Behnke.
1-3 p.m.—Dividing Physics, Cmdr. Bond.
3-5 p.m.—Pool Work, Tests and Skin Diving, Neal Hess.
7-9 p.m.—Medical Aspects, Capt. Behnke.

Tuesday, August 23
8-10 a.m.—Medical Aspects, Capt. Behnke.
10-12 noon—Dividing Physics, Cmdr. Bond.
1-3 p.m.—Lifesaving and Artificial Respiration, John Jones.
3-5 p.m.—Pool Work and Scuba Fundamentals, Neal Hess.
7-9 p.m.—Practice Teaching.

Wednesday, August 24
8-10 a.m.—Legal Aspects, Hal Lattimore.
10-12 noon—Teaching Techniques, Al Tillman.
1-3 p.m.—Equipment.
3-5 p.m.—Advanced Pool Work, Neal Hess.
7-9 p.m.—Practice Teaching.

Thursday, August 25
8-9 a.m.—Legal Aspects, Hal Lattimore.
9-11 a.m.—Marine Biology, Dr. Rechnitzer.
11-12 noon—Search Patterns, Neal Hess.
1-3 p.m.—Oceanography, Dr. Rechnitzer.
3-5 p.m.—Pool Work, Neal Hess.
7-9 p.m.—Written Tests, Al Tillman.

Friday, August 26
8 a.m.—5 p.m.—Boat Trip and Ocean Tests, Al Tillman.
7-9 p.m.—Graduation Dinner and Movies, Dr. Rechnitzer.

Standards as set by the YMCA and Underwater Society of America for Underwater Leadership and Training and Certification will be used for qualification and graduation from this course.

SKIN DIVER—August 1960

INSTRUCTOR STAFF

National Association of Underwater Instructors, Houston, Texas, August 22, 1960

Captain Albert R. Behnke, Jr., U.S.N. (Ret.), Medical Aspects of Diving

Captain Behnke received his M.D. from Stanford University in 1930. He holds a Master of Science degree from Yale University which was awarded him honorarily in 1942. He was a Research Fellow at Harvard University 1932-33, where he worked on problems dealing with exposure of the human body to high pressures. He is an Honorary Member of Hollywood Academy of Medicine, Honorary Member of Harvey Society, Honorary Member of American Society of Anesthesiologists and a Fellow of the New York Academy of Sciences. He is a member of the American Society for Clinical Investigation, American Physiological Society and Sigma Chi.

Dr. Behnke was instructor, U.S. Naval Medical School, 1937-42. He participated in the five months rescue and salvage operations incident to the U.S.S. Squalus disaster. During World War II, he carried on intensive investigation into the applied physiology of respiration under deep sea conditions, and has been connected with the investigation work at the Naval Medical Research Institute since its foundation. He initiated action which led to the foundation of the Naval Medical Research Center, Bethesda, Maryland. He served as Scientific Director of this institute from 1943 to 1950. He was Staff Medical Officer, Commander Submarine Forces, Atlantic Fleet during 1952.

Commander George F. Bond, Medical Corps, U.S.N.

Physics of Diving Commander Bond was Submarine Medical Officer, Submarine Base, Pearl Harbor, 1944-46, and Assistant in Charge, U.S. Naval Research Laboratory, U.S. Naval Submarine Base, New London, Connecticut until last year when he was promoted to Officer in Charge of the same installation. In addition, Commander Bond is in charge of the Submarine Escape Training Tank, U.S. Naval Submarine Base.

Commander Bond is a member of the American Medical Association, Qualified Deep Sea and Scuba Diver and a Qualified Submarine Medical Officer.

Dr. Andreas B. Rechnitzer, Marine Biology and Oceanography

Dr. Rechnitzer is the Scientist in Charge of Project NEKTOK, the continuing program of probing the ocean bottom in the Navy’s most unique submersible, the bathyscaphe “Trieste.” He is a biological oceanographer with his Ph.D. from UCLA. He received the Distinguished Citizen Service Award from President Eisenhower, February, 1960 and is a life member of the National Geographic Society. He is a member of the National Academy of Science Panel on New Devices for Exploring the Ocean. He has written several papers on scientific diving and is a pioneer in the development of self-contained diving equipment for scientific research.

Mr. Al Tillman

Training Techniques and Local Certification

Mr. Tillman is Director, Underwater Activities, Los Angeles County Department of Parks and Recreation. Mr. Tillman is responsible for the most advanced program for the certification of skin and scuba instructors. He pioneered the concepts of training qualified scuba divers to be instructors of the newborn sport as early as 1953. Since that time, he has trained over 200 qualified instructors and has edited the text “Underwater Recreation” published by Los Angeles County. He is the only one, responsible for the high level of instruction offered the new diver in Southern California.

Mr. Hal Lattimore

Legal Aspects of Instruction and Salvage

Mr. Lattimore is a practicing lawyer in Fort Worth, Texas. He is legal counsel to the Underwater Society of America. He has been diving in the Gulf States for over 10 years.

Mr. John C. Jones, Jr.

Livesaving and Water Safety

Mr. Jones is Director, Underwater Training, Howard County, Florida, Red Cross. Mr. Jones pioneered the training of scuba instructors in Florida. His extensive development of skin, scuba and instructor's courses has been emulated throughout the United States. Many of the country's top instructors use lesson plans developed by Mr. Jones. He is responsible for the training given over 150 instructors in Florida.

Mr. Neal Hess

Co-ordinator, Search Patterns and Pool Work

Mr. Hess is instructor editor, "Skin Diver Magazine," Director of Instructor Certification, Underwater Society of America, a Professional Engineer and graduate of the School of Business Administration, Harvard University. He has corresponded with over 500 instructors in the United States, Canada and Mexico. He is responsible for the listing of qualified instructors in "Skin Diver Magazine" and the formation of the National Association of Underwater Instructors.
In November this year NAUI celebrates its 40th Anniversary.
Co-Founder Al Tillman recalls the beginning.

The Formation of NAUI.
Houston 1960

What is the single most influential event in the history of sport diving? It is a question that has been debated for as long as I can remember. One event that is always mentioned as a contender is the first instructor certification course for the National Association of Underwater Instructors (NAUI) that took place at the Shamrock Hotel in Houston, Texas in August of 1960.

“Why was this event so influential?” any newcomer may ask. My answer is always because this was truly when the United States became united in its goals for diver education. It is a fact that the YMCA started a national program a year earlier, but they programmed their courses primarily for divers in the northeast during its infancy. Houston 1960 pulled some of the best divers and experts from every corner of the United States and Canada into one centralized location.

Ralph Erickson (later to be co-founder of PADI) and Al O’Neil came in from Chicago. These were big guys who outwardly projected their distrust of the NAUI idea.

Eugene Winter and Dave Woodward came from the Northwest with an eager eye to soaking everything in. They were divers who came from a dark, rainy locale and their paleness heavily contrasted with the California contingent with their dark tans and confident aura that comes from coming from a state that already had the world’s “best” training program — Los Angeles County.

The guys from New Orleans were smooth and laid back and silver-tongued charming. They talked about diving in the gulf like they were going to an oyster bar for polite conversation.

We had the “best-of-the-best,” Cmdr. Joe Bodner of the U.S. Navy and Capt. Garry Howland of the U.S. Air Force. They were the guys to try and beat and they scored best on the written and best in the field, respectively. Garry would go on to set the standard of NAUI excellence for the next four decades.

Joe Kingry and the Florida water rats were there. They were divers from beautiful and unique places that most divers only dreamed about at that point.

Canada had representatives who would go back to help make NAUI a leader in Canada in those early days. To contrast with those from the lugubrious North were the local Texans. They were good old boys, drawling and twanging good humor throughout the course and holding their own even if they seemed to speak a foreign language.

You may be interested in why NAUI was able to pull in this divergent group of men from everywhere. NAUI was founded by three individuals who had developed well-known names in the field of diving instruction and was backed by the tremendous force of the world’s premiere diving news source.

The original idea for the Houston course came out of the offices of Skin Diver Magazine and one of its columnists, Neal Hess. Neal was a Harvard Business School graduate who had created a column called The Instructors Corner. The column was designed to act as a “rubber stamp” for individual instructors across the country who would send in their course curriculums and, if approved by Hess, would get their name listed in “The Instructors Corner” as an approved instructor.

This went on for a short while and the next step was apparent — a formal course for instructors. Skin Diver Magazine and Hess decided to get the three primary agencies and their founders from across the country together to create a new agency to conduct a historic course in 1960. He went to me as the primary founder of the Los Angeles County program, Bernie Empleton of the YMCA, and John Jones, Jr. of the Broward County, Florida Red Cross program. The YMCA backed out, but Jones and myself moved in with a vengeance. I had already planned out a national program that would be overseen by Los Angeles County as far back as 1955 when I wrote up the plan in my Masters of Recreation thesis, but the political constraints of the County Supervisors hampered my efforts and the course that I arranged on Catalina Island in 1958 fell through. Jones was a hard worker and he immediately saw that NAUI could serve his goals for instruction.

Jones and I took over the planning for this historic course while Hess hustled the candidates and gathered the funding. We had to have a new organization to oversee this course. Jones and I were public servants and were dedicated to training as a service rather than a profit making venture, so we incorporated as a non-profit organization rather than a private company. I became the first President while Hess became Executive Secretary.

The name National Association of Underwater Instructors was derived over a series of memos between Hess, Jones, and myself. Hess originally proposed National Diving Patrol but that name was already being used by an organization being run by Walt Fineberg, so he proposed
National Association of Sport Diving Instructors. I changed “Sport Divers” to “Underwater” to signify a broader based appeal and hence the final name and its acronym ... NAUI.

The Houston course used my Los Angeles County curriculum as a template. We adopted a few new techniques from the military and the YMCA and the candidates were signing up faster than expected. A total of 72 candidates signed up for this one-week course that was originally expected to have only 25 students.

It was the course of courses. It was tough and filled with challenges, both from the instructors and the students questioning the instructors’ abilities to prove themselves. Only 52 of the 72 candidates eventually became the first fully certified NAUI instructors ... aside from the course instructors themselves. I became NAUI #1 and John Jones, Jr. became NAUI #2.

At the Houston course, four-man teams were set up with a group leader assigned. This was an L.A. County device to pull and nurture leadership from the participating pack. It augmented the small staff and served as a liaison between those in charge and the candidates.

One of the assigned leaders was Ralph Erickson, a really big Swede who looked like he should have the nickname of King Kong and represent the pro wrestlers’ union. Ralph approached like he was going to mug you but it was a facade over a nice, bright, serious persona. On the second day of the course, however, Ralph bulked up at our table at lunch to complain to Neil that there was too much time pressure to meet all the assignments the course seemed to require. He was representing his team’s Chicago divers, including Al O’Neil, a big Irishman who personified clout and who was an instigator of turmoil through others. Erickson had courage and he could be soft spoken but with a cutting edge. He’d just picked the wrong time and place to have his say. I, at that point, decided that the course was for real and that I wouldn’t be satisfied with a diva role ... nor be a figurehead. I figuratively stepped in front of Hess and took the bullet. Wrong time, wrong place to discuss this, I told Erickson, drawing a line in the dirt - we were running this course and were not going to be intimidated. We had a track record in diving to stand on. There was a physical air to this encounter and course candidates at surrounding tables were watching with great attention. Perhaps it was a test, but it did allow us a chance to publicly assert our full intention to run the course as we saw it and the inmates would not be allowed to take over the asylum.

There was the pressure of time for everyone. The staff found little time to sleep and the candidates were really hard-pressed to get their assignments ready on time, especially the oral presentations. But many couldn’t sleep even if they found a moment to try. It was just too exciting being part of a pioneer effort and hunkering down with many of the best divers in America.

Those who came under-prepared and hadn’t done their reading really had to scramble. They sought out the gurus - the guys who had a lot of knowledge and experience and drained information out of them. Ray Tussey was a good example: ex-UDT, handsome, smart, an athlete, a role model and willing to help others less endowed. Candidates wolfded down notes wherever they could. A candid photo of very proper Herb Ingraham from Toronto — the kind of Canadian-English type you would expect to say, “toodle-oo” when they leave — caught him enthroned on the toilet pouring over notes. Many did the same, and boning up while brushing teeth was routine. It paid off for Herb, who became NAUI #37.

It wasn’t just the candidates who were scared about meeting the challenge. The staff wasn’t all that sure of themselves, either. After all, who had ordained them to create the universe? I had the whole L.A. County system as my creation to lean on, but I knew that I had to do more than shuffle papers and talk fast. “Yeah, but what can he do in the water?” was surely the thinking.

I chose the newly introduced mouth-to-mouth resuscitation on a diver’s float which in those days was an auto inner tube. I had devised the method with the new artificial respiration technique for divers to use for towing a victim back to boat or shore. It was showcased as a main event at the Race for Life contest at the big L.A. Sportsman Show. Two women victims were lined up from local university swim teams and diving instructors raced against
the clock in making the rescue, replete with drum rolls, spotlights and an excited announcer. Two shows a day for the 10-day run of the show got the skill perfected for use in classes.

I was sweating some in the Texas heat as I slid into the outdoor pool, which was shaped like a shamrock. But I didn’t count on the Irish symbol of luck to get me through; I’d practiced this tube rescue over and over again before coming to Houston. Every possible thing that could go wrong was rehearsed into the practice. As a college professor, I knew you’d better be ready to get shot down if you weren’t way ahead of the students and hadn’t had a lot of hands-on exposure to a skill you were going to teach. The future NAUI instructors hadn’t seen this one before and its very newness caught their fancy. They would go back home with a brand new skill to teach. It was the case of a skill that really worked and from which a learner could experience immediate success. I knew from experience that I’d picked well and that the candidates had something to look at besides a guy in a suit acting like he was in charge.

The instructors at Houston were some of the best as well. Andy Rechnitzer was NAUI’s official scientist-oceanographer. He had played the same role with the L.A. County program in the 50’s. Oceanography, everything one ought to know about water conditions, bottom geology, and marine creatures had become a cornerstone of diver training and no one anchored it in better than Andy. He had command of the podium and looked lean and chiseled and ready to physically dive any situation.

Cmdr. George Bond and Albert Behnke were both there. The two of them provided the tone of authority and credibility for that Houston Course. Medical aspects were the scary and intellectually mystifying core of why diving needed well-trained instructors.

Hal Lattimore was a brash, diving Texas lawyer who was signed up to talk to the instructor candidates about legal liability in diving. It was an excellent hip pocket course all by itself and worth the price of admission. Lattimore was confident and the perfect storyteller. His classic cases of people being sued are remembered to this day by graduates of NAUI Houston. The legal side of instructing is one of the areas that didn’t get the coverage in the years to follow at NAUI courses and certainly would not be done as well as those two hours in 1960.

During the years to follow Houston, NAUI was basically on hold until the courses in Chicago, Toronto and Ft. Lauderdale were held. Neal Hess was wooing the manufacturers and trying to solidify NAUI as the training arm of the Underwater Society of America against formidable opposition, and, he wanted the organization to become a money-maker, while John Jones and I were strongly behind the idea that instruction in diving should maintain a public service and non-profit orientation.

Skin Diver Magazine was caught in converging tides, pressured from all sides, manufacturers, dive shops, the clubs and independent instructors. Auxier and Blakeslee had to look at both advertising revenues and subscriptions to survive; but they didn’t roll over. Instead they shifted even more support to NAUI as 1961 passed.

Over the next year or so Hess did the planning and hustling of courses and managed the fees while Jones, Garry Howland, and myself hustled the teaching end of NAUI. Hess was secretive about his dealings and left the three of us out of negotiations he was making with manufacturers and dealers. We eventually discovered various details of the dealings and these brought the three of us into conflict with him regarding our vision of how NAUI should operate.

Hess used various tactics to woo some Board members into his camp but had neglected to remember that NAUI was based on the work of Jones and myself, and Garry is as honest as they come. It all came to “blows” and the power behind NAUI, Jim Auxier and Chuck Blakeslee at Skin Diver Magazine, had to make a decision over the future of the organization. Would it be our vision or Hess’? Hess and I went before Auxier and SDM chose the high road of public service over profit. Hess resigned from NAUI in January of 1962 and we reorganized with a new Board consisting of Garry Howland as President, John
C. Jones as Vice-President and Jim Auxier as Secretary-Treasurer; I became Executive Director. The actual day-to-day operations of NAUI were transferred from the position of Executive Secretary to the newly reorganized position of Executive Director. NAUI also moved all of its operations from my kitchen table into Skin Diver Magazine’s offices in Lynwood.

Over the next few years I took over the dual position of President and Executive Director and both Jones and Howland served productive terms as President. NAUI was the main power in diving in the early 1960’s. In 1964 the UNEXSO project came along and I was ready to move NAUI international. I made agreements with the British Sub Aqua Club as well as plans to move the world headquarters to Grand Bahama Island. NAUI moved to Freeport but a new generation of instructors pushed for NAUI to move back to California. The Pacific Branch had the majority of the voting members and its Director, Art Ullrich, was able to wrestle control back to California ... and there it sat until 1997.

In 1997, NAUI moved its headquarters to Florida after making a renewed commitment to educate divers around the globe. Even in its non-profit role NAUI must compete to survive, and current Board members like my friend Tom Hemphill have the skills and business acumen to accomplish such a task. I only hope that the vision of public service always survives as the heart and soul of NAUI philosophy.

Urchin Dancing — NAUI Style.

The final big test for wannabe NAUI instructors in the 1960’s was a bail-out in the ocean. It evolved from the ditch and recovery test used in the 1950’s and was an NAUI innovation first introduced in the founding instructor certification course in Houston in 1960.

Candidates were showing up at instructor courses well-rehearsed in the 1950’s procedure. It failed to reveal the reaction to the unexpected, the panic threshold. With bail-out, the candidates gathered all the gear in their arms (mask, fins, regulator, tank, weight belt, etc.) and jumped in. On the bottom, they put on all the equipment with a calm, controlled demeanor. A lot of variables, unexpected things came up that forced the diver to coolly solve any problems (eg. the fins getting away and floating back to the surface). It was a good test.

For five years I was on the bottom as examiner in all the NAUI instructor final tests. At the 1963 Miami ICC Garry Howland was my co-examiner. We were working in 30 feet of water off Jordan Klein’s boat in Biscayne Bay. There were white splashes at the surface and there they came, four at a time, two to watch for each of us.

We waited at a nice, clear sandy spot under the boat. We waited as they sank toward us. But a current pulled them into nearby clusters of those purple-red, glass-spined urchins, with their long needles waving and revolving. The divers were landing on them — without the masks on they couldn’t see the bottom clearly.

Garry and I aghast, watched a wild, frenzied dance with gear spilling from their arms, a macabre scene, a vision of Mardi Gras. Some fiendish, evil muse in us had us laughing in our masks; you know comedy is a prat fall, and someone else’s misfortune.

But these were tough candidates and ignoring the pain, recovered nicely, scooping their gear together and getting the masks on to their faces. Garry and I quickly got serious and grasped them by the arm, moving them to the clear sand without the urchins.

We moved the boat to remedy the situation, but we didn’t neglect our apologies or praise for those stalwart four at graduation night. Those people with tattooed dots from the spines they probably still wear as badges of honor ... along with their NAUI patches.

Candidates studied where they could at NAUI Houston

This edited article is reprinted from Al Tillman’s book “I Thought I Saw Atlantis,” which contains much more information on the formative days of American recreational diving and is available below.

I THOUGHT I SAW ATLANTIS
Reminiscences of a Pioneer Skin & Scuba Diver
By Albert Tillman 1997 1st Edition
A great history book by NAUI Instructor #001, co-Founder of the American Underwater Film Festival, Founder of the Underwater Photographic Society, Founder of UNEXSO and author of early training manuals and programs. Al tells about his experiences from the personal associations with other pioneers to the large and small events that shaped diving. An essential book for any one having an interest in recreational diving and its history. $39.95 hardbound limited edition signed and numbered, $14.95 soft bound plus $5.00 domestic p&p. please check for overseas p&p. CA res. add 7.75% sales tax.
In late November, 1893, a four-masted, ill-starred schooner, the Louise H. Randall, moved away from the Philadelphia dock where she had been loading hard coal bound for Boston, a port she was destined never to reach.

She had been at sea only a day when she encountered a strong northeast wind, with rain and a rough sea. This wind, gathering violence, increased the waves’ size hourly; about ten o’clock at night, three seas, striking the ship in quick succession, threw her on her beam ends, shifted her cargo, and left her unable to right herself. Quickly then, the wind—a gale now—carried the sinking ship inshore until she reached shoal water and could bury herself one-half mile from land. Right then the Louise H. Randall, her decks eight feet below water, was finished with fate.

But Louise H. Randall was not. Nor was her husband, Captain Randall. Nor were the seamen clustered with them in the Louise H. Randall’s crosstrees. There, for twenty-six hours, Louise Randall clung with bleeding hands, without water or food, while life-saving crews on shore tried vainly to reach the vessel with a line.

Twenty-six hours. Then Louise Randall saw a ship enter the horizon. A ship that grew, every moment, more distinct, that came on through the swollen sea, keeping the sunken Louise H. Randall dead ahead, that finally was close by. So close that the flag high on its mainmast—the flag which bore a black horse, riderless on a white field—could be made out clearly. Then Louise Randall, knowing the Black Horse of the Sea, knowing the ship, the rescue steamer I. J. Merritt, thanked God utterly, knowing herself saved.

In November, 1931, the Black Horse flag still flies, still a symbol of succor on the high seas more pointedly, the emblem of the business of salvage. In 1893, Merritt, Chapman, and Scott were the names of three small salvage companies. Today their names are borne, and

Merritt’s flag is flown by the ships of an $11,000,000 corporation, the greatest salvage concern in this hemisphere. If, in the years that have elapsed, the Black Horse has set foot ashore, and the major part of the capital and energy and ingenuity of his masters goes into such prosaic endeavors as the building of foundations, bridges, sewage disposal plants, wharf facilities, and the like (see Appendix), his most exciting, most romantic labors are still upon the high seas. For the 20th century wind blows as hard as that of the 19th; fog has not thinned nor waves shrunk. To the riderless Black Horse, the owners and insurers of the $1,500,000,000 worth of U.S. shipping still look to save their injured, to raise their dead. And however more effectively coasts and channels are buoyed and lighted and charted, and however conscientiously this century’s radio carries warnings and advice, there is still some $15,000,000 worth of shipping to be saved and salvaged each year.

Marine underwriters themselves once carried on what little salvage there was in American waters. In thick weather they stationed men and horses on the Atlantic’s capes, their orders to the men being to get immediate word to them the moment they sighted a ship in distress offshore. “Immediately—even if you have to kill a horse.” But these agents—lookout and horse—were not enough. And in 1860, at the request of the underwriters, Captain Merritt for the first time broke out from the mast of a Gloucester mackerel fisherman turned salvage ship the Black Horse flag, a symbol of swift succor and a tribute to the horse that had been so hard-used in a service which Captain Merritt made no longer necessary.

The business of salvage is a curious one, bound up with the past, the laws which govern it tortuously evolved from the days when all wrecks were royal property. The sea was “the pack horse of the king,” and whatever she bore to shore belonged to him. In the history of salvage
and in its essence today is a strange mixture of heroism, of man's subtlest ingenuity, and of the breath of scandal which rises as the hysteria of great calamity subsides. The things men thought and did in the terror of a dark moment are retold before the courts of law. Once it was the duty of the king's admirals to salve ships upon the high seas. But only if no living soul upon the distressed vessel reached land alive were the admirals themselves enriched. There were sinister tales told. Today the captain of a ship in distress may still pace the bridge in dilemma. Unquestioned master of his vessel, his absolute duty is to protect those who sail with him. Yet should he say the word, his SOS go out over the sea and salvors come at his call and put a line aboard his vessel, these gentlemen have a claim upon his ship, payable by his underwriters. And should he have overestimated the risk, there are carpets in far-away offices upon which he may stand, shifting from one foot to the other, explaining himself and his SOS to practical-minded gentlemen sitting behind desks. His whole career may rest upon a decision made with panic in the air, terror pressing close.

It is only when his decision has been made, however, that his affairs become the concern of the salvagers. The salvor is summoned, the ship is saved. What is his pay? It is determined by negotiations with the owner, by arbitration, or by ruling of the court. Court precedents serve as a guide. The courts will consider such factors as the labor involved, the promptness, skill, and energy displayed, equipment used, the value of the property, of course, and the risk to life and equipment. For releasing a stranded ship, perhaps 5 per cent of its value may be awarded; for towage upon the high seas, perhaps as little as 3 per cent or as much as 25. The percentage rises in cases involving fire at sea; still greater is the award where the salved vessel has been abandoned. But even should a ship be left derelict, it remains to be proved that the master acted with intent of finality—whether, perhaps, he did not intend to return to fight some other day.

In practice, the intricate decisions of the Admiralty Courts are more the concern of the amateur salvager than of the like of Merritt-Chapman & Scott. Most searchers for undersea gold are in this former class, following clues of almost forgotten treasure in ships legally abandoned. Merritt-Chapman & Scott take little of their salvage under these rules of court. Most of it is undertaken for marine-insurance companies on a no-cure, no-pay contract. Under such terms, the company undertakes every expense and if it fails is paid nothing. Successful, the company sends an itemized bill which is either paid, arbitrated, or left to court ruling (seldom the case).

Fortunate it is that ships which JL must sink go down, ordinarily, in shallow water. Those sunk in an exposed sea can rarely be saved with profit; those down deep, never. Salvage operations at a depth of 15 feet are unusual, and only when the reward expected is great are they undertaken at a greater depth. Ships that go down off the coast in war-time will be raised if their submerged weight is not more than 3,000 tons, because the need for tonnage warrants troublesome and expensive salvage. So also will attempts be made to recover gold bullion, even though it lies 200 feet down. The Sorimo Co. of Genoa, Italian salvagers, is seeking with new mechanical devices to recover the $5,000,000 in gold and silver bullion in the strong boxes of the Egypt, sunk off the coast of France at a depth of 426 feet (a scientific attempt not to be confused with those of the, gold-seeking dreamers mentioned above).

There are few things Merritt-Chapman & Scott has not sought in the sea. There is the salvage which, although marine, has to do neither with ships nor their cargoes. The same hour that a floating derrick is recovering in New York Harbor a twenty-five-ton anchor and twenty-five tons of chain lost by the Olympic, a diver in Lake Hopatcong, New Jersey, is recovering an engagement ring lost by a girl. One Black Horse vessel recovers from the Pacific’s bottom a fallen aëroplane; another, from a Boston river, a train that has gone through an open drawbridge; another, from a New York river, a crane blown from a coaling dock; a fourth, from a California harbor, melted dollars sunk with a burned gambling ship. In another port, a Black Horse diver, to him the grisliest salvage, disinters the drowned.

Strictly marine salvage does these things for a ship: helps it into port when it is broken down, makes it whole when it is broken, raises it when it has sunk, refloats it when it has stranded. Essentially a civil and mechanical engineer gone to sea, there is about the salvor a flavor of salty self-reliance. To him no two problems are alike. His ingenuity is endless, his patience that of Job. Today he has solved his problem of how to right and float a warped wreck of twisted steel; tomorrow the winds and tide intervene, and he must begin all over again. His eyes are the
dangers whom he sends below. Much of their work must be
done in the eternal gloom of deep water. Each job is an
adventure; the logs of the ships that fly the Black Horse
are, in their unself-consciousness, sagas of the 20th-cen-
tury sea.

How the stretcher-bearers of commerce work is best
told by two tales, pieced together from logs of everyday
adventures. There is not in them the thrill of the rescue of
the Louise H. Randall, but they tell of the challenge that
daily the sea hurls down, the salvor accepts. Their multi-
plication, in infinite variety, is the story of the salvage of
today.

The Tamiahua, largest West Coast tanker, carrying
$1,600,000 insurance written by Lloyd’s and the San Fran-
cisco Board of Underwriters, southward bound in ballast
out of San Francisco, goes aground on the Pescadero reef
in a November fog. Quickly her captain, fighting fire with
fire, fills her empty cargo tanks with sea water to steady
her so that the sea will not pound her against the rocks.
The ship’s crew decides to remain aboard.

First to reach the stranded Tamiahua are San Fran-
cisco tugboats and Coast Guard vessels, but their efforts
to deliver the beached tanker are vain. That being plain,
after a day and a night, the owners of the Tamiahua signal
Merritt-Chapman & Scott.

Straightway two Black Horse salvage steamers, the
Homer and the Peacock, leave their San Pedro base and
head north. The Homer thirty-three years ago was the
Excelsior, running from San Francisco to Nome and loaded
with prospectors bound for Yukon gold fields. Afterward
she was a salvage ship in southern seas. And a few years
ago she acted as the gold ship in a moving picture shot in
Los Angeles Harbor, The Trail of ’98. The Peacock re-
cently made the longest salvage voyage yet recorded when
she sailed 9,727 miles to rescue the S. S. Steelmaker,
stranded in the South Seas.

Arriving alongside the Tamiahua, the Peacock and
Homer find her still stormridden. Not being able there-
fore to transfer salvage apparatus to her, they go north to
San Francisco, unload it there, and it is carried overland
to a coastal bluff just ahead of the Tamiahua. From this
point are rigged to the ship a line and a trolley over which,
for the next seventeen days, travel equipment, fuel, provi-
sions, and men.

By this time divers have examined the Tamiahua’s hull
and the surrounding sea bottom. They find that of her
twenty cargo compartments, eleven are badly stove, oth-
erers have leaks that can be controlled by pumps, a few are
intact. They report, too, that the Tamiahua struck an out-
side reef and then, before her tanks were flooded, worked
over it, bow on. Now she rests in a deep basin between
reef and beach.
The salvor’s problem: to lighten the ship enough to take her over the reef. What first appears to be a natural channel through the reef is found studded with pinnacle rocks. Subsequently, however, a crooked channel is developed to the north through which it is hoped the Tamiahua may be worked when her draft is lightened.

To lighten a vessel, salvors may jettison her cargo. The Tamiahua has none. Hence they will remove her machinery and deck erections, and, most usual procedure, will force the water from her with compressed air. Leaks in the Tamiahua’s engine room and the presence of gas prevent the raising of steam in her own boilers. The Tamiahua is without power. The salvors must supply it themselves with gasoline-driven air compressors which they install on the Tamiahua’s deck.

For fifteen days the storm which had brought about the Tamiahua’s stranding continues. Great seas break over the ship’s decks, washing salvors and machinery across them, and preventing the emptying of her tanks. But on the sixteenth day, the storm appears to subside; the Tamiahua’s tanks are scaled, and the water in them is returned to the sea. Then, alas, with everything in readiness to refloat the ship, the storm begins to rise again and head toward the reef. Quickly the ship has to be unsealed to steady her, re-flooded, and secured by lines moored on the beach.

The recurrence of storm continues two days. Then, again, the weather mends and the following day, the eighteenth that the Tamiahua has been bound to the reef, is chosen to refloat her. The air compressors are hurried into action. A space of more than 400,000 cubic feet must be filled to force out the water held in the ship. Throughout the day the pumps build up the pressure in the tanks. Maximum pressure is to be obtained at 12:30 p.m., the time of high tide the next day. Throughout the night the pumps build up the pressure. Daylight: the Homer and Peacock attach manila hawsers fifteen inches in circumference and 22,400 feet long to the Tamiahua’s stern. Eleven o’clock: the last line connecting the Tamiahua to the beach is let go. Twelve o’clock: the last ounce of water is expelled from the ship. She is buoyant; the tide is full. The Homer and Peacock, straining together, pull out to sea and she is drawn from the reef. One o’clock: the Tamiahua has been maneuvered over the outer reef into deep water. The hawser are shifted to her bow and taken by the Peacock, which then heads, with her in tow, for a San Francisco drydock.

In the raising of the liner Muenchen, Merritt-Chapman & Scott had no gales and reef-inclosing seas to contend with, but there were obstacles enough.

On a February afternoon while she is unloading at Pier Forty-two in the North River, Manhattan, the Muenchen’s cargo in No. 6 hold—nitrate, peat moss, and newsprint—catches fire. The length of the ship is torn by quickly succeeding explosions. The fire boat Thomas Willet, lying close to the Muenchen, is half sunk and her pilot blown from the bridge. A fleet of fire boats and thirty-one land companies pour 15,000,000 gallons of water into the ship before the fire subsides. Then the Muenchen sinks with a port list, her bow afloat, her stern embedded in twelve feet of silt.

It is first reported that the vessel, whose value was $3,000,000, is beyond salvaging and will be cut up and removed in sections. But the hour the ship’s steel parts have cooled, a crew of divers go below to inspect her. They find that her most serious wound is a hole, twelve feet by four, starboard and aft, low on her hull. The next day the Muenchen’s sister ship, the Stuttgart, arrives in New York and the salvage engineers, going aboard her, are able to reconstruct the Muenchen’s former lines. This done and the divers’ reports had, they understand their work to be: to build and lower a cofferdam around her; to pump millions of gallons of water from her holds.

The salvors undertake first the patching of the great hole in the ship’s stern. Her after part being sunk deep in mud, it cannot be reached by divers until a submarine “fence” is made. Inside this the divers work with access to the hull, and are able to apply the patch. This is a wooden form made above the surface, then bolted below water to the hull, filled with concrete, lowered in canvas buckets, poured and tamped by divers, and finally made water-tight with canvas.

The other holes, after being measured by divers in darkness (underwater lamps being useless in the mud-clouded Hudson), are patched with sailcloth and wood “puddings.” There are hundreds of these to be sealed: port-holes and chutes, ventilators, hatches and sanitary openings.

In removing water and cargo from the Muenchen and
righting her, the salvors have to overcome problems of great difficulty relating to equilibrium. When water is drawn out of a ship’s hull, her stability is endangered, and she may shift suddenly and roll over on her beam ends. Before the pumps may be started, the salvors must, as if they had the vessel on a very sensitive balance, locate nearly to an inch her center of gravity and how much this will shift when cargo, say, is taken from hold No. 6, water exhausted from hold No. 6.

The disposition of ballast on board the Muenchen, a bulky, broad-beamed ship of 13,483 tons, requires much discretion. Cargo removal and ballasting must, every moment, balance. At one time 525 tons of coal are placed on board; at another, 300 tons of chain. Even as water is being pumped from the ship’s after holds, it is being pumped into those forward.

Slowly the Muenchen comes around. Three hundred men are employed on her and many of the Black Horse fleet: the floating derrick Century and the pump boat Carback are digging mud; the floating derrick Admiral is removing with buckets cargo which has compacted into a doughy mass; the floating derrick Comrade is placing ballast; the floating derrick Commerce is hoisting; the wrecking barges John W. Chittenden and H. Seymour are performing general services; and the salvage ships Relief and Resolute are standing by, supplying electricity and compressed air.

Although fifty days are needed to prepare the Muenchen for pumping, only three are necessary to pump her out. The sixteen pumps used are able to exhaust 1,500,000 gallons of water from the ship’s flooded holds in an hour, and fifty-three days after she has been sunk, the Muenchen, sealed and emptied of water, turns like a late sleeper, raises herself, and comes erect alongside her pier. A spontaneous cheer goes up. It is an unconscious tribute to the organization that has given one more ship back to the navy of commerce, to the Black Horse who gallops riderless, to the race of men who salvage from the sea.

Appendix: Salvage

The Black Horse Sets Forth Ashore.

While Merritt-Chapman & Scott was conceived in salvage and is today the largest element in the business of salvage in America, salvage profits alone would not support its great investment in ships and equipment and men. Chiefly from two other sources come its revenues: harbor lighterage and construction, both marine and general.

Today seventy-five shipowners, the operators of 125 lines, look to the Merritt-Chapman & Scott lighters and hoists to handle their heavy cargo consignments. The New York offices of the company, high in 17 Battery Place, are never closed. On watch in them every hour of the day and night is a dispatcher who is informed of the position of every vessel of the Black Horse harbor fleet, engaged or idle. Modern commerce has compelled the development of alongshore and harbor facilities equal to moving the heaviest freights. Derricks (named for a hangman, one Derrick) which can lift and lighter units of hundreds of tons (the largest liner with her own booms can manage only a few tons) are indispensable to the exporting manufacturer. To the shipowner and the dock owner swift clearance is the essential of profit.

Every tide carries fresh labors to the derricks, tugs, and lighters of the Black Horse fleet. World trade, an interchange, may be conceived as well from the deck of a floating derrick as anyplace: she hoists marble out of a ship from Leghorn, then places into the just emptied hold an electric locomotive, and carries the marble on her deck to a railroad terminal or a marble storage yard. She swings an elephant out of a ship returned from India, swings him aloft from the next hold a giraffe, his neck seeming short against the stretch of her boom.

More profitable than salvage, harbor services have the same fault of being too dependent upon the shipping industry. How dependent was shown clearly last year when the combined exports and imports of this country declined $280,000,000, and the harbor service income of Merritt-Chapman & Scott fell quite as steeply. The company’s fleet often lay idle and its men were unemployed.

The dependence of the Black Horse on the shipping industry has been a concern of the company’s directors since William H. Baker became the company’s head in 1927. Mr. Baker, whose background was not the sea but Cornell and concrete (he had been western manager of Atlas Cement, president of Acme Cement, and vice president of North American Cement), has directed a steadily increasing part of the Black Horse’s energies into construction, both marine and general.

Less dramatic than the activities of its seamen and its divers, but looming larger in the company’s activities and

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upon its balance sheet, are the works of its engineers and builders. States and cities are showing yearly more concern about improving with docks, esplanades, sea walls, and parks, their waterfront property, and about protecting it. It is a sum which overwhelms the small amount involved in salvage and even the sums involved in harbor service operations.

Many things belong under marine construction, among them the building of docks, breakwaters, bridge foundations, and shore-protection works, the laying of outfall sewers and underwater conduits, the construction of deep, offshore oil wells with underwater foundations. And the company is no longer restricted to marine construction only. Its other works range from the building of a mile of Coney Island boardwalk to the recently finished trestles and railway roadbed at Boulder Dam. The company is prepared also to make surveys and to prepare plans and specifications for industrial developments, to erect public buildings, to build tunnels, swimming pools, dams, bridges, and the like.

Formed in 1917 from three old companies all born of the sea, the Merritt Wrecking Organization, the T. A. Scott Co., and the Chapman Derrick & Wrecking Co., Merritt-Chapman began early in 1929 to push inland. In that year it purchased several construction companies, a stone quarry, and part ownership in other salvage concerns. In 1930 the physical expansion went on. The program not only carried the Black Horse inland to the Mississippi and the Great Lakes, once distant territory; it also extended the Black Horse building activities from Baltimore to Santa Cruz Island, off the coast of California, from New Orleans to Duluth and Detroit. Not only that, but in both salvage and construction its work was extended to Canada and Mexico and to Central and South America.

Definitely these extensions emphasized the direction of the company’s development along construction lines. It was construction which furnished the brightest spot on the financial statement for 1930. Although in that year a total of $11,750,000 in construction contracts on its books were canceled because of economic conditions, the department showed a reasonable profit and had at the end of the year uncompleted contracts totaling $55,333,000, an increase over the previous year.

Today the Black Horse of the Sea is leaner than he has been. Due to idle shipping, mild weather, and general economic conditions, the net income of Merritt-Chapman & Scott in 1930 was equivalent to $1.61 per share on its common stock; in 1929, it was $2.34. But the Black Horse is yearly growing more independent of the shipping industry and he has now a wide pasture-the sea and all its shore.
Undoubtedly the most popular book among the helmet collectors of the world is *Helmets of the Deep* by Leon Lyons. The front of the book’s dust jacket features an Augustus Siebe helmet (1840-1870) that is part of Leon’s collection. In July 2000, Leon teamed up with John Gallagan of the Treasure Coast Working Equipment Group and Richard Durgee to dive the helmet. Other antique diving items from Leon’s collection were assembled in an effort to recreate the actual diving equipment that would have been used with the helmet over 130 years ago. Leon’s report on the dive, including the reason that air is rushing out all around the helmet in one of the photos shown here, will appear in the next issue of *Historical Diver*. We hope to have some underwater photos of the dive too.-Editors.
Sacramento River Reunion Divers Rally at Lindquist Landing

By
Leslie G. Jacobs

Top Row: “Bud” Weiser, Don Wright, Torrance Parker, Capt. Ed White, Dave Jackson
Bottom Row: Charlie Lindquist, Jr., Gunner Overall, Fred Johnson, Bob Kirby, Gene Webb,
Mike SanGabriel, John Durham, Ace Parnell

“Can’t lay pipe when nobody’s in the water,” Charlie Lindquist, Jr., yelled from the crane. The stage was ready to be lowered into the Sacramento River on Holland Tract, where Lindquist owns 51 acres. Situated between Contra Costa and San Joaquin Counties, the Lindquist property consists of a working cattle ranch, marina, airstrip and dry storage facility, with 4600 feet of river frontage. The diving stage hung suspended from the crane on the barge that Charlie built. Everyone was waiting for the first diver to dress in.

“C’mon, you guys, let’s get some divers in the water!”

In the course of a three-day weekend, forty-odd hard hat divers, experienced and novice, dove the river — seven of them women. Charlie’s wife Becky made her first dive in standard gear. “It was dark,” she said, “but it was interesting. I’m glad I did it!”

Charlie and Becky Lindquist made the first dives on Friday. On Saturday morning, a young man complained the dress was too hot. His tender called him a “candy ass.” Afterwards the diver took the tender aside and said, “Just for your information, I am not a candy ass.”

“Well,” said the tender, “Just for your information, I was only kidding. But we had women divers didn’t complain as much as you!”

The event was organized by Charlie and Becky Lindquist and John Durham, as a reunion for active and retired commercial divers and their families. Temperatures soared to the mid-90’s, but a cool breeze off the water kept everyone cool and whetted appetites for adventure, good conversation and delicious barbecue.

Capt. Ed White and John Durham served as dive masters. Participants included Torrance Parker, Jocko Robinson, Mark Howell, John Durham, Becky Lindquist, Kenny Knott, Jeff Dennis, Frend Johnson, Tim Johnson, Robert Shep-
herd, Chris Malone, Tom Palatino, Mark Hicks and his wife and daughter, and George Eaton, who owned the houseboat where guests could enjoy the river view from a spacious, comfortable deck. Bob Kirby dove his Morse streamline. Other divers used the old Desco that Charlie’s father and his uncle, Scotty Chisolm, had used 40 years ago. When Charlie, Jr., acquired the helmet, he had it reconfigured by Desco, and added a telephone receptacle and second exhaust valve. A Kirby 4-light was also used. Lindquist and his nephew Gary Brush operated the crane.

Son of diver Charlie Lindquist, Charlie Jr. purchased one acre along the river thirty years ago. The property now spreads as far as the eye can see over acreage that he and wife Becky have fashioned into their own private waterfront kingdom. At 63, Lindquist is a bundle of energy; he still dives commercially and runs the marina. He also enjoys riding horses with Becky, working on his Cessna 172, and taking his Harley Davidson for runs around the scenic Sacramento delta.

Dick Clement, age 86 and retired from commercial diving since 1976, enjoyed reminiscing with Kenny Knott and Bud Weiser under the shade tree in the Lindquist’s patio. They offered humorous recollections and words of wisdom for the neophyte:

“You have to be an innovator. You see what’s available to you and get the job accomplished.”

“You have to improvise. A good diver gets the job done regardless what he’s handed to do it with.”

“A successful diver can’t be too laid back. You have to have a way about you that allows to you talk to people, particularly the bosses, in order to change or improve something. Nobody knows better than the guy who’s down there what the situation is.”

“And don’t be too proud to ask for help.”

“A good diver has to have presence of mind and the right temperament. Don’t panic!”

Divers and tenders worked swiftly with practiced concentration born of many years’ experience as they dressed each other in and out—sometimes two and three at a time. Visibility was poor—a foot or two, give or take the amount of silt stirred up from river bottom, but nobody seemed to mind. Don Wright jumped into the water for a refreshing swim across the river. Bob Kirby and Torrance Parker decided to forego the stage and jumped in, in full gear, showing the newcomers how the old pros do it.

“A successful diver has to have an ego one mile high and two miles wide,” said Bud Weiser. “You have to have that much confidence in yourself.”
The final HDS display featured the latest trend in rebreather design technology; the fully closed circuit electronically controlled mixed gas units. Starting the closed circuit mixed gas display was an early example of the Kanwisher-Stark Electrolung (serial #8). It was produced in 1969 by the Oceanic Equipment Corporation, which was founded by Walter Stark, one of the unit’s co-inventors. This system includes three polargraphic sensors designed by John Kanwisher, the other co-inventor. These sensors read the oxygen level (PO2) within the loop and displays that PO2 reading on a wrist mounted meter. The level of oxygen is then averaged and compared to a preset value, thereby activating the solenoid to open and admit more oxygen if/as needed. An audible beeper alarm is included to warn of sensor malfunction or extreme high or low oxygen levels. The system weighs 35lbs and has the scrubber and cylinders mounted on a backpack and the counterlung worn on the chest. The scrubber assembly is constructed of clear Plexiglas with the electronics located at the top above a sealed bulkhead. The counterlung is of clear vinyl to aid visual inspection and reduce fungus growths, and features a drain to remove accidental water ingress, exhaled water vapor or hygienic rinses from postdive procedures. The Electrolung design was sold in late 1969 to the Beckman Instruments Company who continued to produce it until approximately 1971. The unit was loaned by its owner, Patrick Duffy of Alaska.

Alongside was another rare mixed gas system, the Shadowpac by Divematics, USA, Inc. This system was designed for commercial applications in 1976 with a centralized scrubber/counterlung configuration protected in a fiberglass shell on the diver’s back. The axial flow scrubber boasts a duration of six hours and has the counterlung assembly (with relief valve and diluent addition) located at the top, with the electronics and sensor cluster located between the two. Inverted gas supply cylinders are mounted either side of the central scrubber package. All up, this backpack mounted system weighs in at just 45lbs. It included large bore hoses and a Widolf full face mask with integrated switch over block for bail out, either to open circuit or surface supply. This rig was the personal property of the inventor, HDS member Tracy L. Robinette and loaned to the display by Divematics USA, Inc.

The next rig in the display is a USN Mk15.5, known under its correct designation as an Mk15 Mod 1. The heritage of this design runs back to the commercial CCR1000 developed by Biomarine Industries in 1969, and was tested by both the US Army and US Navy, before being accepted under the designation of Mk15 by the USN in 1977-8. The Navy then worked with Biomarine to extend the duration and reduce the magnetic signature of the system and the Mk16 started testing during 1980. Biomarine were bought out by Rexnord in 1980. In an effort to improve the performance of the existing Mk15’s during 1984-5, a modified Mk15 was tested. This rig became known as the Mk15.5. In 1985 Rexnord also offered a commercial version, known as the SeaPak. The rig weighs 64lbs, and has twin inconel spheres...
storage cylinders each containing 21 cu ft to 3000 psi, and has a duration of six to eight hours. This Mk15.5 unit is EDU unit #3 and was loaned to the display by HDS members, Peter and Sharon Readey.

Modern rigs were represented by the Prism Topaz. This digitally controlled closed circuit mixed gas system has true voting logic, reading between three proprietary oxygen sensors and indicating unit performance status via an LED sequenced primary display. A redundant secondary display is included for back-up. It is driven directly by the sensors themselves and requires no batteries. The unit has an integrated BC and dual front mounted counterlungs, with an automatic diluent addition and manual addition override for both oxygen and diluent gas. A rear mounted backplate anchors the radial flow scrubber centrally with twin 19 cu. ft. supply cylinders either side. Electronics are mounted at the top of the scrubber assembly in a sealed compartment, and include a depth transducer to prevent off-gassing near the surface. The rig offers a four to six hour duration in a 47lb package. This system was loaned to the display by the manufacturers, Steam Machines, Inc. of California.

This article would not be complete without a mention of the additional display items of rare books, magazines and brochures, photographs, etc. that were loaned by members and owners alike and added to the ambiance. We would especially like to thank Mr. Al Betters of the West Coast UDT/Seal Museum, for his help with pictures and information. Unfortunately a family emergency prevented him from showing some of his systems this time. We would also like to thank SFC Brian Dennis and Dr. Christian Lambertsen for their kind assistance with time, information and pictures.
During the infancy of scuba diving the double-hosed regulator was basically the only game in town. Within a
decade though, the single-hosed regulators began appearing on the tank valves of divers throughout Europe and North
America. Even with the proliferation of evolving models on a yearly basis, the single-hosed designs had some serious
shortcomings, the primary shortfall being that of lack-luster performance when compared to the highly regarded
double-hosed models such as the U.S. Divers’ Aquamaster and Voit’s Trieste models.

While the sport divers were somewhat enamored of the single-hosed versions, the major militaries had more or
less snubbed their noses at the work of breathing results from their own independent tests. Granted, the double-hosed
regs were not without their faults, but the single-hosed examples typically performed at levels far below those of their
counterparts. The U.S. Navy Experimental Diving Unit at the Washington Navy Yard (prior to moving to the current
location in Panama City, Florida) had run several of the leading single-hosed models through their breathing machine
and had failed each of them on the grounds that they couldn’t effectively compete within the established parameters.

The testing data that proved to be the most detrimental was that of the exhalation effort required by the newest
designs. To be quite frank, the two-hose was considerably better despite the corrugated hose through which the ex­
haust gases had to pass. Many of the engineers sat by idly wondering if the entire design was the culprit, and if the
problem could ever be mechanically rectified.

Others felt that the small diameter of the diaphragm (compared to most
of the two-hose models) was the Achilles heel.

Two designers decided to buckle down and solve the dilemma that had plagued the manufacturers for years.
Andrew (Jack) Chappell, and Fritz (Fred) Schuler of Voit/Swimaster took the excellent balanced diaphragm first stage
that they had incorporated on the Dolphin II regulator and used it as the starting point. At that time, the balanced
diaphragm first stage had an outstanding airflow with a corresponding small drop in intermediate pressure. When this
design was extensively tested it was found that the pressure within the LP chamber would seldom drop more than
15psi, despite the workload. This design was such an innovation that it still stands as the primary engineering back­
ground for the latest Mares MR12 versions.

With the first stage more than adequately handled, these two men then set about solving the mysteries of the
lackluster breathing capabilities. The two of them realized that with the vast amount of air coming from the first stage
there was much room for improvements in the second stage housing. The Navy’s testing had shown that the exhalation
effort was abnormally high. The new design would therefore need to have high aerodynamic capabilities with both
incoming air and outgoing.

The internal contours of the housing were greatly radiused and the poppet assembly designed to allow large
quantities of air to enter into the chamber. The diaphragm and its corresponding lever were also redesigned to work in
the most mechanically efficient means possible. Even the diaphragm material was carefully chosen to ensure that its
composition didn’t deter performance.

Perhaps the most important advancement was made in the basement of Jack Chappel’s home in Fairfax, Virginia.
As he pondered over the new additions he began to wonder if the size of the exhaust valve was not limiting the exhalation process. He enlarged the opening in the rear housing until a mouthpiece check valve from a Voit two-hose regulator would properly fit. It was close to 50% larger in volume than the standard size exhaust valve used at that time. It was also fairly common for many of the single-hose designs to breathe rather wet in any position other than the diver looking straight ahead. Jack then developed a tandem valve arrangement where the exhaust would first pass through a valve and then enter a small chamber where it would then exit through an identical valve. While this tandem design did limit the wet breathing effect, it had the adverse reaction of increasing the exhalation effort beyond an acceptable degree. (The wet breathing is still a problem with many regulators in an inverted position.) The new exhaust valve was also mated to an improved combination chin rest/exhaust tee designed to effectively channel the bubbles from a diver’s field of vision. After hours of finishing up the modifications and gingerly tuning every feature, he took a day to visit the Experimental Diving Unit.

With much trepidation, Jack attached the reg under the watchful eyes of the naval operators and turned on the machine. As the breathing simulator increased the number of cycles and the depth rating, the results were read. The new design had passed with flying colors! The careful engineering and Yankee ingenuity had paid off.

The prototype was then sent to Voit’s production facility in Santa Ana and the plans were drawn up for full production. The MR12 name was chosen to be the title of the first U.S. Navy approved single-hose regulator, the MR standing for “Military Regulator” and the “1” being single-hose; the “2” stood for the two-stage design.

Full production of the MR12 commenced in late 1970, and the diving world was soon to be changed forever. Voit sold the MR12’s as quickly as they could manufacture them and soon their competitors were retooling in an attempt to match the performance of the new standard.

The death knell was sounded for the two-hosed regulator, and sadly just one decade later Voit/Swimaster disappeared from the market. Its legacy, the MR12 still lives on in Mares late incarnations.

Greg Barlow is a member of HDSUSA. Greg would like to offer his sincere thanks to Mr. Jack Chappell who was gracious enough to answer my numerous questions regarding the MR12’s history. Mr. Chappell was a well-known gentleman around the diving industry for many years. His many contributions to the diving industry helped introduce diving to the masses.
Aqua-Tech Dive Center Unveils Display of Diving History
by Leslie Leaney

HDSUSA Founding Benefactors Jesse and Brenda Dean recently opened their new Aqua-Tech Dive Center in San Diego. The new location is right next to their old store, and they have included space to display items relating to diving history. The new two story, 10,000 foot facility incorporates displays of both commercial and recreational classic diving equipment alongside the latest in available dive gear. The displays are located on both floors and include a fully rigged Soviet Helium diver Jake, a Snead, early recreational scuba gear, a variety of Kirby Morgan masks and helmets, Swindell, Miller Dunn Style III, Helmax, U.S. Divers Commercial helmet, Morse commercial, Arawak, Savoie, U.S.N. Comstock mask, U.S.N. Victor Berge mask, Siebe Gorman deep water pumps, Scott Hydro-Pack, and more.

One of the more unusual displays features two D-Day Desco U.S.N. Mark V's accompanied by a letter from the late Bernice McKenzie recalling the time she spent soldering components to the run of helmets on June 6, 1944 (D-Day). If you have an interest in antique diving equipment and are in the San Diego area, you might want to visit Aqua-Tech as Jesse and Brenda are constantly adding to the displays. They are located at Aqua Tech Dive Center, 1800 Logan Avenue, San Diego, CA 92113. Phone 619-237-1800.

Howie Doyle, Skip Dunham, Jesse Dean, Phil Nuytten and John Edwards with a Russian Helium Jake.

Brenda and Jesse with a fully restored Siebe Gorman pump.

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Due to the prevailing liability laws in America the HDSUSA does not conduct any in-water activities. Some American-based divers have formed groups to restore, operate and preserve the classic equipment of America’s rich diving heritage. These groups often contain divers who are members of the HDSUSA. The activities of these groups are not official HDSUSA functions and the HDSUSA is not involved in any of the activities of these groups, a sad situation that the HDSUSA is forced to endure. This column is produced solely for the interest of our readers. Please consult the HDSUSA disclaimer at the front of this issue.

UHEXSO. The July 1st and 2nd UHEXSO dive rally and show at the Aquarena Center, San Marcos, Texas was a big success. The park had over 1,600 people come through over the weekend and we estimate that a good 500-700 people got to interact with UHEXSO divers and see them from the underwater viewing area. We had two-way communications from the diver to the sub theater and the team of John Hoover, wearing a Superlite 17 and Julie Hoover as the theater radio operator did a great job of answering questions and entertaining the guests in the theater. Pete Petrisky did his Greek Sponge Diver show harvesting sponges in his Korean rig, and Paul Schenk dove his MK-V rig. Russell Potocki and Bill Gronvold of MOAV fame impressed everyone with their new compressor and trailer rig and Russell’s new MK-V is spectacular. Russell also put on quite a show playing “spongeball” while diving in Pete’s Korean rig. On Sunday the U.S. Navy Mobile Salvage Unit divers showed up and put on quite a show themselves, and they dove Pete’s Korean rig also. So all in all a great time. Stay tuned to the UHEXSO web site for pictures. Also the MOAV dive team will be hosting a dive rally or two in the near future: stay tuned as these should be a lot of fun.

News: Now that the July rally is behind us, we need to work on two things:
1) The Sabine River Project.
   We are close to completion and one or two more trips should get it done.
2) Operation “Clean Sweep” at the Aquarena Center.
   This will involve working on cleaning and repairs in the sub theater area. These will be working dives on both scuba and surface-supplied.

Those who are interested in either the Sabine or Cleansweep projects, please let Hoover know at UHEXSO@airmail.net.

John Hoover

California Classic Equipment Divers. “Close’er up,” comes a voice from inside the Mark V helmet. The grid-covered faceplate is snapped shut and the tender tightens down the wing nut, sealing it in place.

The old 1943 U.S. Navy “jitterbug” compressor beats out a steady rhythm as air is pumped into the hose attached to the back of the helmet. The diver, encased in the cumbersome 140 pounds of gear, adjusts the flow of air that will sustain him while in the water.

The tender then taps the top of the hat to indicate everything is ready to go, and completes a final check of the connections, air hose, and communications line. The diver responds with a “thumbs up” and with the aide of his tender, he rises and makes his way to the side of the old tugboat. In a matter of minutes, he will slip into the murky waters of the L.A. Harbor and drop from sight, leaving only a trace of air bubbles floating on the water’s surface.

Even though this sounds like something that took place 50 or 60 years ago, it actually took place on Labor Day weekend as the California Classic Equipment Divers in cooperation with the L.A. Maritime Museum presented a demonstration of the techniques in diving the old classic standard gear. CCED members dove throughout the day from the deck of the Museum’s tugboat, “Angels Gate.”

The day long event was to honor the memory of E.R. Cross who owned and operated the Sparling School of Diving in Wilmington, California, and Al Hanson who dove along with his wife, Nornia, from the Catalina glass-bottomed tour boats. A display of old helmets and other diving memorabilia was also set up on the observation deck for the visitor’s enjoyment.

For more information about the California Classic Equipment Divers, visit their website at www.geocities.com/Pipeline/Halfpipe/4507 or contact Charles Orr at (310) 834-7051. E-mail: Neverbent@aol.com

L. to R. Charlie Orr, Rick Eriksen and Capt. Ed White
Central Coast Working Equipment Group. On June 23 to 25, the Central Coast Working Equipment Group and the Marine Technology Dept. of Santa Barbara City College held a weekend workshop for 16 divers. The purpose of the workshop was to expose the divers to the unique history and procedures involved with three types of heavy gear: the Mark V, the Kirby-Morgan air helmet and a low pressure abalone hat. The lead instructor was well-known helmet designer and maker Bob Kirby. The other instructors were Bob Christensen, the chairman of the Marine Technology Dept. Don Barthelmess, Scrap Lundy and Skip Dunham.

The workshop started at 3pm on Friday and concluded at 1pm on Sunday. The Friday session consisted of classroom presentations on the Mark V by Bob Christensen followed by Bob Kirby’s discussion on the development and features of the Kirby-Morgan air hat. Saturday’s training started at 8am with an excellent, locally made video on dressing in/out procedures for the Mark V and the Kirby-Morgan gear. The video was followed by the divers spending the entire day practicing dressing in/out and diving in SBCC’s two training tanks. Each tank used one type of gear. The 16 divers split into two teams of eight. Each team spent half the day using one type of gear and then rotating to the other tank and its gear. Since each tank had two sets of gear, everyone was constantly involved in either dressing in/out or diving. On Sunday morning, the divers had the choice of using either the low pressure abalone hat or making a 120’ chamber dive.

Those who dove the abalone hat were pleasantly surprised by the difference between it and the gear they had used the previous day. The air supply, for the hat came from a Seibe Gorman, single cylinder, hand operated air pump. Both the hat and the pump were restored by Bob Kirby. At the workshop’s beginning, Don Barthelmess said the main purpose of the workshop was for everyone to have fun, and that goal was really accomplished. The Central Coast Working Equipment Group and the Marine Technology Department will hold the next heavy gear workshop on the weekend of Nov. 3-5. The cost is $375.00. By combining a team of top notch instructors with the excellent facilities at the college and the course’s written materials, the Central Coast Working Equipment Group offers unsurpassed training of this type available anywhere. If you would like information on the next class, please contact Don Barthelmess at (805) 965-0581 ext. 2427 or e-mail at barthelm@sbcc.net or fax (805) 560-6059.

MOAV will be holding three Heavy Gear Diving Rallies at Aquarena Springs, San Marcos, Texas. The Y2K dates are August 19 & 20, September 16 & 17 and October 14 & 15. Some of the gear present will be Richard Lowe’s Siebe 6 bolt, Bill Gronvold’s 12 bolt Russian and Russell’s brand new Desco MK V. Any Groups or individuals that are interested in participating are welcome, for more information please check our web site at http://moav.net or Contact Bill Gronvold at 281-861-6478.

On another note we are happy to report on August 5th 2000, MOAV working with Texas State Marine Archeologist, Steven D. Hoyt, located what is believed to be the remains of the OAXACA a 3841 cargo ship that was torpedoed July 26,1942 off of Matagorda Bay, Texas by U-171 with a loss of 6 lives. MOAV extends a special thank you to the following people for all of their help in getting our Heavy Gear up and running, Pete Petrisky, Charlie Orr, John Durham, Leon Lyons, Torrance Parker, John Hoover, Bob Barth, and Leslie Leaney. The help you have given us over the last year has been invaluable.

Congratulations Leslie on your marriage. We wish you and Jill all the best.

Russell Potocki

For details of regional rallies, meetings, etc. contact the following groups:


California Classic Equipment Divers. Charlie Orr, organizer. Phone 310-834-7051 www.geocities.com/Pipeline/Halfpipe/4507

Florida’s Treasure Coast. John Gallagan 954-989-1377, or Marc Cohen 954-565-9754 www.hybdiving.com

Rocky Mountain Working Equipment Group. Contact Ross Boxleitner, 303-232-2264 rboxl@aol.com


MOAV South East Texas. Bill Gronvold 281-861-6478 or moavbilly@moav.net

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Christie’s assembled an impressive array of diving items for their first sale of the new century. Siebe Gorman equipment dominated the helmets and pumps, but there were also items from China, Russia, Italy, Germany and Japan. Heinke equipment made a strong showing with a diver’s radio fetching over $1700 and a pair of boots almost $1500. Of special interest were numerous diving books, two of which fetched around $500 each and another which made almost $900. However, the star of this section proved to be a single sheet menu from Siebe, Gorman & Co.’s annual dinner in 1901, which sailed past $2,000. Realized prices converted from UK£ at US$1.50 and include the buyer’s premium. Captions from left to right.

Siebe Gorman & Co. Ltd. 12 bolt helmet #9265, (matching), hand formed bonnet, circa 1920-30. Sold £2350/$3525

Siebe Gorman & Co. Ltd. Pearler helmet #17320, (matching) circa 1950’s. Sold £3,290/$4935

Siebe Gorman & Co. Ltd. 12-bolt helmet, bonnet #15609 on breastplate #11893, with Siebe Gorman boots, Siebe Gorman weights, and a shoulder cushion. Sold £2,115/$3172

Siebe Gorman & Co. Ltd. 12-bolt helmet, #18434, (matching), with a pair of Siebe Gorman boots, a pair of front and back weights, and a neck cushion. Sold £2,820/$4230

Siebe Gorman & Co. Ltd. Admiralty patent 6-bolt helmet, #14388, (matching), with a shoulder cushion, a pair of Siebe Gorman boots, and a set of front and back weights. Sold £2350/$3525

Siebe Gorman 3-bolt, 3 port, light weight helmet, with hinged face port and oval side lights, with shoulder cushion, Siebe Gorman boots, Siebe Gorman weights. Sold £2,350/$3525

Siebe Gorman & Co. Ltd. 12-bolt helmet, bonnet #15609 on breastplate #11893, with Siebe Gorman boots, Siebe Gorman weights, and a shoulder cushion. Sold £2,115/$3172

Siebe Gorman 3-bolt, 3 port, light weight helmet, with hinged face port and oval side lights, with neck cushion, Siebe Gorman boot and weights. Sold £2,115/$3172

Chinese 12-bolt helmet. Sold £587/$880

Russian 3-bolt Helium helmet, late 20th century. Sold £1,762/$2643

Japanese 12-bolt helmet. Sold £646/$969

Siebe, Gorman & Co: Annual Dinner menu, November 2nd, 1901, a folded single sheet of light green paper foliate impressed front and crinkle-cut borders, printed with details for the dinner at the “Dr. Butler’s Head” public house and listing R. H. Davis as Chairman, containing a list of the evening’s entertainments with menu on the back cover - 5 1/4 x 4 1/4in. Sold for £1410/$2115

Description courtesy of Christie’s Auction Catalog
82. Siebe Gorman & Co. Ltd. two-diver pump numbered 9458, circa 1920. Sold £2,115/$3172
81. Siebe Gorman & Co. Ltd. single cylinder pump, numbered 9847, circa 1920’s. Sold £2,115/$3172
83. Siebe Gorman & Co. Ltd. two-diver pump numbered 2234, circa 1920. Sold £1,762/$2643
88. Heinke two-diver telephone, model 134N, circa 1920’s, and a Siebe Gorman Mk 9 telephone. Sold £1,175/$1762
89. Siebe, Gorman & Co. Ltd. single-diver communication unit, circa 1920’s. Sold £352/$528

In addition there were numerous other diving related items of interest.

**Helmets.** An Italian I.A.C. hand-formed 3-light bonnet, without a breastplate, sold at £763/$1144. **Pumps.** A rocking cylinder hand-operated booster pump by Siebe, Gorman and Co. Ltd., No.266, circa 1943 sold for £411/$616. A 20th century 2 cylinder pump, listed as possibly by Draeger, made £1,762/$2643 and a Poseidon rocking two-cylinder pump sold for £587/$880. **Knives/Boots.** A traditional Galeazzi diving knife with screw in scabbard fetched £352/$528; two apparently unused Siebe, Gorman & Co. Ltd. diving knives made £376/$564; another Siebe, Gorman & Co. Ltd. knife with two underwater flashlights fetched £211/$316; one lot consisted of a diving knife of Siebe Gorman pattern in cast brass scabbard with three spare scabbards and an early 1960’s camera casing and went for £58/$87. Much as Schrader equipment in the USA is considered rarer than its early rival company Morse, items by Heinke are generally considered much rarer than those of Siebe Gorman in the UK. Giving some credence to this were a pair of brass soled boots by Heinke, stamped Heinke & Co. Ltd. Patent 87 Grange Rd Bermondsey London, which sold for an impressive £998/$1497. **Books and ephemera.** Several copies of *Deep Diving and Submarine Operations* by R. H. Davis were available. A 1951 copy, listed as part 1, with original dust jacket and coupled with the Admiralty Manual of Hydrographic Surveying fetched £82/$123, and another listed without reference to “part” but with original dust jacket made £94/$141. A 1955 sixth edition in original dust jacket, and inscribed by Davis to Stanley Means sold for £235/$352; a 1962 seventh edition in original dust jacket made £176/$264, and a 1981 eighth edition sold for £117/$175. A copy of *Diving Manual and Handbook of Submarine Appliances* by R.H. Davis, and published by Siebe, Gorman & Co., Ltd., circa 1920 was also available. This copy had blue card covers which had some water damage and staining but still sold for £564/$864 showing the increasing value placed on such early titles, seemingly regardless of condition. An even earlier title was *A Narrative of the loss of the Royal George*, ninth edition, circa 1840’s, published by S. Horsey. The book was “bound between wood recovered from the wreck and containing many illustrations detailing attempted removal of the Royal George from Spithead, contained within a loose outer cover (later).” This rare diving title sold for £329/$493. Another unusual item was listed as H.M.S. *Lutine*; a manuscript book. This came with a letter of provenance dated 1925, “and a further letter dated 1897 with details of the author, a Mr. Fletcher, bound between oak boards salvaged from the wreck, with a copper disc from the hull plating pinned to the front cover.” It sold for £376/$564. A rare Siebe, Gorman & Co. Ltd. 16mm. celluloid training film with aluminum spool and tin case, 150 feet with a video version of same sold for £293/$439.

*Thanks are due to Mr. Charles Miller for his assistance. All images courtesy of Christie’s Images ©2000
For fuller descriptions of items consult auction house catalog
For information on upcoming auctions contact auction house*
My first meeting with Al Hanson and his wife Norma was in Avalon, Catalina Island about 1951. I was there to operate a one-man wet sub for a LIFE Magazine spread. (The sub went down okay but stayed there. I didn’t make LIFE Magazine.) A couple years later, in 1953, I was hired by Disney Studios to work on “Twenty Thousand Leagues Under The Sea” in Nassau, Bahamas as Diving Equipment Technician. (At age 20, I was the only certified Aqua Lung Technician in the U.S.) Al Hanson was one of the divers hired by Disney — and the only truly professional diver in the bunch. We became good friends. His hard-hat skill was one of the things that inspired me to attend E.R. Cross’s Sparling School of Deep Sea Diving in Wilmington, California a few months later. I didn’t get right into hard-hat diving. I was hired by Healthways to set up their new SCUBA department. I tested a lot of scuba gear in the waters off Avalon and always visited Al and Norma when I was there.

For a few years Al and Norma had a tourist aquarium in Avalon that was quite popular, and then a barge moored in Lover’s Cove near Avalon. It featured “The Diving Hansons.” Glass-bottom boats would tie up alongside and Al and Norma would be underneath in their hard-hat gear, pointing out the abundant sea life. One day Al was on the bottom at forty feet pointing out fish and Norma was hanging off at ten feet talking to the folks in the glass-bottom boat. Suddenly a ten foot Great White Shark appeared out of the blue. It slowly circled Al three or four times and then swooped up toward Norma. Al yelled out, “Norma — SHARK!” All Norma could see was a BIG fin coming up at her. Out of sheer reflex she lifted her legs and kicked out with her heavy lead-soled dive boots. She dashed the big shark right in the kiss! Al said the shark’s eyes rained down like popcorn off the balcony. The damaged shark veered away, did one more circle and said to himself, “To hell with this — I’m going back up north!” The folks on the glass-bottom boat were thrilled. Some of them even took another trip in hope of seeing it again! Norma was a bit shaken by the event but gained the distinction of being the only woman to ever kick the teeth out of an attacking White Shark.

Al Hanson was an internationally known diver. Now and then he’d get visitors from all over the country and all over the world. They all wanted to dive with him around Catalina. Al had a very special, and unique, way of offering his guests a rare thrill. As they were cruising along underwater, Al would spot a big moray eel looking out of his rocky hole. The visitor got the unusual experience of eye-to-eye contact with a big moray. But Al would add something extra to it. He’d reach for the moray and the eel would retreat into its hole. Al reached in after it! He’d feel around inside the hole and grab the moray right behind the head. (Al had a grip that would crush a golf ball.) Then he’d pull the slithering, writhing eel from its hole. The visitors were amazed. So was the moray! As Al displayed his catch he’d continuously slide his other hand down the eel’s body to keep it from throwing an overhand knot in its body. When a moray bites something bigger than one gulp it throws an overhand knot into its tail and slides the knot up its body until it reaches what it’s bitten. It then gets the leverage it needs to rip out a chunk by pulling its head through the knot. Al’s visitors thought it was a spectacular display, but none of them wanted to try it themselves.

In the mid to late fifties I ran Al’s “Hanson’s Mooring And Diving Service” boat in Avalon Harbor. Al was a great guy to work for and with, although a standard phrase around Avalon was: “Everything Al Hanson owns is HEAVY!” Of course, that included the five-hundred-pound train wheels used as mooring weights.

For years Al was the chief diver for the Los Angeles Harbor Department. Norma was always his tender. He did everything underwater that one could imagine doing — salvage, construction, inspection and more. I worked with him on many projects over the years. There was just nothing he couldn’t do.

Al was an honest man, an honorable man, a considerate man, a good-humored man, and everything else on the plus side. It was an honor to know him and to work with him, and it’s easy to remember him as one of the finest men one could ever hope to meet.
Dr. Ruth Turner:
A Tribute to a Great Scholar and a Great Lady

With the passing of Dr. Ruth Turner on April 30th, the diving and scientific communities have lost one of their finest scholars and friends. Dr. Turner, who was 85, leaves behind a legacy of academic excellence, leadership, and an enduring love of the sea.

A native of Massachusetts, Dr. Turner was a Harvard Professor, a prolific academic author, the mollusk curator at the Museum of Comparative Zoology at Harvard University, and an avid scuba diver well into her eighties. Dr. Turner’s work has had a major impact on scientists around the world. Of particular import was her contribution to the understanding of wood-boring teredos. Dr. Turner revealed that teredos, commonly known as “shipworms” because of their resemblance to worms, are actually a species of mollusk related to clams. The damage wrought by wood-boring teredos, which has caused deterioration of the Hudson River piers in New York City, was notorious throughout history, dating back to ancient Greece. Even Columbus was said to have lost all of his ships to these creatures on his fourth voyage to the Americas. Funded by the United Nations, Dr. Turner traveled around the world to study teredos. She published over 100 papers on every aspect of these creatures, thus earning the affectionate title, “Lady Wormwood.”

Dr. Turner’s research on teredos was also funded by, and was of great use to, the US Navy. So much so, that the Navy dedicated its book on biodeterioration to her. Working with Dr. Robert Ballard, she revealed that wood-boring mollusks were the reason that so little wood remained on the sunken luxury liner Titanic.

Dr. Turner also investigated numerous other shipwrecks firsthand, and appeared on a National Geographic television special to discuss deep-sea vents. She was the first female scientist to use the Woods Hole Oceanographic Institution’s deep submersible research sub, ALVIN, for deep ocean research, and has logged the most hours in ALVIN of any female aquanaut. The Woods Hole Oceanographic Institution calls Dr. Turner the female “Pioneer in Oceanography.”

Dr. Turner’s two greatest passions were mentoring students and scuba diving. Because of her vivacious personality and generosity (she often invited needy students to eat and sleep in her Cambridge home), numerous graduate students followed her lead into marine sciences. She often told her young admirers, “You must do what sets you on fire. If you do what you love, you will succeed!”

It was probably scuba diving, however, that brought out the most fun-loving aspect of Dr. Turner’s personality. Although a petite woman, she held her own with the most seasoned and burly divers, both in the water and at the card table. In 1992 she was officially honored as the “Diver of the Year” by the Boston Sea Rovers, and was inducted into the Women Divers Hall of Fame earlier this year.

I know that many of Dr. Turner’s friends and colleagues, join in me in saying a heartfelt good-bye to a great scientist, a great friend, and a great lady.

Hillary Viders, Ph.D.
Exec. WDOHF Exec. Comm.
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