

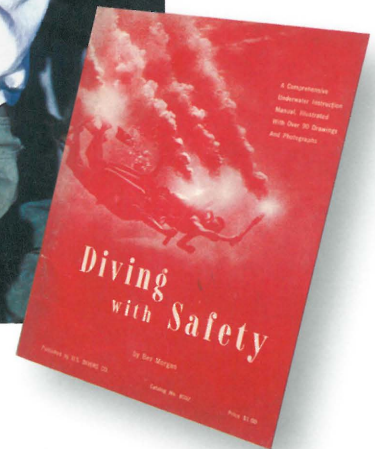
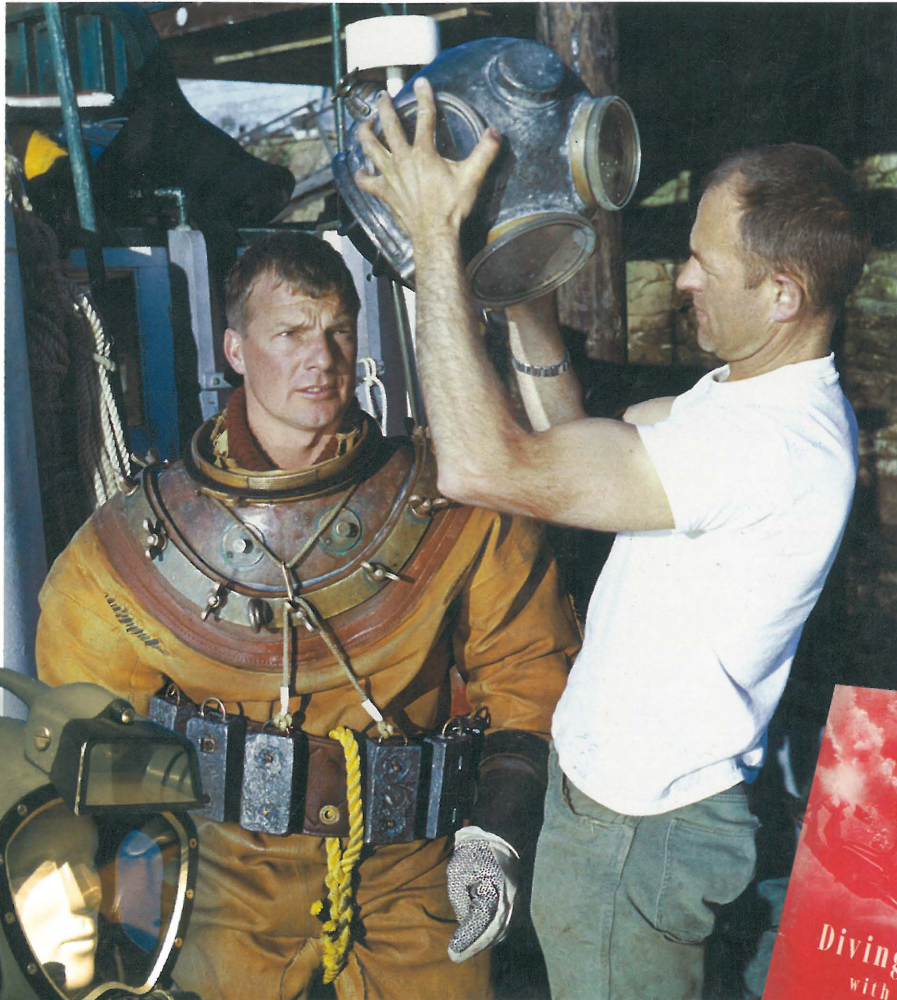


# HISTORICAL DIVER

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Volume 15 Issue 2

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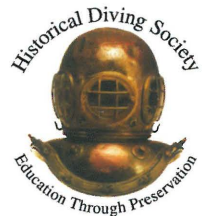


- **Bev Morgan: Pioneer, Diver, Photographer & Entrepreneur** •
  - Development of the Canadian Decompression Computer •
  - Ron & Valerie Taylor • Rodney Fox • Blue Water White Death Reunion •
  - ADCI Hall of Fame • Stan Waterman Hans Hass Award •
    - International Scuba Diving Hall of Fame •
  - Aqua Lung's Mistral Regulator • Perry Huntley Patent •



# HDS Diving History Conference 2007

Tarpon Springs, Florida  
October 26 - 28, 2007



Zale Parry.

Join the City of Tarpon Springs and the Historical Diving Society for this years HDS Conference and dive into history experience. Included is the Friday evening City Welcoming Reception at the historic Sponge Exchange, full Saturday Conference at Tarpon City Hall and Awards Banquet with Zale Parry at The Westin Innisbrook Golf Resort, and traditional Greek sponge diving display on Sunday.

Friday October 26, 6 p.m. Traditional Greek welcoming reception at the historical Sponge Docks, hosted by the Honorable Beverly Billiris, Mayor of Tarpon Springs.

Saturday October 27, 9 a.m. City Hall. Tarpons Springs. Historical diving presentations and exhibits featuring: Carl Roessler, Kent Rockwell, "Scrap" Lundy, Tom Lowe, Samantha Merrill and Nick Toth.

Saturday October 27, 7 p.m. HDS Awards Banquet with guest speaker Zale Parry, "Wooden Tanks and Live Sharks."

Sunday October 28, 10 a.m. Traditional Greek sponge diving at the sponge docks.

Conference tickets are \$35 each and available now. Awards Banquet tickets are \$55 each and also available now.

These tickets are limited in number. SAVE \$15 by purchasing a combined Conference and Banquet ticket for \$75 BEFORE September 15, 2007. Smart Casual dress is required for the Awards Banquet.

Tickets may be purchased from the HDS office at 805-934-1660, Monday - Friday 9am - 1pm Pacific time. Or by e-mail by contacting the HDS office at [hds@hds.org](mailto:hds@hds.org) and putting "HDS Conference" in the Subject box.

The Conference hotel is again The Hampton Inn and Suites, 39284 U.S. 19 North, Tarpon Springs. State that you are part of the HDS block when booking for the reduced Conference rate. Early booking is highly recommended.

Standard non smoking room with 2 queen beds is \$97 plus tax.

A suite with two queen beds and pull-out sofa bed is \$124 plus tax.

October 12, 2007 is the deadline for these rates. For reservations call 727-945-7755.

Transportation will be provided to and from the hotel for each event.

Check [www.hds.org](http://www.hds.org) for updated information.

(Following the Conference weekend the HDS will be at DEMA, in Orlando, Florida.

October 31 - November 3. Contact [www.demashow.com](http://www.demashow.com))

We look forward to seeing you there. HDS staff.



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A PUBLIC BENEFIT NONPROFIT CORPORATION  
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# HISTORICAL DIVER

Volume 15, Issue 2

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Number 51, Spring 2007

## FEATURES



### BEV MORGAN INTERVIEW

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Bret Gilliam gives us an inside look at the supremely successful and multi-talented pioneer diver Bev Morgan. Whether it be surfing, wetsuit design, sport diving, dive instruction, abalone diving, oil-field work or diving equipment manufacturing, Morgan played a major role

in its beginning, development or refining.



### CANADIAN DEVELOPMENT OF THE MULTI-TISSUE DECOMPRESSION COMPUTER

BY PHIL NUYTTEN ..... 35

Dive computers are an integral and accepted part of our diving kit today. But at one time two enterprising Canadians set themselves down to

the daunting task of creating the first dive-along computer, literally out of thin air. Phil Nuytten dives into the very nuts and bolts of their endeavor and saves their story for the history books.



### AQUA LUNG'S MISTRAL REGULATOR

BY KENT ROCKWELL ..... 41

In the early 1950s "Aqua-Lung" became the household word in scuba equipment and historically launched the sport diving revolution with their rugged, over-the-counter, CG-45 double-hose regulator. Now considered obsolete, see how and

why they launched into re-inventing a lost technology.

### On the Cover

Bev Morgan dressing in, *Diving with Safety* published by U.S. Divers Co. in 1956 and a helmet from the movie *Sphere*.

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## Editorial

Entrepreneur Bev Morgan is the subject of our cover story, and while Bev is certainly no stranger to this magazine his interview, by diver, writer and publisher Bret Gilliam, gives us a new and candid look inside this complex and multi-talented diving pioneer. Bret's friendly style of interrogation settles you comfortably on Bev's sofa as he reveals fascinating details from a historical perspective. We hope to have further submissions from Bret and look forward to his new book, *Diving Pioneers & Innovators: A Series of In-Depth Interviews*, which is at the printers now.

Phil Nuytten's extensive research into the first dive computers is Part 1 of the paper presented at our HDS 2006 Seattle Conference by his daughter, Virginia Cowell. And speaking of Phil, *Historical Diver's* first move into inside color was the insertion of four pages in HDM number 42 for Phil's treatise on Emile Gagnan. In HDM number 50 we again brought in color, and in this issue, under publisher Leslie Leaney's direction, you will find no less than two signatures providing 8 color pages made possible by last year's matching fund money.

In August of 1963, Petersen Publishing Co. bought *Skin Diver* magazine and introduced their first color insert in the October 1963 issue. In this issue we sadly report the passing of Robert E. "Pete" Petersen, a major friend and contributor in the growth of sport diving.

I missed this year's 31st annual Beneath The Sea exposition and a chance to meet with Australia's Ron & Val Taylor and Rodney Fox. I've followed their exploits, bite-for-bite, in print and film, for as long as I can remember, and I'll take this opportunity to say, "Welcome to our Advisory Board." They join a growing list of prominent ambassadors representing our Society's historical preservation focus.

Our colleague and friend, Dr. Christian J. Lambertsen celebrated his 90th birthday on May 15, 2007. The Institute for Environmental Medicine, University of Pennsylvania, toasted him with a surprise gathering on Friday, 18th, 2007, and we e-mailed Dr. Lambertsen:

"Your well-deserved honors and accolades seem to seek every opportunity to find you. Your birthday is no exception, and though you try to ignore the adding years, that in itself is something of a triumph.

"Those of us who have and have had the privilege of knowing and working with you will certainly continue to celebrate your birthdays, if for no other reason than as a reminder that it is only too easy to take cherished friends for granted during our hectic pace through time.

"We, the Historical Diving Society and *Historical Diver* magazine, wish you the best for this and those continuing birthdays."

— Kent Rockwell, Editor

## HISTORICAL DIVER MAGAZINE

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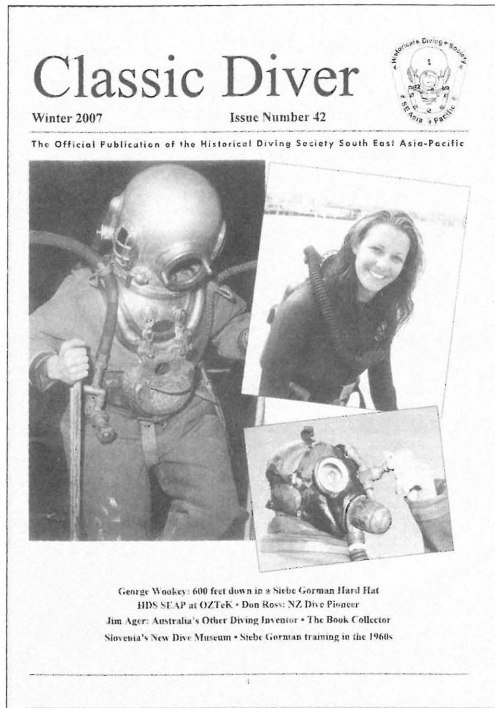
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Diving is a potentially hazardous practice and if practiced incorrectly, or with incomplete planning and procedures, can expose a person to considerable risks including serious injury or death. It requires specialized training, equipment and experience. 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.

# The *Classic Diver* Down Under



As reported in the last issue, the recent restructuring of the Society's operations lands me back inside the magazine after a very short absence. I return in the newly created position of Publisher while my good friend Kent Rockwell stays in the Editor's chair.

The establishing of the Publisher's position will bring the operation of the magazine nearer to the policies and vision of the Board of Directors, but will not affect the historical direction of the magazine.

*Historical Diver* magazine is the primary benefit of membership in the Society. I founded it to create a regular method of not only recording diving history but as a means of connecting a single membership base in our country of our size, which spans several time zones. We quickly discovered that the magazine was of interest to many others outside America, and it is now mailed to members in over 40 countries.

In keeping with ideals of the Society's founders, the magazine was permitted to be used by several emerging international Societies to assist them in getting started and building their membership base. The first overseas Society to adopt *Historical Diver* was the (then titled) Diving Historical Society of Australia & South East Asia. The seeds

of this trans-Pacific relationship were planted when Bob Ramsay and Graeme Roberts visited the USA office in 1996. With Bob leading the charge, this new Society appeared on the international scene on May 16th 1997 at ADEC in Singapore. Jean-Michel Cousteau and Mr. Sidek Saniff, Singapore's Senior Minister of State for the Environment, oversaw the official launch. Once some of the political issues were behind them, the new Society changed its name to the Historical Diving Society South East Asia-Pacific (HDS SEAP).

For the next 10 years *Historical Diver* served as the official HDS SEAP publication as it went through its growing pains. The trials of trying to operate an overseas organization dependent upon this magazine, which was seldom out on schedule, was a very difficult task for the SEAP Board of Directors. Nevertheless, through the decade, SEAP built up a strong enough member base to now be able to undertake the daunting task of publishing their own official Society magazine — *Classic Diver*. This informative publication is edited by Jeff Maynard and it replaces *Historical Diver* as the official SEAP membership magazine. Information can be found at [www.classicdiver.org](http://www.classicdiver.org).

After 10 years at the SEAP helm, Bob Ramsay has now stepped down. However, I will not let him slip out of the international spotlight without recording my sincere admiration for his tenacity, work ethic and unflinching determination when it came to fighting for what he believed was best for his Society and its members. I won't get into the personal and financial sacrifices. Bob took the first "down under" steps on the path of organized diving history that many now follow. On that journey his unwavering devotion to the Society became a large part of SEAP's success story and I am proud to have been able to work with him. Bob's HDS achievements, along with his early work in co-founding DAN in that region, are now part of the international historical record.

The Australian/USA HDS cooperation that Bob established continues to flourish and is reflected in the appointment of Rodney Fox and Ron and Valerie Taylor to the USA Advisory Board. We welcome our friends into the HDS USA and are pleased to record their recent visit to the USA, which drew throngs of divers, in this issue.

**Leslie Leaney**  
Publisher

## Call for Papers



# 2008 Historical Diving Society Call for Papers

## HDS Conference, Monterey, California, May/June 2008.

A major part of the Historical Diving Society's mission is to promote research into diving history and provide a forum for the publication of research findings. During the past fourteen years, the HDS has held conferences that have been a major part of that effort, providing researchers an opportunity to present their work to a live audience.

*Historical Diver* magazine has recently been the medium by which we provide the content of these conference papers to those who are unable to attend. A couple of ongoing issues with this process are that speakers are often not scheduled until very close to conference time and that the presentations are not always in a form that readily transfers to the printed page. In an effort to overcome these two issues, the Historical Diving Society is initiating an "early" call for papers for our 2008 annual conference.

In keeping with the HDS's commitment to all aspects of diving history, this is an open call for papers. Researchers, authors, and historians who are interested in presenting their research can contact the HDS with a letter or e-mail describing the content of their paper and its relevance to diving history. Topics on commercial,

recreational, military, scientific diving, equipment, events or personalities are welcome. The submissions will go before a committee which will select the papers to be presented. Letters of intent should include the title and subject matter, and the presenter's involvement (participant, researcher, etc.). The presentations should be kept no longer than 45 minutes in length.

If you wish to submit a paper, please contact the HDS with your intent by December 2007. Speakers will be selected in January 2008, and papers will be due by March, 2008. The Conference is targeted for May or June of 2008, and will be held in co-operation with local cultural, maritime and diving organizations.

It is the intent of the HDS to provide the highest level of presentations over a wide spectrum of diving topics and to bring those papers to the HDS membership via the *Historical Diver* magazine as soon after the conference as possible

*Sid Macken*  
*HDS Chief Operations Officer*  
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# SILVER SEAS

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# HDS USA Welcomes New Advisory Board Members

The Board of Directors is Pleased to Announce the Appointment of Ron & Valerie Taylor and Rodney Fox to the Society's Advisory Board

## Ron & Valerie Taylor

Ron started skin diving in 1952, at the age of 18. Along with spearfishing Ron was interested in underwater photography and spent as much time hunting with his camera as with a speargun. Ron's first underwater breathing apparatus was home-built from WWII surplus aircraft parts and a CO<sub>2</sub> fire extinguisher bottle.

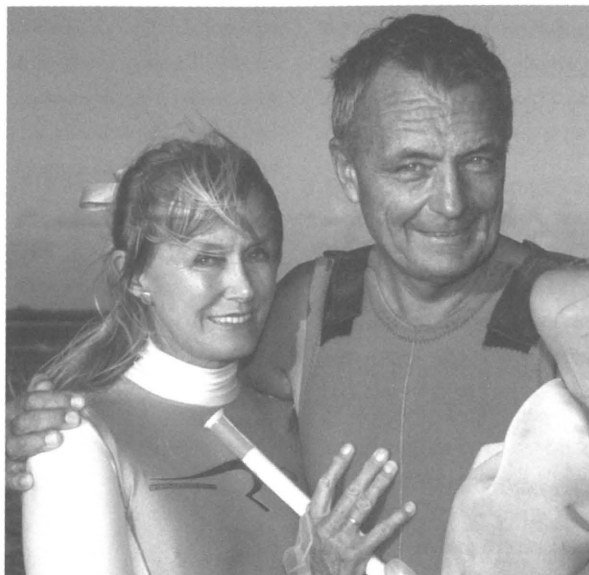
Valerie first ventured underwater in 1956 at the age of 20 and took up spearfishing in 1960, eventually winning several Australian championships for both spearfishing and scuba.

In 1962 Ron won his first photographic award for a news film entitled, *Playing With Sharks*. The Taylor's first major underwater film production, *Shark Hunters*, in black and white, was sold to Australian and American television in 1963, the same year Ron and Valerie were married.

After winning the Australian Spearfishing Championship four years in succession, Ron took the World Championship in Tahiti in 1965.

Ron and Valerie retired from spearfishing in 1969 and formed Ron Taylor Film Productions Pty Ltd. The American feature film, *Blue Water, White Death* was shot with Ron and Valerie playing two of the main characters. Valerie took up underwater photography. Ron built Valerie's underwater housings which were, at the time, state of the art. With them Valerie would become one of the world's top underwater still photographers.

During 1970 and '71, the Taylors filmed and directed the 39 episode TV series *Barrier*



**Ron & Valerie Taylor**

*Reef*. In 1972 and '73 Ron and Valerie produced their own 13 episode television series, *Taylor's Inner Space*. In 1970 Valerie wrote a letter to the NSW government that resulted in the nationwide ban of spearfishing while using scuba, and their filming of sea lions' slaughter by commercial fishermen, created another national conservation law.

Valerie's underwater stills landed her on *National Geographic's* June 1973 cover, as well as their May 1981 issue, with two picture stories inside. Assignments from prominent magazines were in abundance and Time-Life contracted her to shoot stills for their American Wilderness book series.

Since 1974, the Taylors have filmed the live shark sequences as well as underwater action footage for such productions as *Jaws*, the *Wild, Wild World of Animals* TV series, *Orca*, *The Blue Lagoon* (and the 1990 *Return to the Blue Lagoon*), *The Wreck of the Yongala*, *Operation Shark Bite* (a one-hour television production featuring Ron's suit of mail (which Valerie

successfully tested against sharks in the wild), and the list of film credits began to mount.

In 1991 the Taylors joined author Peter Benchley and Stan Waterman, working on a TV special about the tragic decline of white sharks. Then worked with Jean Michel Cousteau shooting his special on great white sharks as well as stills for his book on the shark. Many films were to follow, with *National Geographic's Blue Wilderness* series, *Shadow over the Reef*, *Mysteries of the Jungle Sea*, *The Island of Dr. Moreau*, and their documentary *Shark Pod*, bought by the Discovery Channel

in the U.S. (*Shark Pod* received the jury award at the Antibes Film Festival in France).

Two excellent one-hour specials have been made about their lives. *Sea Lovers*, directed by American Casey Jones, and *In the Realm of the Shark*, made by Australian Dick Dennison. The Taylors' latest series of three one-hour shows, *In the Shadow of the Shark*, is the story of their diving lives and has been sold to *National Geographic*, Channel 7 in Australia and over 100 other countries.

The Taylors have authored several books including *The Realm of the Shark*, a biographical account of the Taylors' lives. Their latest book, *Blue Wilderness*, won the 1998 Gold Palm Award for images at the 25th World Festival of Underwater Pictures in Antibes.

The Taylors have received many awards and accolades for their lifetime of underwater work ... of which international recognition for their conservation efforts may be their crowning legacy.



## Rodney Fox



Great white shark attack victim Rodney Fox's time is spent consulting and coordinating film crews, arranging and guiding hundreds of tourist adventure trips and expeditions specializing in great white sharks and other marine creatures. While back at home he keeps busy talking to groups of people visiting his shark museum, "The Rodney Fox Shark Experience," Shark Museum and Nautical Gift Shop.

Rodney Fox was attacked by a great white shark off the Australian coast in December of 1963. His story of the attack and survival,

from one of the world's worst shark attacks, has been published many times. In the attack, Rodney's abdomen was fully exposed and all his ribs were broken on the left side. His diaphragm was punctured, lung ripped open, scapula pierced, spleen uncovered, and the main artery from his heart exposed.

The tendons, fingers and thumb in his right hand were cut, and to this day he still has part of a great white tooth embedded in his wrist. He was minutes away from death due to loss of blood. Rodney thanks the brilliant work of his surgeon, Dr. Justin Miller, for the delicate job of sewing all the pieces back together. Over 360 stitches were required.

Rodney went on to build one of the first underwater observation cages, and since the 1963 attack, has offered his expertise as consultant, guide, expedition leader, hunter, film producer, photographer, actor, cage designer, safety diver and more. It is estimated that

Rodney has been involved in some way with 90% of all prominent white shark images taken worldwide, in the 20th century. And with his earlier career as a professional abalone diver, Rodney's wide variety of experiences has found him a much sought-after public speaker.

The Fox family shark museum features Rodney's private collection from a lifetime of film-making and research with sharks. The displays feature great white shark models, cages from the film *Jaws*, giant fossil teeth, plus photos and video highlights from many films in which he has been involved.

Rodney Fox was born in South Australia on 9th November 1940. He is happily married to Kay, and they have three children and seven grandchildren.

In January 2007 Rodney was inducted into the International Scuba Divers Hall of Fame: [http://www.scubahalloffame.com/hof/rodney\\_fox.html](http://www.scubahalloffame.com/hof/rodney_fox.html).



The Cayman Islands, the destination that pioneered the sport of SCUBA diving, now stands at the forefront of nitrox and mixed gas diving with unmatched instruction and expertise, as well as new safe diving limits. Just a few reasons why, for all that diving is, was and always will be, the Cayman Islands remains the world's unquestioned leader. Call your travel professional or visit [www.divecayman.ky](http://www.divecayman.ky)

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# Historical Diving Society Board of Directors 2007

## Dan Orr, Chairman



Dan Orr, President / CEO of Divers Alert Network (DAN) was past Executive VP, COO and Director of Training at DAN after posts as Associate Diving Safety Officer at Florida State University and Director of Diver Training at Wright State in Dayton, Ohio. Orr has Bachelor's and Master's

Degrees in Biology and has authored or co-authored texts like *Scuba Diving Safety* and DAN's *Pocket Guide for Diving Safety* series. Orr is a recipient of many awards, including the Leonard Greenstone Award for Diving Safety, the NOGI from the Academy of Underwater Arts & Sciences in Sports/Education, Beneath the Sea's Diver of the Year in Education, the Our World-Underwater Award, and is an Associate Boston Sea Rover. Orr currently serves on the boards of Divers Alert Network, International Divers Alert Network (Chair), Diving Equipment and Marketing Association (Secretary), and the Historical Diving Society (Chair).

## Leslie Leaney, President



Leslie Leaney was born in London in 1947 and started diving in 1969 in Singapore. He became Diving Officer for the BSAC Special Branch and led diving expeditions into the South China Sea, the Indian Ocean, the Maldives, Australia and New Zealand, and a survey in the Red Sea.

In 1980, Leaney moved to Malibu, Calif., to work in the music industry. In 1992 he co-founded the HDS-USA with Skip Dunham. Initially formed as a British HDS chapter, the Society evolved into an American non-profit corporation. In 1993 Leaney founded *Historical Diver* magazine, and has written and lectured extensively on diving history while consulting for the History Channel, the BBC, the Discovery Channel, United States Navy and other organizations.

Leaney has served or serves on the boards of the International Scuba Diving Hall of Fame, the Commercial Diving Hall of Fame, the Academy of Underwater Arts and Sciences, the Santa Barbara Maritime Museum, and the Historical Diving Society USA. Leaney is a Fellow of the Explorers Club, a Fellow of the Academy of Underwater Arts and Sciences, and, at the invitation of Dr. Chris Lambertsen, a Lifetime member of the U.D.T. Seal Association.



## Tim Beaver, Secretary

Mr. Beaver began diving commercially in 1977 and is a partner in Global Diving & Salvage, Inc. of Seattle Washington. As president since 1988, Tim has managed over 200 full-time employees providing services including heavy marine salvage,

salvage support diving, oil and gas production and heavy marine construction support. Diving operations to 1,000 feet are supported by three saturation diving systems, with a fourth under construction at their facility.

Mr. Beaver is 1st VP and on the boards of the Association of Diving Contractors International, on the Board of the HDS, a member of the Propeller Club of the USA and the Society of Port Engineers.

Current activities include salvage in the Gulf of Mexico, salmon restoration efforts on the Snake and Columbia River systems, support of construction of the Olmsted Dam in Kentucky and recovery of the vessel *Catala* located in Ocean Shores, Washington.

## Lee Selisky, Treasurer



A successful dive equipment manufacturer, Lee Selisky served on the DEMA's board from 1990 to 1996 was DEMA President (1992-1995) and on the board of Ocean Futures. As Chairman of the Historical Diving Society USA, Lee helped other countries

found their respective HDS organizations (Mexico, Russia, France). He has served on the Scuba Diving Hall of Fame board in Grand Cayman and, in 2004, rejoined the Historical Diving Society's Board. In 2005, he joined the Board of Divers Alert Network (DAN).

Lee was instrumental in bringing the Deane Helmet (1833) and the Rouquayrol-Denayrouze scuba unit (1865) to the United States. He received a NOGI in 2005 from the Underwater Academy of Art and Science for distinguished service.

## Edward Cassano, Director



Edward Cassano has 23 years of marine resource management, education, research and at-sea expedition experience within the maritime industry. For 14 years Ed was a commissioned officer with the Department of Commerce's NOAA, participating in programs concerned with trawling, long-lining, marine mammal and sea birds. He has led expeditions into Southeast Alaska, Pacific, Bering Sea and the

Gulf of Alaska. As Manager of the Channel Islands National Marine Sanctuary, Cassano's programs led the sanctuary to the forefront of the nation's work in marine resources.

In 2000, Cassano joined the Santa Barbara Maritime Museum as Executive Director and then joined Jean-Michel Cousteau's Ocean Futures Society as VP of Exploration & Expeditions in 2004, co-directing a PBS film expedition to the Northwest Hawaiian Islands. He later became VP of Programs and Exhibits at the Aquarium of the Pacific.

Cassano has received numerous lifetime achievement awards based

on his expertise in marine issues. He is currently the CEO and Founder of InMer Expeditions, a marine conservation organization that conducts research expeditions that collect accurate, reliable information about the ocean and coastal zones. InMER capitalizes on the excitement and sense of discovery of a scientifically oriented expedition to achieve its conservation goals.

### Carl Roessler, Director



Five years into his post at Yale University, Carl moved his wife and children to the Caribbean islands of Curaçao and Bonaire. From 1969-72, he hosted dive groups for See & Sea Travel, Inc., then forsook the Caribbean and traveled the world. For the next twenty-five years, Carl organized dive programs in over thirty of the world's best-loved dive destinations. Carl popularized the liveaboard dive cruises and was president of See & Sea for twenty years. Carl has amassed over 300,000 underwater images, an active business selling to magazines, book publishers and stock photo companies.

Carl's book *The Underwater Wilderness* was a bestseller in 1977 and Book-of-the-Month Club selection. In 1984, three of Carl's books (*The Undersea Predators*, *Mastering Underwater Photography*, and *Divers*

*Guide to the Cayman Islands*) were published to rave reviews. In 1986 Carl's book, *Coral Kingdoms*, was his second Book-of-the-Month Club selection. 1991 saw the publication of his *Diver's Guide to Australia*, and 1992s book was *Great Reefs of the World*.

Carl serves on the Board of Directors of the HDS and on Jan. 25, 2007 was elected to the International Scuba Diving Hall of Fame.

### Sid Macken, Chief Operations Officer



At age ten, Sid Macken started snorkeling in streams and ponds in his small Oregon farming community and took scuba lessons at the age of thirteen. While in high school he built a fiberglass underwater housing for his 8mm movie camera and bought a Calypso camera.

After discharge from the Army, Sid enrolled in the Marine Diving Technology program at Santa Barbara City College and graduated with the second class. Sid now owns Mocean Video, specializing in underwater video production. He has produced four videos on diving history and written several articles for *Historical Diver* magazine, the most recent being "A Brief History of American Underwater Photography."

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### Miller Dunn Style 3 and Mark V Chin Button

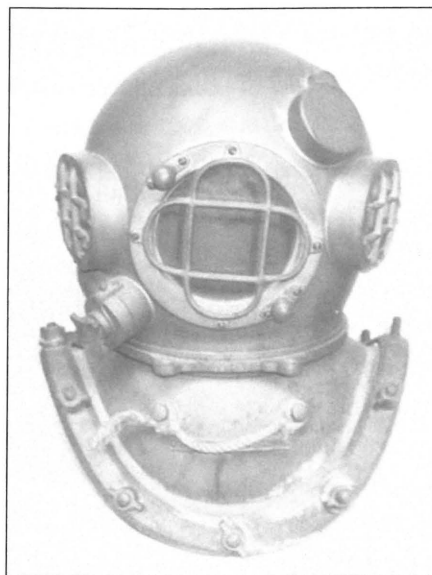
I have two questions which I thought members maybe able to assist with. The first is, does anyone have a patent number for Miller's DivinHood? I have the first two patents but have been unable so far to find one for version three.

Secondly, do you know when the USN adopted the chin button? I'm pretty certain it was in the thirties, but can find no corroboration for this in the USN manuals. I have a patent for a chin button for 1930 but don't know if this is the one the USN adopted.

**Dr. James Vorosmarti Jr.**  
*Md.*

*We do not have patent information on the Miller Dunn style 3, but we suspect that other members may. With regard to the chin button, it is shown in the new exhaust design for a new navy helmet in Stillson's 1915 Report on Deep Diving Tests, which I made reference to in HDM #1, The Mark V Column. The 1916 USN Diving Manual introduces the Mark V, but the text under the HELMET heading which describes the exhaust makes no reference to a chin button. However, every early Mark V, from circa 1916 onwards that I have inspected did have a chin button. This could have been a later modification, but as it was in the design printed in the 1915 Report my instinct is that it was incorporated in the 1916 design for the Mark V. Hopefully we shall hear some views from members on both of your questions.*

— **Leslie Leaney, Publisher**



### Stolen Helmet

The breastplate on this helmet was stolen at a FedEx facility. The serial number is 4628. As you can see, the helmet was in nice condition. The rectangular tag helped make this one special. Perhaps you can show this in the magazine to alert members to watch out for it.

**Ken Downey**  
*Morse Diving Inc.*  
*Rockland, Mass.*

### UHMS Office Moves to Durham, N.C. in July

This is to inform you that Dr. Peter Bennett is the Board of Directors' selection as our incoming Executive Director. I will be turning over the reins to him in July, but will continue in an advisory capacity and in what some would call a special assistant to our president until my approved retirement date of December 31, 2007.

Being that Dr. Bennett is established in Durham, N.C. and has no interest in relocating to Md., our office will be moving to Durham in July after we return from our annual meeting. Lisa Wasdin

will be relocating with the office. We will inform you of the new UHMS address and telephone numbers, our email addresses will remain the same as at present.

**Don Chandler, Executive Director**  
*Undersea & Hyperbaric Medical Society.*  
*Md.*

### Grayback Diver

I received my copy of *Historical Diver* #50 and all I can say is WOW! It really looks great. This motivates me to write more. I have couple of ideas brewing in the back of my brain. I really enjoy being part of the Historical Diving Society.

**Pete Pehl**  
*Oak Harbor, Wash.*

Nice job on the current issue number 50 — looks great. I really liked the *Grayback* story, very interesting and engaging.

**Andy Lentz**  
*Goleta, Calif.*

*I am glad you liked the issue. Lots more adventures ahead! —Editor*



### Beebe / Barton Bathysphere Update

Brad Matsen's article in issue #49 on Beebe and Barton's Bathysphere was very interesting. It would be interesting to know how such an important historical relic ended up in a Coney Island junk

## In the Mail

pile; please tell me it is now restored and sitting in a museum.

**Mark Melrose**  
Charles City, Iowa

Dear Mark,

Before *Descent* was published, I sent a copy of the manuscript as a courtesy to the Wildlife Conservation Society, the successor the New York Zoological Society, who own the bathysphere. They had been very helpful, but when they read the preface to the book in which I describe finding it under the roller coaster, they were upset, to say the least.

We talked, and eventually at the urging of Bill Conway, former director and friend

of Beebe, they set aside some money to refurbish and display the sphere. Frankly, the restoration was a disaster, a very hokey, inaccurate replication of the equipment inside, the wrong color altogether, and it was really a loss to have the original paint and lettering obliterated. Still, the bathysphere is on display in the courtyard of the New York Aquarium on Coney Island. When they unveiled it, we had a little ceremony attended by members of Otis Barton's family, so it all ended well. Those are his two nephews standing next to the sphere.

**Best regards,**  
**Brad Matsen**



### Hans Hass Deco Brain

I picked up a Hans Hass Deco Brain dive computer. It has a sticker "DiveTronic Liechtenstein" on top of it. There are none like it on eBay at the moment. I did some research and know it was made between '79 and '86 and mostly used in commercial diving. I sure recognize the Hass' name. But I am curious about the Hass computer. Has anyone used one or know its history? How well did it work?

**Steve Mehan**  
Chapel Hill, N.C.



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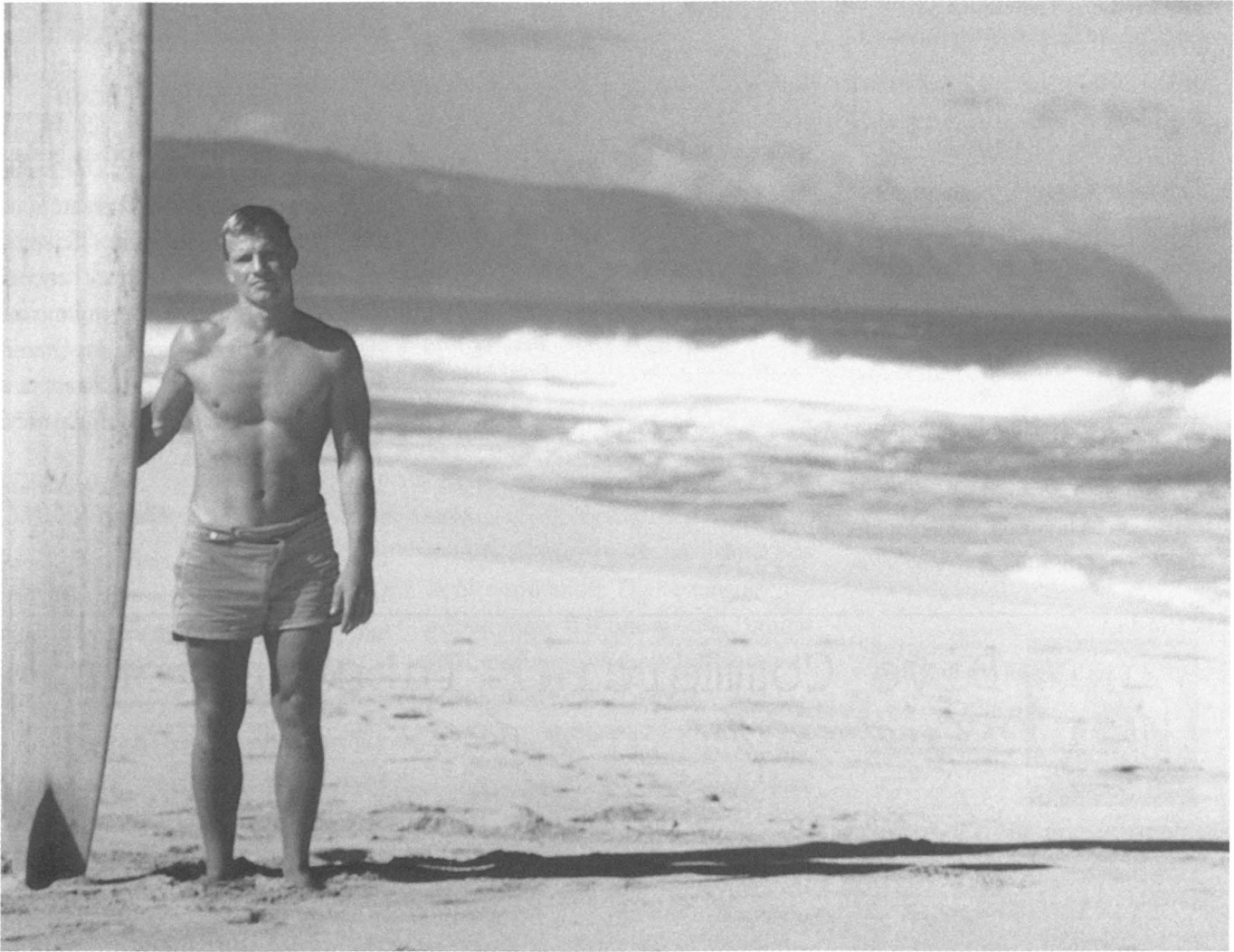
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# Bev Morgan

## Pioneer, Diver, Photographer & Entrepreneur



Circa 1959. Surfing roots. Morgan at Banzi Beach (Pipeline) with the enormous standard "Gun" surf board of the day.

### BY BRET GILLIAM

*Over the last half a century, HDS Advisory Board member Bev Morgan has cast his influence upon many different aspects of diving. In prior issues we have recorded the stories behind practically every helmet and mask design he has been involved in. In the following interview, Bret Gilliam addresses the more personal side of Bev, who supplies historical insight into his amazing life and times. The interview was held in 2003. - Editor.*

It would be difficult to imagine a man more deserving of the moniker "pioneer" than legendary commercial diver and manufacturer Bev Morgan. In a professional career spanning nearly six decades, Morgan has managed to leave his mark on diving in so many ways that the accomplishments of others pale in comparison. From a modest beginning as a lifeguard, he'd go on to amass considerable wealth as the founder of Diving Systems International, the world's largest manufacturer of commercial dive gear. Along the way he helped originate

the first dive training programs in the U.S., started the company that became the multi-million dollar grossing wetsuit conglomerate Body Glove, indulged himself in a variety of hedonistic (and sometimes scientific) voyages of discovery to the South Pacific and beyond, and ended up as soul mate and confidant to rock musician David Crosby. Honored by DEMA as one of its first inductees into diving's Hall of Fame, Morgan remains an intensely private man who has shunned the limelight in spite of his considerable successes.

I originally trained to dive in 1959 using Morgan's book, *Underwater Safety*, and I tracked him down at his new home in the Santa Ynez valley, just over the mountains from Santa Barbara. His pal Crosby lives just down the road and helped him find the place. He greeted me warmly and we settled in to let the tape recorder run. I asked him to reminisce about his phenomenal career and the adventures that cropped up.

**Tell us about how you first got involved in this.**

As a kid, I didn't know much about the water or any of those things. Then one day, I drove by the beach and there were a lot of girls. So, I started going to the beach to look at the pretty girls. It turned out to be a neat environment.

**What year was this?**

I'd say around 1946. One day I was surfing in San Diego. It was a flat day and some divers went by. They were getting a lot of abalone and lobster. That got me real interested. They invited me over for a cookout on the beach. Turned out it was Connie Limbaugh, Jim Stewart and Andy Rechnitzer who were going to Scripps, back in the early days. It looked like a real fun deal to get food out of the ocean. This chance meeting turned into a long friendship. A little later I was working with two fellows named Rex Guthrie and Tom King up at Los Angeles County Life Guards. They took a World War II frogman's mask and put a tilt valve regulator in it from a B-29 bomber oxygen unit. We breathed in through the nose and out through the mouth, and the damned thing worked pretty good. When the aqualung came along it worked better, so we bought a couple.

**What year was that?**

That was probably 1949 or 1950. We bought the aqualungs in 1951 or '52 and began diving with them. As a lifeguard for the County Guards,

I worked on their only boat at the time, named the *Baywatch*. One of the jobs was body recovery from the boat. We started recovering scuba divers because no one knew how to dive, and they were renting or buying the equipment with no training. The only instruction the aqualung manual gave was not to hold your breath when you come up.

**In those days there was no formalized training program, was there?**

Well, no. There was really only the YMCA. A guy named Fred Swankowski ran a diving class at the YMCA pool in Long Beach. I attended either the first or second class. At the time, the Los Angeles County Board of Supervisors was seeking to make it illegal to dive with scuba equipment due to the high accident rate. Back then, five or six out of 100 people diving would lose their lives; that was a pretty high percentage. My idea, along with Limbaugh and ER Cross, was to organize a board of advisors. The Board of Supervisors recommended that we start a diving instruction program, so they provided us with a budget. So I, along with Ramsey Parks, who was my diving partner at the time, put one together and it became the Los Angeles County dive instruction program.

**What year was that?**

We put it together in 1953. The following year we taught about 1,000 students in the LA County pools. We quickly realized that there was no way we could teach all the people in Los Angeles County, let alone everyone else interested in scuba diving. So, at the end of the summer of 1954, we put together an instructor's program and began developing a manual on how to instruct scuba divers. At that point it became obvious to me that this diving program should not be a government-controlled or dive club-controlled operation. I felt very strongly that it should be a dive shop-associated training program. My concept was a dive shop with a pool, classroom, workshop and showroom.

**In those days, how many dive shops are we talking about in the Southern California area?**

Two! But the enthusiasm for the sport was overwhelming. The Los Angeles Times was very generous in giving article space and write-ups. We were in the sports section at least twice a month with good full-page features. At that time there was only one manufacturer in the United States, and that was U.S. Divers. In those days there was no PADI or NAUI. Al Tillman, one of the fellows who had helped us start the LA County Instructor program, went on to start NAUI a few years later. It all grew out of that original little LA County course we started.

**Didn't you decided to try your hand at retailing around then?**

In 1955 I started a shop called Dive 'n Surf and later brought in Bill and Bob Meistrell. We sold the complete U.S. Divers line since they were the only company manufacturing dive gear in those days. They had the aqualung. There was no other scuba available.

**Did you have suits in those days?**

Before I opened the shop I went to the Scripps library and ran across a report from a fellow named Hugh Bradner, who recommended the use of foam neoprene for military divers to keep them warm. The insulation was in the material itself so the diver got wet but stayed warm. He called his new suit a "wet suit." I read the report and it gave a source on where to buy the material. I bought a sheet of it and made myself a suit. It worked very well. I then made suits for all my diving buddies and that's how Dive 'n Surf began as a suit manufacturer.

**Who was using these suits?**

Scuba divers.



Circa 1956. Morgan in Mexico during the early hunting days with 194lb black sea bass.

#### What about surfers?

No, not surfers. Surfers considered it chicken to put on a rubber suit so we couldn't break into that market, no matter what we did in those days. I remained with Dive 'n Surf until 1957, then I sold out to the Meistrells. We dove most of the time. We'd get up at 4:00 a.m. and go diving, then open the shop at 9:00 a.m. They were great partners, but I decided to go adventure sailing and diving aboard a 61-foot ketch named *Chiriqui*, so I sold out to them. I went down to the South Pacific with a crew of dive buddies for a couple of years. We did a lot of filming, 16mm stuff and lots of still pictures.

#### Tell us about some of the places you visited. Did you dive while you were there?

Yeah, we had a compressor on board and a bunch of bottles and dove our brains out. We started out in Long Beach and went down along the coast of Mexico. We dove all the way down. We spent a month at Tres Marias, a group of islands off Mazatlan. From there we sailed to Acapulco, continuing to dive all the way down to Cocos Island. It was untouched

in '57, nobody had ever collected fish there. We offered to do a collection for Scripps. We soon found out why no one had put together a fish collection there. There were a lot of sharks. A lot of sharks. Before we arrived in Cocos we read that the reef sharks chewed on the anchor chain when it was let out. I just laughed, thinking it was a joke, but sure enough, when we pulled into Chatham Bay and dropped the hook, we heard all this crunching. We thought we were dragging across rock or coral. When we looked, we actually saw that it was a bunch of sharks chewing on the anchor chain! As we let it out we thought, geez, we better rethink this. We didn't know if we were going to dive there or not. But, we found a place the next day where we could get our back against a vertical drop and jump in the water.

Sharks came at us right away. While in Mexico, we encountered quite a few sharks so we made "shark billys," poke sticks about two feet long and made of ironwood. They were heavier than water so if it was knocked from your hand it sank to the bottom, and the bottom was a much better place to be than mid-water to recover your billy. We didn't go

in the water without those shark billys. When the sharks swam up to you, you'd hit them in the nose and they would go away. We'd dive back to back, usually three men to a team. Two guys back to back, one guy fish collecting or whatever you were up to. We'd never spear too many fish unless we were next to the boat and could hand up the gun, then jump in the boat after the fish was speared, and let somebody else haul the fish in. You might only get half of it in otherwise.

Our final day of diving at Cocos was out in the blue at the edge of a drop-off. Three of us had just dropped into the water from our 14-foot skiff. Two very large sharks, not reef sharks, came slowly towards us. One guy, Lowell, froze. Ramsey Parks and I looked at him, then at each other. Lowell just hung there not moving. Ramsey and I had our shark billys at the poke position towards the two approaching big boys. When they were about 20 feet away they separated and split off to the side. We soon realized why. A third shark was approaching slowly behind them. This guy was really, really huge. I couldn't really see how long it was and that didn't matter. What mattered was how big around he was. He continued swimming slowly toward Lowell who remained frozen in mid-water.

This monster shark was going to eat Lowell, and his mouth was big enough to do the job in one easy gulp. It was as if the shark detected which of us was more scared. When the shark was about 10 feet away, Ramsey and I swam toward it and started poking its nose with the billy. It broke off the approach and kicked its tail, which tumbled us as it swam away. Ramsey and I grabbed each side of Lowell and began shoving him into the boat. I don't recall how all three of us got into the boat, but somehow we were all in the boat when the three sharks returned and started to bump against the bottom as if trying to dump us out. Ramsey fired up the outboard and took off at high speed back to the safety of the big boat. There was silence as we secured everything and set out to sea to find a better island to dive.



### Where did you go after that?

We went to the Galapagos and spent two months going through those islands. That was real interesting down there. We would see an occasional fish boat but no yachts. We were only the second yacht to ever go to Easter Island. There were many rumors about the big statues and roads into the ocean as well as the submerged cities. Much speculation was made about the statues in those days coming from the moon, because the experts couldn't figure out where the quarry was or where they had been made.

### Had anybody been there before with any diving equipment?

I don't think so. We were the first to dive there. Thor Heyerdahl had been there six months prior to our arrival. He had a big expedition, *Kon-Tiki*, and all that. He explored the island and when he came out with his book, his information was more accurate than any expert's previously. He even discovered a few atypical statues from the big-lipped ones.

### Did you continue on to the West Pacific?

We went to Pitcairn Island and dove on what was left of the *Bounty*. The mutineers ended up there after taking the ship from Captain Bligh and leaving Tahiti. The remains of the wreck are up in the surf line, but we got a few pieces of anchor chain. Kind of neat to have a piece of that history.

### Every other person there must have been named Christian ...

Well, there are about six common names: Christian, Adams and a couple of others. But that leads to an interesting point. Due to the fact that there are not many visitors, there was a lot of in-breeding on several of the remote islands, including Pitcairn. They needed fresh genes, new blood. There were five of us young guys on the boat at that point. They would meet us with a reception committee and match up who was going to be with whom.



Circa 2004. Schooner *Mayan* sails to another adventure in the islands.

Well, I guess you could say we did our duty. It kind of wore us out to stop at any particular island. So I guess there's more than a few Morgans out there now widening the gene pool. I like to think I did my part to ensure that the future generations of some of these remote Pacific islands remain healthy. And maybe they won't all look like Prince Charles.

From Pitcairn we went to Minerva Reef. We had read that German pearl divers worked there in the last century and got a lot of pearl shell. The visibility was the clearest I've ever seen in the world, anywhere.

### How clear?

Well, I could see a hazy outline of the boat when I was standing on the anchor and we had the 300 feet of chain out. It was clearer than anything I've seen since, absolutely clear water.

Probably only a handful of white people have ever visited there. What was your reception like from the natives?

Very positive, everyone thought we were wonderful. For them, California was where all the movies were made, and before we left we stocked up the boat with a lot of film. One of the guys on the crew had been to the South Pacific many times, and he told us how they loved action movies. So we went up to Hollywood and picked up footage from fight



**Circa 1993. Morgan in the last style of heavy gear helmet built with partner Bob Kirby during the 1960s.**

scenes. We had two hours of nothing but violence; fighting, riders getting shot off of horses — cowboys and Indians mainly. We spliced it together and made a feature film out of it with no story line, nothing, just violence. It was nothing but action, fighting and crashes.

**Probably be a hit movie today.**

We'd set up a projector and screen in the most godforsaken island in the South Pacific and show this film. It was interesting, the natives would just yell and howl, they loved it. Anyway, they thought we were really unique creatures.

**How far out did you get into the Pacific?**

Tahiti. As many boat trips do, it all kind of fell apart in Tahiti. Before we arrived, we mutinied. A fellow by the name of Lowell Thomson was the majority owner of the boat, but we all had a share. He was a character. He had a mine in Idaho. He got hooked on diving. When we got to Easter Island, Lowell started acting weird, as people on sailboats do after a certain amount of time. All of a sudden we had a bunch of guns on the boat missing. We found out that Lowell had retrieved all of the guns and put them in his cabin. We didn't exactly know what he had in mind but it wasn't good. Somewhere between Pitcairn

and Tahiti he brandished a gun at one of the crew. We found an old rusty shotgun in the bow of the boat that one of the guys had stored there. We threw a few shells in it then cornered Lowell with the shotgun and told him he'd be toast if he didn't behave.

He was confined to his cabin for nine days. We'd let him out with armed guards to eat and go pee over the side of the boat. We feared he'd shoot us. When we got to port in Papeete, he turned us into the authorities, and we turned him in. The French were used to it — just another mutiny. We each went our separate ways in Tahiti. He sailed to Hawaii without our services, and the crew on that voyage also planned mutiny. So we weren't the only guys.

**Was it sometime after that when you began making gear?**

Actually, back when we had Dive 'n Surf, I tried my hand at some garage engineering. U.S. Divers had come out with a regulator called the Mistral. It was a nice venturi-assisted regulator. Single stage regulator, two hoses. It worked fine on the workbench but once in the ocean, it would squirt water right on the choke center in the middle of your throat. So I fiddled around with it and got it to work properly by redesigning the damn thing. And wouldn't you know, the company actually incorporated my stuff and changed the regulator. I called them up a few months later and said, "Hey, that was all my idea, what's the deal? You never paid me for any of that."

So the guy at U.S. Divers says, "Well, I tell you what, you have a pickup truck?" I said, "Yeah, so what?" He says, "How about if I give you everything you can put in your pickup truck out of my warehouse and we'll call it even?" I said, "You've got a deal!"

So I told the Meistrells about it and we all ended up in the damn truck. We got there and loaded that truck down to its axles, everything they had, regulators and tanks, then drove off. I was happy and he was happy, it worked

out fine. At any rate, that was the first time I realized that I could fool around and come up with stuff.

After I came back from the South Pacific, in about 1960 I began doing commercial abalone diving. There were times when the surf was up and we couldn't dive, so I had time on my hands and worked on getting surf suits accepted by surfers. I've always worn a wetsuit surfing. I could care less whether or not it was chicken. I made 100 suits for surfers. They were called "short johns." They came down to the middle of your thigh with a Farmer John kind of upper. We sold them for \$15.

I contacted my surfer buddies like Hobie Alter and the other board makers. They all had surf teams. I convinced their top 10 team riders to wear this wetsuit. First they said it was chicken and they weren't going to wear it. I told them if the profit off your wetsuit sales doesn't pay your rent, I'll pay your rent for you. Well, they all said that's different, it's not chicken to pay the rent. They all agreed to it. So I had 100 of the top surfers on the coast wear a wetsuit all in the same week. They were warm, and it wasn't chicken because all of the other good surfers were wearing them. All the younger folks, beginners and all, thought the surfing wetsuit was great from then on.

We had somewhere in the neighborhood of 1,000 orders that first week. So I'm knocking myself out to produce these things and my partners say, "Look, this is little old lady work — we're not going to make these wetsuits." I tell them, "Guys, you only have to work for about a month, then it's retirement city!" They said, "No, we are not making wetsuits, especially surfer wetsuits. It's beneath us, we're divers and we're not going to do it."

So, I packed the whole thing up on the truck and I drove up to the Meistrells and said, "Look, I want to sell you my new surfing wetsuit business." They weren't making surf suits at that time because nobody knew how to crack that market, except for O'Neil up north because of the cold water. Anyway,



Circa 1956. The start of Dive N' Surf which evolved into Body Glove. Morgan started the store in 1955. L to R. Dale Velzy, Hap Jacobs, Bill Meistrell and Bev Morgan.

I took a sewing machine, a batch of rubber and by then 2,000 orders to Billy, and he said, "I don't know." I wanted \$3,000 for the whole package, business and all. He ended up buying it. They called me a couple of months later to say they were making a \$5,000 profit a day each on this deal.

#### And that's how Body Glove started?

That was the deal. Those guys made a nice bit of change over the years from that load of stuff in my pickup. As soon as I unloaded the rubber, the sewing machine and everything else, I drove straight to *Surfer* magazine and got hooked up to edit the publication with John Severson for a year. At the end of the year, though, the old dive itch just got to me. Danny Wilson had put his first bell together and had made his first helium dive in Santa Barbara, so I just packed up and came to Santa Barbara and asked Danny for a job. Danny says, "Well, I tell you what, I don't know if you're qualified for this commercial diving." I said, "Let's not hear that again. This is a new deal, it's working out of the bell. You're not even going to use heavy gear."

"Well," he said, "you've got to pass the qualifications." He whips out two fifths of

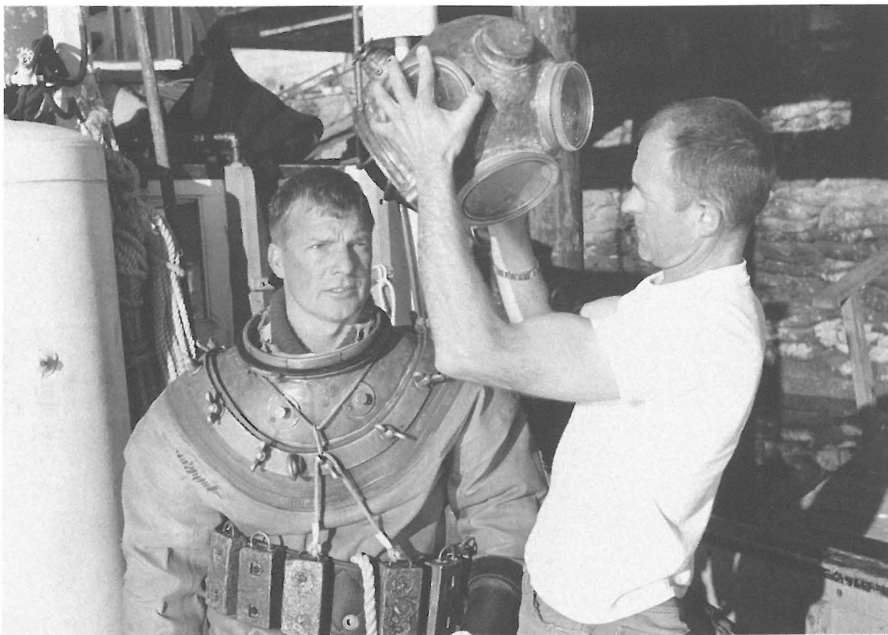
vodka and puts one in front of me. He then takes one himself and says, "You've got to keep up with me. If you can make it through the whole bottle, you're hired."

So we sat down and talked diving and we talked drinking and we each drank, right out of the bottle... a fifth of vodka each. I woke up in the morning with my head in his toilet. His wife, taking pity on me, gave me a wet towel and said, "You've got the job."

#### How about manufacturing commercial gear?

When I went into the abalone business I had a difficult time finding a mask, so I built one instead. Being a surfboard glasser, I built the mold and made it out of fiberglass. It worked really good so when I got into petroleum diving, I just kept tinkering with the design.

Many of the abalone divers graduated to petroleum diving when the oil companies started doing offshore work. Prior to that, the only people the oil companies would employ were heavy-gear divers who wore big metal helmets because they had always had bad luck with scuba divers.



**1964. Bob Christiansen places a standard gear helmet on Morgan during additional construction on the Trans-Pacific telephone cable. Christiansen is a former HDS Director and is today still working with Morgan.**

Most scuba divers weren't journeymen plumbers and that's what they needed, so you had to be a hard-hat diver to get any work in that business. I was a mask diver on the end of the hose, but not hard-hat. I had to buy a hard hat and learn how to use it to get into the petroleum business. I then had the opportunity to design equipment that was more advantageous than the big metal helmets.

**But in those days there was considerable resistance to trying to simplify this gear.**

Yes, there was. Standard heavy gear had gone unchanged for 150 years. Very little had changed: A metal helmet covered your head and it married to a dry dress, and you wore woolen underwear under it to stay warm. You jump into the water and walk over to the job site and do your job. But it was three-dimensional gear in which you could have the same communications that you have in heavy gear, and you could walk on the bottom if you want and you can swim if you want — that is better gear. In addition to that, equipment you can put on by yourself is more efficient. Also, in most emergencies, you can take care of yourself. The primary advantage is the shorter training needed with the newer gear.

But probably the biggest single change that came up that you couldn't do in heavy gear was the dive bell. You couldn't dive out of it with heavy gear; it wouldn't fit through the hatch. So the guys had to switch to a lighter-weight gear. I was getting nowhere trying to get any new type of helmets sold, so I went into business with Bob Kirby building heavy gear. Kirby was a metal smith, and we built some beautiful copper helmets. We were spinning the domes and working the metal, putting ports in. As far as heavy gear is concerned, we built the best diving helmets in the world. That was 1964. Everyone came to us for those helmets and then we said, yeah, but this little helmet here is better. There was no way for them to counter.

**You'd already established your credibility?**

Yeah, but it took seven years for them to accept the lightweight fiberglass helmets. At that point, there were less than 100 commercial divers, and the petroleum companies projected that they'd need 5,000 for all the upcoming offshore work.

**Where were these guys going to come from?**

Well, there was only one base of divers — scuba divers. You can't go to the plumbers union and say we need 5,000 plumbers who like diving. You're going to have to go out and get divers who are willing to learn plumbing and that's what we did. We started schools to teach diving and one of them was here in Santa Barbara. The Santa Barbara Marine Technology Program. Another one started, Commercial Diving Center (CDC), turned into the College of Oceaneering in San Pedro.

The schools trained scuba divers to be commercial divers. The most they could have trained using standard helmets (heavy gear or copper hats) in the time allotted would have been about 300 or 400 divers, so we came up with the Band Mask. This design enabled any scuba diver to do a couple hours' training and be fairly comfortable in this umbilical mask and have full communications. Now all they had to do was learn the trade of underwater plumbing and they didn't have to relearn diving. Within five years they were able to train 5,000 qualified divers because of this equipment. That put Kirby and me on the map. Kirby and I built a lot of equipment and supplied all of those divers.

That was also at a time when they switched from the concept of living underwater and working, to living on deck and taking an elevator down to do the work. These guys were stored at working pressure. They were put back in the bell and transported to the job site where they did the work, then moved back topside to sleep and eat.

**How long could these missions be?**

When they got into sat diving, there were 20-day dives. You put in your six-hour day on the bottom, so the guys would work three shifts, with a couple hours going and coming.

**How deep did these divers get?**

They did good solid working dives around 800-1,000 feet in that area. A few did 1,200

feet, in test diving, of course. Comex had some guys go a couple thousand feet.

**It's interesting, in an industry where no one manufacturer has ever achieved dominance, your company has achieved a market share that most people can only dream of. How did that happen? What do you estimate your market share to be?**

Oh, I have no idea, but it is a high number.

**It has been variously reported as high as 85 percent to 95 percent or more of the world market. Do you think that is accurate?**

It could be. I just have no idea. I started building the first commercial fiberglass helmets around 1960, then got set back and had to build metal helmets for a while. In essence, that makes 44 years we've been working with commercial stuff. Thirty of those years have been in intense manufacturing and develop-

ment. I even dabbled in some sport scuba gear. For instance, I showed Gustav Dalla Valle (co-founder of Scubapro) the adjustable regulators that we've had on our unit since 1957. Six months later he came out with their adjustable second stage, even though he told me they weren't interested in it.

**Did he present you with the offer to back your truck up to his place?**

Nope, Gustav was tighter than the other guys. I never got anything out of him but a couple of great lunches and some wine.

**What trends do you see now in commercial diving? Is it growing or is it flat?**

Well, right now commercial diving is flat as far as the number of divers working, but there is always a chance it will expand. We're going through a lot of work right now. Many divers are busy maintaining the offshore

towers. The way it works is when gasoline is high, the price of oil is high, of course, and the oil companies do all their maintenance because they have the cash flow to do the offshore maintenance. When it's lower, they pull back on the maintenance until the cash flow gets good. Well, you can imagine at \$40 a barrel, which is where it is now (in early 2003), they want to get all the work possible done offshore. So all the divers are working but there are now fewer divers than there were 10 years ago.

**A decade ago, people hypothesized that the diver itself might eventually become obsolete and be replaced by ROVs or divers in one-atmosphere suits. Do you envision that happening?**

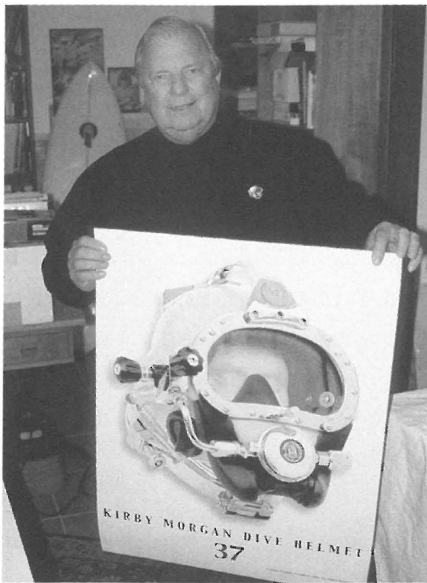
In water down to 150 feet, I don't think they'll ever replace the diver because they can still get more done and are still more economical

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2004. Morgan with a poster for his Superlite 37 helmet.

than an ROV. The one-atmosphere suit is too clumsy, too expensive and too much work for that depth. What I'm finding is the ROVs actually create work for divers. For instance, there are cross girders and things on offshore platforms that have completely disappeared; nobody knew about it for a few years until the divers finally did their inspection. Now, ROVs go down and inspect anytime they feel like it. And what they find creates work for divers.

**Interesting. Beyond 150 feet, what would you consider a practical alternative to a diver?**

Zero to 150-165 feet is common air diving. Beyond that, you need mixed gas. In Europe, you must have a closed-bottom bell that can be pressurized and brought on deck, so the price goes up quite a bit as soon as you hit 165 feet plus. In the North Sea you contend with cold, rough water — big seas — and it makes sense to have a closed bell. In the Gulf of Mexico, however, where you have warm, clear still water, you can dive using mixed gas with a “come home” open-bottom bell — a dome is all it is, you can descend to 220 feet. But beyond 220 feet, even in calm, still water, you should use a closed-bottom bell. Many projects are made more efficient when using a closed-bottom bell in 400-600 feet of water. Beyond that, saturation diving begins when you take a crew of divers and put them in a

pressure vessel for 10 or 20 days of diving. The whole support gets very expensive.

**Are there as many saturation projects going on now as there were a decade ago?**

Yes, there are because they're saturating for shallower jobs. A few years ago when they did saturation, it was usually at 800 feet or so, and now they'll saturate for a 200-foot dive if it makes sense. The way it's done is you pencil out so many hours a day for sat diving and so much decompression, and somewhere around 300-400 feet, it becomes economical. So there's actually more sat diving in shallower water now than there used to be.

**If you put a diver in sat with the hatch depth around 400 feet, it still gives him the excursion capability to go below that to what, another couple hundred feet or so with no decompression and return to storage?**

You can always cut your pressure in half without decompressing. So if you're stored at 400 feet, you can go to 800 feet. It depends on the logistics of support. You know, do they have a bell that will go that deep? Are the cables set up properly? Does the job require that many hours? Then there's the safety factor. So instead of storing the guys at 400 and making 800-foot runs, the companies prefer to store the guys a little deeper so you don't have any chance of getting the bends.

**Your company gained a tremendous reputation early on with your lightweight divers' helmets. What other products are you making to support this? Are you actually designing suits and bells, things like this?**

No. We work with the suit manufacturers to marry the suits to the helmets, but we don't actually build the suits themselves. We build a few scuba-diving suits since we're going to have a neoprene department anyway, but no, we stick mainly to helmets and avoid chambers and plumbing and stuff like that.

**Has the old brass helmet been completely retired at this point?**

No. Many people still use them. A fiberglass version of the old metal helmet that operates the same way, with a breastplate and all, is still made. Some of the guys prefer it, and it's good gear. It still has its place but it's not as convenient as the stuff we make.

**A few years back, you were working on a new split full-face mask that would be adaptable to a lot of uses.**

Well, the whole idea was to make a full-face mask with a trap door over the mouth — we call that a pod — and when you remove the mouth pod, it attaches very simply and easily underwater or on surface. So you can put on your mask and all your gear and still breathe air but not breathe your tanks down, and then snap this in place. And because the pod provides a little dry area, you can take the mouthpiece out and communicate. Since then, we've also discovered that it's very comfortable to have your mouth in air. You've got the mouthpiece in place but there's no water on your mouth and it's more convenient — and feels better too. For a rebreather diver, it's very important because it's one more barrier to the water getting into the system. You don't want to get your chemical absorbent or your masks wet. We find the military divers like this mask because it gives them that extra barrier. If they pass out, they don't flood. If they pass out, they don't drop the mouthpiece. Their buddy has time to go over and get him, and dry drowning is always better than wet drowning for bringing guys back.

**In addition to your commercial interests, you also have a significant amount of military clients, don't you?**

Yes. We sell more or less to all the navies of the world; they're predominantly shipped husbandry diving gear as opposed to swimming gear, and now that we're getting into the new mask for swimmers, we find we're now getting more calls from all the foreign navies too.

**You've done some movie stuff, like *The Wreck of the Mary Deare* with Gary Cooper back in the '50s and now you've recently expanded into Hollywood support for they're underwater needs. Tell us about some of the movie productions you've worked on.**

*Sphere* was a film we did in 1997 with Warner Bros. It was a lot of fun and very interesting to work with the movie people again. We designed the equipment to work in front of the camera. The whole idea was to allow the camera to see the diver's face in full — from the side and front view. We worked on the microphones to get studio-quality voice communication underwater. That was really tricky because you have backpressure resistance. All underwater breathing apparatus, including our helmets, have backpressure.

We designed it so that when the actor divers talked on camera, we could tap off their microphone so that the production sound-

men could take the sound directly from the helmet microphones. It was the first time the quality of sound was there and it didn't have to be dubbed in. We lowered the resistance for exhalation to the point of where they could act and enunciate and have no forced breathing resistance or forced vocal resistance. It made a big change.

**Now, I remember from working on movies like *The Deep* back in 1976, in those days, it was a real transition to get these actors in the water and to make them basically be able to function down there. You were working with Samuel L. Jackson, Sharon Stone, Dustin Hoffman and some others. How did they do?**

They did great. We set up with director Barry Levinson and told him we wanted to have the right instructors as well as the time to teach them properly in the swimming pool.

The filming was done in tanks, but the movie was supposed to take place at a 1,000-foot depth. They did a lot of trick stuff to get the water the right darkness and then we spent a month with the diving crew and the actors. By the time we finished with the new helmets and had broken them in, the actors were as comfortable as I've ever seen. On the first day of shooting, they went into an enclosed cave. Even though it was a fabricated cave, it was still a cave. It was about 50 feet long, and I get nervous as heck when there's an overhead problem with novices. Well, these guys were beyond being novices by then. They went in there, played the part like troopers, and never had any trouble. It went off without a hitch and was a good shoot all the way through. No safety problems whatsoever.

**What are you concentrating on next?**

We're working on making the helmets lighter,

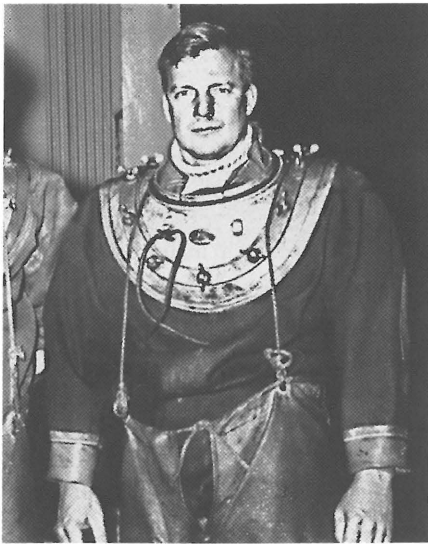


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1964. Morgan commercial diving in Alaska.

which means making them less buoyant. We're also trying to bring the price down. The commercial market needs equipment at lower cost, and we're working on production methods for doing that. So that's one of the challenges.

#### **What interests you most in diving today?**

A very lightweight, low-priced set of gear that will do everything our heavier stuff does. It's interesting that we called our helmets SuperLites. Though they are lighter than the older helmets, the SuperLites weigh 27 pounds average, and that's not very light by today's standards. But nobody has yet made a lighter one. We've got them down to 20 pounds, but they floated off your head. A true 10-pound helmet that works well would really be needed, but it's a difficult design to undertake and make economical for now. So I'd say that would be the biggest challenge. Another large challenge is to make breathing equipment that breathes so easily you'll never out-breathe it and you don't even know it's in your mouth.

**When diving began back in that era, there really wasn't much difference between commercial and sport; it was sort of all the same animal. Now we've seen tremendous jumps develop in sport diving equipment. Do you align yourself with any of these manufacturers, or do you take the best elements of that and design it yourself?**

There's a lot of looking at everybody else's equipment to see how they achieve better breathing. I look closely at ScubaPro and Oceanic every year when they come out with their new lines. I also look at Atomic and U.S. Divers. All of those regulators are so good, it's incredible. If you come out with a super fine-tuned regulator and it only works once, that's no good. Commercial divers would line up to shoot us if we turned out something like that, because reliability is more important than anything.

**Your manufacturing facility has been in Santa Barbara, California, for years but I know that you recently established offices in Panama City, Florida, to put you at close proximity to the Navy Experimental Diving Unit. When did you make this move and how is this working out for you?**

Well, we started about seven years ago. We hired one man and had a small shop, and we've grown over time. We've got five acres of ground and 10,000 square feet of buildings. It's testing, research and development only, no manufacturing. We're now an official testing body for CE marking for the European market. We're one of the only dive test houses in the U.S. that can do that.

**You have a unique relationship with the Navy. I can't think of another government contractor in a similar industry segment that has had the same side-by-side relationship.**

The Navy changes personnel every two years — they rotate, and you have to get along with the new guys. It's not so much creating and maintaining the relationship, though we do that, it's more that our focus has always been to provide our Navy with the best equipment possible in the world. By working very closely with them we always know what they need next.

**In addition to knowing what they need next, do you ever suggest what they need next?**

Oh, sure. That's working together.

**You've been doing this for 50-some years now. What do you think has been the biggest innovation in commercial gear?**

You have to realize that the original Dean Siebe Gorman design of heavy gear helmet — the old metal and copper helmets — dominated commercial diving for 150 years. Though there were diving schools, training was done through apprenticeships, serving as tenders first, then working your way into diving over many years.

The biggest factor that changed all that was offshore oil. The offshore oil companies met with commercial divers, myself included, and asked how many commercial divers there were in the United States. We estimated that there might be 400, part-time divers included. This was in the early sixties. They said they needed 5,000 divers over a ten-year span. The first thing that had to be done was to transition from the heavy gear — which took two to three years to learn, into something that scuba divers could quickly learn to use.

So we set up the schools and the equipment to teach these folks. For years we had the market all to ourselves because we had patents on our basic designs in place so that they would not be copied. We're still patenting new things, but now we've got serious competition for the first time. It's good; it's gotten us off our butts. We're working our fannies off trying to stay ahead of the competition.

Let's face it, you can go along with a good piece of equipment you have patents on, then when the patents run out, the competition can come in, take your equipment, reverse-engineer it and start right where you are. They paid nothing for engineering so they're able to sell their copies of your product cheaper. This takes away, or at least reduces, your market share. That's where we are now. We're busting our rears to develop new innovations to beat the competition and as a result, there are some interesting paths opening up to us. I mean, how does one improve something that's already working very well?



For instance, the diver's telephone. Instead of sending your voice messages back and forth on wire, you line the diver with the same wire and heat the diver with that same power source. It's those kinds of things that are in the future.

Companies fight change because they don't want to inventory a new set of gear. Divers, however, are pretty innovative. If you've got a new gimmick or gadget, they'll go for it if it assists them on the job. Therein lies my paradox. I couldn't introduce something new when we had an iron grip on the market with our patents because nobody wanted change. Now that there's competition, divers are becoming more interested in new innovations — from me as well as the competition. It'll be interesting to see what direction this all goes. **Six or seven years ago, there was a tremendous interest in rebreathers within the sport and tech communities. It's interesting that**

**they really didn't go anywhere. We've seen almost an even dozen rebreather manufacturers, of which maybe only two or three are left. What do you think happened?**

Historically, though easy to use, rebreathers have always been a lot of work to maintain and prepare, whereas open-circuit rigs require so little work it's incredible. They've even improved and become easier to use. You can throw them in the bilge and they still work. All you need to do is get somebody to fill the tank and you can just keep diving. If there's any maintenance at all, it's only once or twice a year when you take them in for a tune-up — replace the O-rings and stuff.

That's far, far simpler than tearing down your rig and putting Sodasorb in it, or whatever you're using for absorbent, then making sure your bags are dry, and on and on and on. So for the casual sport diver, they're discouraged by the amount of maintenance involved. First,

they're intrigued. They expect more bottom time. They expect quieter diving. And they get that but pay for it in maintenance, and they pay for it in money, whereas with open-circuit scuba, you can go anywhere in the world and get your tank filled. You don't even have to take a tank with you. They've got tanks. All you've got to do is show up and they'll outfit you where you go. You can't do that with a rebreather.

**Has your company ever gotten into rebreather development?**

We've made a few — strictly for the military.

**At one point there were many boutique-like rebreather companies but the only major player to ever really set their foot firmly in that market was Dräger. They did their own distribution for a couple of years, but eventually dropped that and handed it off to**



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**U.S. Divers, who apparently didn't even want it. They actually had the best semi-closed circuit rebreather out there. A lot of people still use them. It's too bad, it's a good product but it's not getting any support.**

Well, Dräger, you've got to understand, is an old-line company that has been around for years, and I really don't know whether they have any enthusiastic divers left on their payroll.

**That brings up another interesting note. When you got into this sport, it seemed that all the manufacturers were original first-generation divers. There were you, Dick Long, Dick Bonin, Gustaf Dalla Valle and Bob Hollis. Nowadays, it appears that many of these companies have been absorbed into other public companies and I wonder what you think about the leadership here? Can corporate suit bean-counters really lead diving innovation?**

Apparently not. I'll probably get skinned alive and roasted for saying that. Big companies have a lot going for them. They have big budgets, big money and mass production. They can buy things so much cheaper than the little guy. The little guy gets out priced by the big guy. In the beginning, when I got into the business, the big guys didn't even know what I was doing. I now sometimes wonder if the big guys even understand what the sport is about. They've got money, but will they continue to come up with innovations? Well, whoever comes up with the innovations, if the big companies are quick enough to buy them out, absorb them, make a deal with them or make their own version, then they'll continue to dominate the market. Where are the young entrepreneurs?

Well, I've got a young fellow in my business from Poland who's willing to work 17 hours a day and bust his rear. He can start out seeing my stuff, which is fine, there's nothing wrong with that, and he's willing to invest the time to try and improve it. He is doing a good

job. For the first time, I'm looking over my shoulder at competition. So what's going to get Scubapro, U.S. Divers and Mares to look over their shoulders and think the new guys are gaining on them?

**The guys at Atomic have done a pretty good job about making them look over their shoulder.**

They sure have. Here's where you had somebody in the business working as employees who pulled out and went off on their own and did well. Are we going to see more of that? Sure, but I bet the suits at Scubapro won't like it. Letting Doug and Dean go (the founders of Atomic) had to be one of dumbest things Scubapro ever did.

**As a photographer, you've been chronicling the sport of diving and surfing for half a century, I'm interested in what you think of the new digital camera systems. Is this going to have applications in commercial diving as it is in the filming industry and everything else?**

Oh, sure. Digital photography is creeping up on us like a monster. You know those pictures you hate to throw away but keep anyway? You look at them every now and then and go, "No, that one's not good enough." Now I can manipulate whatever was technically wrong with those photographs and restore them digitally. Recently, I've been interested in murals and the printed word on a photograph in combination with enormous photographs. I've got photographs that I make wall-size, four foot by eight foot. I can stand back and almost feel as if I could walk into the picture.

It's almost like Dorian Gray in reverse, my pictures aren't getting old, and I am. But I can actually visualize walking into these prints; and the bigger they get, the more I can see it and the more I can have a sense of being there now. I'm getting older and many of my friends are croaking so it's really neat to have a wall of photographs of friends, living

and dead. I can vividly walk right into that picture and remember the details of the time. Well, I couldn't do that before. I had a wet darkroom, but to make a big print took an enormous amount of labor and help. Now, I can clean up the picture or leave it as is and print it out at any size I want — well actually, I can print eight to a hundred feet. I can do it all myself.

**We've also seen the same revolution come along in motion picture video. Now you can buy a digital sport camera, toss it in a housing for a fraction of what it used to cost, and produce better stuff than we did in professional broadcast systems even 15 years ago.**

I recently spoke with Al Giddings — he's now got an outfit that can digitize and improve the stuff he used to shoot as A quality. It's just phenomenal. Yeah, the motion picture thing is growing, too.

**Maybe some day we too can run ourselves through one of these things and rejuvenate our tired bodies. How old are you now, Bev?**

Seventy-six. Inside, I feel 20, but there are certain things that are more difficult to do nowadays.

**It looks to me like you'll continue going strong for a long time yet. As I told my wife, "If you pass away before me, I'll throw you a lavish funeral... and I'll bring a date!" You've managed to go through the turnstile of marriage quite a few times. How many wives have you had?**

I've had three wives ... and I've lost three expensive houses.

**So you're probably happier just leasing rather than owning, I take it?**

Houses or women? I'm always open.

**One of your best friends over the years has**

been David Crosby, of Crosby, Stills & Nash fame, who is actually a rabid diver as well.

I had come back from a trip to Palau when a friend of mine invited me to Maui to photograph whales. He was the skipper on Crosby's boat, *Mayan*. So I went over and got on the boat and met David. You know, I really enjoyed his music and it turned out he was an avid diver. He loved the diving, and so we had a great time. He had this big old Alden schooner and he used it to get away from the crazy side of the record business and concert tours. It worked out well; I had a lot of underwater camera gear and time to break away to do things. Crosby had a great sailboat set up for diving, enjoyed diving and was a good guy. The boat always seemed to have a lot of very good-looking girls aboard. Let's see now: big sailboat, lots of dive gear, lots of camera gear, good food, good music, good friends, lots of money, time enough between

concerts and work to go anywhere we wanted. That started some 30 years ago.

We'd take off, go through the Panama Canal and over to the Bahamas and go diving for a few months. Fly home to work and then meet the *Mayan* at some new place. Sometimes in Tahiti, sometimes Hawaii, sometimes California. It sure has been fun. Actually, I guess that might be an understatement. Trust me, we didn't get bored. We're still at it.

David is a serious diver and I've known many divers in my life. He's probably the most dedicated diver I know. I'm not saying he's the best diver in the world, but I don't know anyone who enjoys diving more. Let me put it this way: He had a liver transplant: He couldn't walk and his wounds were not quite healed, but he wanted to go diving so badly that he called me up. He wanted to do one more dive in case he croaked in the middle of his liver replacement recovery. I dressed him

in a wetsuit that I built specially for him. I took him out on the boat and we winched him into the water, pulled him around underwater then winched him back out, put him on deck and took him home. Now, that's pretty dedicated! He's also a dedicated sailor and a damned good one, too.

**Jay Leno had a great riff about Crosby's liver. He said that Crosby might have been pretty wild and crazy but was a pretty good businessman. But this time he might have made a big mistake. His transplant cost about \$40,000 but the liver they took out of him had a "street value" of over a hundred grand!**

Hell, it might have been worth three times that!

**At one point you preserved his boat for him when he had to go away for a while.**

Yeah, I bought the boat from him to



**Bob Hollis**  
Founder & CEO

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## History in the Making



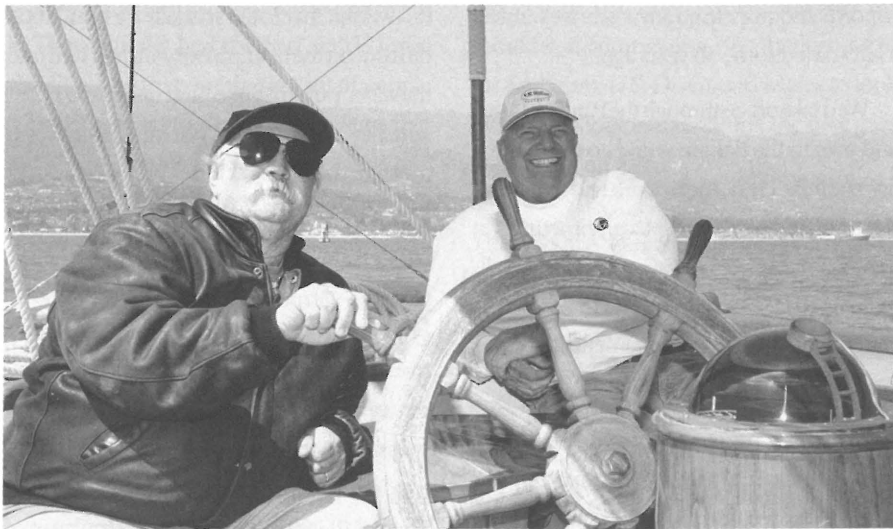
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Circa 2004. "Wooden ships ethic." Skipper David Crosby and Morgan enjoy time on the *Mayan*.

protect it when he had some legal and health problems. It's a nice boat. Wooden Alden schooner, built in '47, if my memory serves. She's been rebuilt a couple of times. David actually just got through rebuilding her for 10 times the amount of money I could buy an equal fiberglass one. I keep telling him let me get at it with my fiberglass and you won't have to rebuild it again.

**That would probably violate his "wooden ships" ethic.**

Absolutely. It's all in jest, because he loves that boat. He wants to make one more go at the South Pacific so he'll probably do it.

**You guys think you might have a little fun along the way?**

I'm sure that we can find what it takes.

**I interviewed Greg McGillivray, the IMAX film director and producer, when he was doing *Coral Reef Adventure* about a year and a half or so ago. He finally decided that the perfect music for the film was going to be a lot of the original music of Crosby, Stills & Nash and was delighted to discover that David was a diver and willingly lent their efforts to this project.**

I didn't know that. As good friends as we are, we give each other a lot of space. For

instance, by the time you go to print on this it will be old news, but David had some trouble back east recently (busted for possession of marijuana, but later acquitted). And instead of me calling him up and going, "Oh, my God, what happened?" I figure if he needs my help, he'd call me. Let him slay his own dragons. I've got my dragons, he's got his.

**David Crosby in trouble with the law for smoking grass? Who would believe it?**

Well, I don't think the latest incident was too big a shocker.

**Aside from being one of the musical geniuses of the era, he's managed to remain current and cutting edge from — well, from all the way back to the days of the Byrds to what they're still doing now. But he hasn't exactly been the poster child for clean living.**

He's one of the brightest guys I've ever known. I mean, I've known a lot of Ph.D.s that couldn't hold a candle to that guy's brain. It's just one of those things. And like he says, when somebody asks, "Are you really David Crosby?" he just says, "Somebody's gotta be."

**You've always had this trademark mustache, now I see a respectable, clean-shaven face. Will we see another launch of this mustache?**

Oh, of course. The last mask I developed has a pod that comes off on the lower end that seals across your upper lip and for someone with a reasonable mustache such as yours; it's not a problem. Mine, however, was so big and bushy that when I put on the mask and tried to get the regulator through the hair, I'd get a mouthful of it.

**You've been the driving force in your company for all these years, but didn't you bring one of your kids into the business?**

Right. Connie, my youngest daughter, got interested in the business and came in. She's learning the business end of things and doing a great job.

**Back in the days when you were trying to convince commercial diving companies to go from heavyweight brass hats to lightweight commercial gear, did you ever envision that someday, an attractive, beautiful lady would be running the world's largest commercial diving company?**

No, I got pegged for that a few times.

---

This interview originally appeared in *Fathoms* magazine, and is reproduced by the kind permission of Bret Gilliam. The interview also appears in *Diving Pioneers & Innovators: A Series of In-Depth Interviews* by Bret Gilliam, 2007 (New World Publications Inc., [www.fishid.com](http://www.fishid.com)).

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# ADCI Hall of Fame Exhibit West Coast Opening



Oceaneering Rat Hat



Savoie Fiberglass Display

The Santa Barbara Maritime Museum is the 2007 host organization for the ADCI Hall of Fame Trophy Exhibit. A team comprising of the museum's Executive Director Julie McDonald, Historical Diving Society staff, and Hall of Fame inductees from the region, successfully lobbied for the trophy during the last quarter of 2006. Another team, led by HDS President Leslie Leaney, secured the loan of numerous rare diving helmets to create a display of historical equipment used by America's commercial divers.

The exhibit was officially opened in February, with a large number of inductees and ADCI members in attendance. Among the Hall of Fame members gathered were Lad Handelman, Bev Morgan, Fred Aichele and Whitey Steffans, who was inducted earlier in the year. Numerous HDS members were also in attendance including Connie Morgan, Dan Vasey, Kristine Barsky, Chris Swann, Dan Orr, Lee Selisky, Carl Roessler, Ed Casano, Tim Beaver, Bob Evans and Ella Jean Morgan. A surprise guests was Michael Von Alvensleben, who was one of the three divers who organized the HDS inaugural meeting in 1992, and has not been seen for a while. A good representation of ladies turned up, for a museum event, and we thought we'd run some of their photos here as a change from just guys and helmets.

ADCI Executive Director Phil Newsum gave the guests a detailed explanation of the history of the ADCI and the Hall of Fame, noting that

many inductees had started their careers in Santa Barbara. The museum already houses a significant number of historical helmets designed by Bob Ratcliffe, Bob Kirby and Bev Morgan, among others. These were supplemented by items loaned from the collections of Charlie Orr, Gene Webb, Leslie Leaney, Bob Ratcliffe and Kirby Morgan Diving Systems Inc. Details of the museum can be found at [www.sbmm.org](http://www.sbmm.org).

In the short time since it was created, the Hall of Fame Trophy has become the doorway through which the general public can travel to meet the commercial diving community face to face. And face to helmet. Under the guidance of former ADCI Chairman Jim Caldwell, the exhibit was publicly displayed for the first time in 2006 at the Atlantic City Aquarium. A report on this exhibition can be found in *HDM* # 48 and *Underwater* magazine July/August 2006 issue. The trophy's tenure ended in late 2006 and was moved to New Orleans, where it was the centerpiece for the 2007 Hall of Fame induction of Whitey Steffans and Jerry Wilbur O'Neil.

The Trophy and exhibit will remain in Santa Barbara until the end of the year and then will make its way back to New Orleans for the 2008 induction. From there it will go to its 2008 host. Anyone with an interest in hosting the Trophy at an appropriate venue for 2008 should contact the ADCI head office at 281-893-8388.

*HDS Staff report*

# ADCI Hall of Fame

## ADCI Hall of Fame Display Helmets, Courtesy of the Historical Diving Society On Display Until 12/31/2007



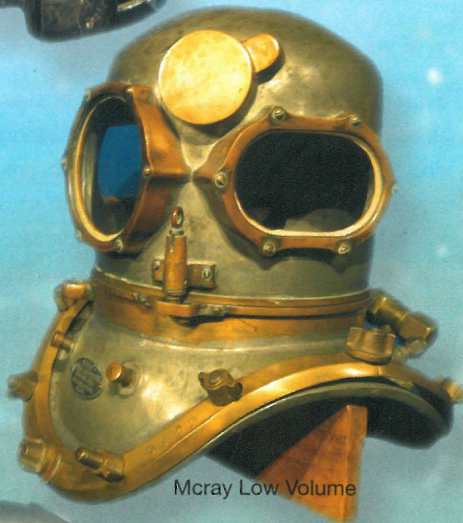
Kirby Morgan D-15



Joe Savoie Super



Early Rat Hat



Mcray Low Volume



Joe Savoie Demand

R. Kirby Helium Recirculator, circa 1964. One of six helmets built on a DESCO shell by Bob Kirby for Associated Divers.

R. Kirby Helium Recirculator, circa 1964. One of four helmets manufactured to order from Murray Black at DIVCON.

Kirby Morgan Abalone Mask, circa 1965. The first fiberglass mask produced in the company's first year prior to Morgan's name being placed on their company labels.

Kirby Morgan Clamshell Helmet. Experimental - 4, circa 1966. It was order by the US Navy Experimental Diving Unit and is the only model ever produced.

Kirby Morgan Clamshell Helmet - 6, circa 1968. Santa Barbara, California. The front mask section attaches by a hinge to the shell section. In 1970 a US Navy team of divers using these helmets made a successful dive to 850 feet off the Channel Islands.

Kirby Morgan, Kirby Helmet Experimental D-15, circa 1975. This was the only model the company built.

Kirby Morgan Helmet 16, circa 1975. This model is serial # 70 and has been refurbished and signed by the designers.

Kirby Morgan 47, circa 2006. Santa Barbara, California. One of the company's current state of the art models with patented advances in its breathing supply. As the company enters its fifth decade its products continue to dominate the world commercial diving market.

Lindbergh Hammar Helium Recirculator, circa 1965. A copy of the successful R. Kirby design manufactured by Jon Lindbergh and Pat Hammar.

McCray small volume Pacific North West helmet, circa 1948. A customized small volume bonnet on Morse commercial breastplate shell.

Bob Ratcliffe Helium Demand Helmet, circa 1964. One of either two or four helmets built on blank Yokohama shells by Ratcliffe for Cal Dive.

Bob Ratcliffe Oceaneering Rat Hat, circa 1970

Joe Savoie Fiberglass Gas Helmet # 095, circa 1968. Savoie's company sales display model featuring gold-plated fittings.

Joe Savoie Demand Helmet # 79-10, circa 1979. Stainless steel helmet with demand regulator fitted through the face port.

Joe Savoie Super Helmet # 79-17, circa 1979. Stainless steel helmet fitted with part of Savoie's patented gas reclaim system.

TOA air helmet, circa 1960. Converted (probably) by Al Hansen in Los Angeles for use in Southern California.

Phil Widolf Abalone Mask, circa 1950s. A solid bronze mask that was the abalone diving industry standard.

SBMM regular exhibit display helmets.

Thomason Agonic helium recirculator, circa 1966.

Ocean Systems helium demand DESCO conversion, circa 1963.

Bob Kirby helium recirculator built for Pete Brumis, circa 1964.

Chilean fisheries helmet restored by Bob Kirby.

Japanese abalone diving helmet.

C.E. Heinke hand pump 191, modified by Bob Kirby.

A. Schrader shallow water pump.

Black fleet Japanese abalone helmet.

Mask #1 by Bob Kirby.

Helmet from the movie *The Abyss*.

Helmet from the movie *Sphere*.

# ADCI Hall of Fame Exhibit West Coast Opening



Bev Morgan and Bob Ratcliffe.



Hall of Fame Trophy



ADCI's Don and Jane Sutton



ADCI's Phil Newsom with Kirby Morgan's Karen Martinez.



National Polytechnic's Ella Jean Morgan



HDS's Vanessa Goulard and Jill Leaney with Force Fins Susanne Chess.



Barbara Aichele with Connie Morgan




Dan Orr and Bob Evans



HDS' Ed Cassano and Kent Rockwell.

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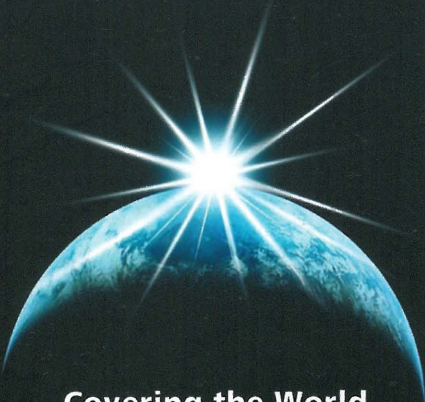
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# HDS Hans Hass Diving to Adventure Award 2006

## Stan Waterman — Arts & Literature



Rodney Fox, Valerie Taylor and Ron Taylor assist Stan Waterman with his hefty HDS Hans Hass Award.  
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Ernie Brooks, first recipient of the HDS Hans Hass Diving To Adventure Award, presents Stan Waterman with his award.  
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The Society is pleased to announce that the recipient of the 2006 HDS Hans Hass Diving to Adventure Award is Stan Waterman for his contributions to Arts and Literature.

The award presentation was made at the Beneath The Sea show in New Jersey, where Stan is almost part of the furniture. Stan was part of the underwater film crew for the major movie *Blue Water, White Death*, which was of influence to many underwater filmmakers, adventure tour operators and authors, including Stan's great friend, Peter Benchley. Several other crew members from the movie were also on hand to help Stan celebrate his award.

Stan joins his fellow HDS Advisory Board members Ernie Brooks, James Cameron, and Daniel Mercier, in receiving this distinguished

award. A fuller accounting of Stan's career can be found in issue #50 and at [www.stanwaterman.com](http://www.stanwaterman.com)

**The Award.** The HDS Hans Hass Diving to Adventure Awards were established with the full cooperation and consent of Professor Hans Hass. They are named in recognition of Professor Hass' first English-language book, *Diving to Adventure*, which was published in New York in 1951. The book became, and remains, a major influence to many of today's leading underwater writers, photographers, film makers, scientists, engineers and ocean adventurers. The award plaque bears a bronze relief image of Hans Hass and is created, designed, and donated by the noted ocean artist Wyland.



# *Blue Water, White Death* Reunion to Honor Stan Waterman



**Top row, left to right: Oceanic's Bob and Ronda Hollis with Stan Waterman; Valerie Taylor with Tom Chapin; Susanne Galli with Stan Waterman**  
**Middle row, left to right: Dan Libaratore and Dr. Shirley Pomponi with Stan Waterman; The *Blue Water White Death* group face the cameras again; (L to R) Tom Chapin, Ron Taylor, Stan Waterman, Valerie Taylor, Rodney Fox, James Lipscomb.**  
**Bottom row: The evening's Legends and sponsors with BTS and HDS staff.**

Several key diving industry personnel and their companies gave support to the Beneath The Sea — Historical Diving Society's second annual Legends fund-raising evening, held in New Jersey as part of the Beneath The Sea show. The highlight of the evening was the reunion of key crew members from the late Peter Gimbel's ground-breaking film, *Blue Water, White Death*.

Joining Legend honoree Stan Waterman were Ron and Valerie Taylor, who were alongside Stan and Peter in some of the most dramatic footage taken. Gimbel's co-director and director of surface photography, James Lipscomb, and assistant cameraman and expedition musician, Jim Chapin, both made rare, and very well received, appearances. Rodney Fox, the diving coordinator who handled the boats and cages during the film's finale at Dangerous Reef, South Australia, completed the unique reunion.

The reunion was conceived and planned by Maria Hults, JoAnn Zighan and Leslie Leaney and drew Hollywood's attention. A film crew from MGM was on hand to record events as additional material for the long-awaited DVD release of the movie, scheduled for sometime this summer.

The organizers wish to recognize the valued support of the following sponsor companies without who the event would not have been possible: DAN, *Sport Diver* magazine, Caldwell Diving, Cayman Islands International Scuba Diving Hall of Fame, Harbor Branch Oceanographic, Kirby Morgan Diving Systems, Inc., Life Support Technologies, M.V. Manthiri, Oceanic, Ernie Brooks Silver Seas, Lee Selisky, and Wyland Worldwide.

All photos ©2007 Eduardo Grubicy for BTS

# International Scuba Diving Hall Of Fame 2006 Inductees



Left to Right: Cornell Burke, Carl Roessler, Paul Humann, Minister Clifford, Rodney Fox, Neville Coleman and Darvin Ebanks.

## International Scuba Diving Hall of Fame Induction 2007

Carl Roessler, Paul Humann, Rodney Fox, Neville Coleman and the late Ralph Erickson were inducted into the International Scuba Diving Hall of Fame in the Cayman Islands at a black tie gala in January. The annual event was emceed by Stan Waterman, and included the induction of local divers Darvin Ebanks and Cornell Lloyd Anthony Burke into the National Cayman Diving Hall of Fame. The awards were presented by the Honorable Charles E. Clifford, Chairman of the Board of Governors of the Hall of Fame. Fuller details of inductee's biographies and information on the Hall of Fame can be found at [www.scubahalloffame.com](http://www.scubahalloffame.com). All photos ©ISDHF 2007 by Patrick Gorham. All rights reserved.

### Carl Roessler (USA)

After 15 years working for blue-chip companies, Carl Roessler realized a lifelong dream and moved to Curaçao and Bonaire to host dive groups organized by See & Sea Travel of San Francisco. In 1972, Roessler was approached by Dewey Bergman of See & Sea to forsake the Caribbean and travel the world. For the next 25 years Roessler organized permanent dive programs in over thirty of what are now the world's best-loved dive destinations, including the Cayman Islands, Galapagos Islands, Australia's Coral Sea, Fiji, Jordan, Sudan, Ethiopia, the Maldives, Papua New Guinea, New Caledonia, Vanuatu, Palau, Truk Lagoon and Malpelo. Roessler has also amassed an enormous collection of over 300,000 underwater images, with hundreds of his photos and articles appearing in major magazines and textbooks in the U.S. and Europe.

### Neville Coleman (Australia)

Multi-award winning photographic environmentalist, Neville Coleman has been seriously recording the aquatic wildlife of the Asia/Pacific region since 1963. With over 1,000 published articles in over 150 magazines, 100,000 images and 60 marine life natural history books to his credit, he is one of the most accomplished educational authors in the world. Coleman has traveled with, and led, expeditions throughout his native Australia and

all over the globe, documenting over 12,000 species of aquatic flora and fauna, and personally discovering over 450 new species of marine life.

### Rodney Fox (Australia)

Filmmaker and expedition leader Rodney Fox was attacked by a great white shark and badly bitten around the chest and arm in December 1963. The story of his attack and escape has been publicized by many. Fox is regarded as a miracle survivor of one of the world's worst shark attacks; to this day he has part of a great white tooth embedded in his wrist. Fox went on to build the first underwater cage to observe the great white shark and has led 100 major expeditions to film and study his attacker. Famous film makers for the movies *Jaws* and *Blue Water, White Death*, *National Geographic* specials, ABC's *20/20*, *Wide World of Sports* and many others have used Rodney to arrange their white shark filming.

### Paul Humann (USA)

Paul entered the diving business courtesy of Dewey Bergman, who connected him to the famed Bob Soto in Grand Cayman. Soto had begun offering diving from an old 80-foot air-sea rescue vessel called *M.V. Cayman Diver*. Humann bought the vessel, remodeled it and captained one-week dive cruises. Along the way, Humann revolutionized diving vacations. Living for a week on board the *Cayman Diver*, See & Sea clients dove all around Grand Cayman and Little Cayman, and packed in more diving (especially night dives) than was standard in the industry. In 1989, Humann published his first reef guide (to Caribbean reef fishes) and has since gone on to author guides on fish and invertebrates in the Caribbean, Baja, the Galapagos Islands, the northwest coast of the U.S. and the tropical Pacific.

### Ralph Erickson (USA)

Ralph D. Erickson is the co-founder of PADI, the largest dive training and certification organization in the world. Erickson also wrote the first PADI instructional guidelines with student performance objectives — considered the cornerstone of state-of-the-art diver education today, but new and

# International Scuba Diving Hall Of Fame 2006 Inductees



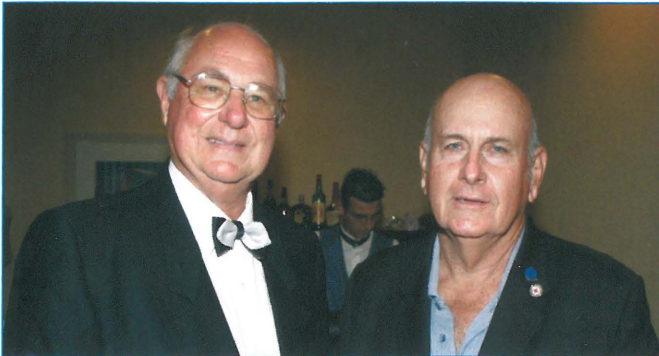
Left to Right: Cornell Burke, Bob Soto and Carl Roessler.



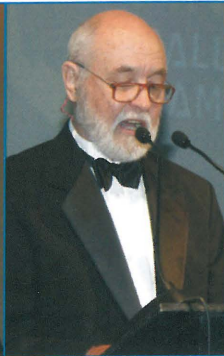
Al Horsby speaks on behalf of the family of the late Ralph Erickson.



Paul Humann receives his award from Minister Clifford.



Rodney Fox and Cayman's Peter Milburn.



Neville Coleman makes his acceptance speech.



Stan Waterman from the class of 2000 belatedly receives his award from Minister Clifford.

radical back then — and established the basic course requirements and lecture outlines for 11 PADI Certification Levels of Skin Diver through Master Instructor. Not only had no one done that before, but the structure and flow he developed are the backbone of PADI's continuing education system to this day.

## Cornell Lloyd Anthony Burke (Cayman)

Cornell Burke started diving in his late twenties and continued diving for almost 25 years. He was a PADI assistant instructor and was awarded an SSI Platinum Pro 5000 card in 1993. Burke dove with several dive operations on Cayman Brac and became a co-owner of Brac Aquatics. As a pioneer of diving in the Brac he has explored and named more than half of the dive sites on Cayman Brac and many on Little Cayman. He was also involved with sinking of the wrecks *Mariner* and *Kissimmee* in Cayman Brac. He visits handicapped diving groups such as Moray Wheels and helps visiting marine biologists from the University of Maryland with their research.

## Darvin Ebanks (Cayman)

Darvin Ebanks started diving in 1976. He was born in George Town and went to sea at an early age. Upon his return he worked with CUC and became a certified diver, and then an assistant divemaster, earning an SSI Platinum Pro 5000 card in 1993. He quickly became interested in underwater photography and after a few years started his own photography business that included photographing visiting divers and, most recently, opened a gallery of his photo images. Ebanks' friendly way quickly made him a favorite with guests and also made him an excellent ambassador for the Cayman Islands. Ebanks assists many local non-profit organizations.

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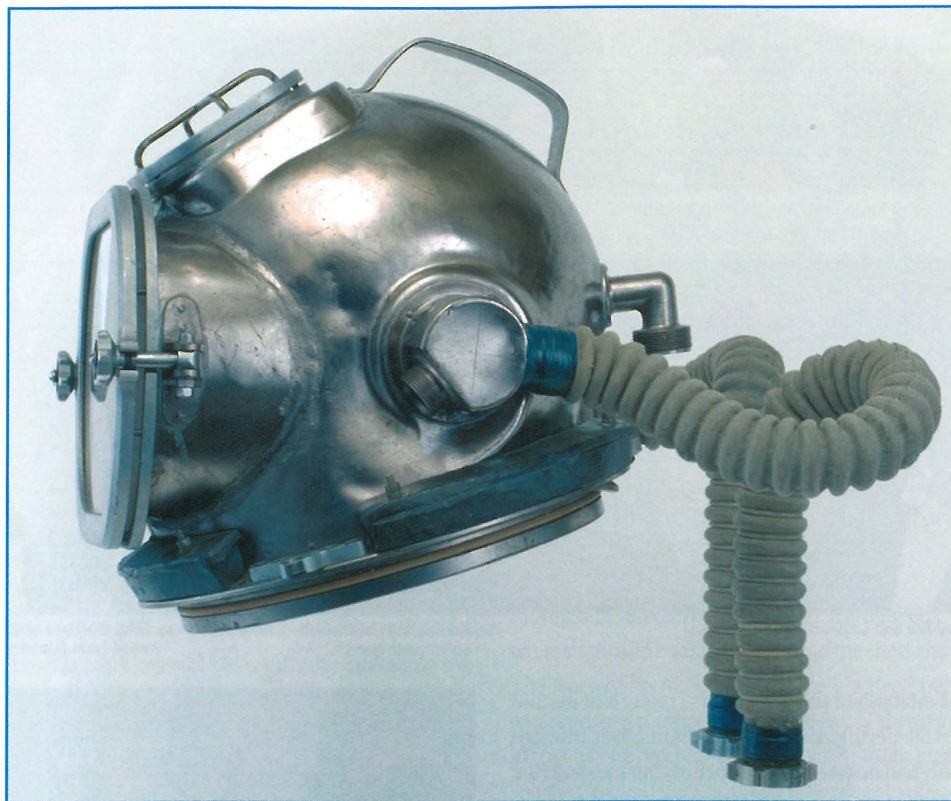
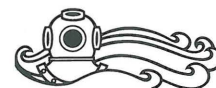
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# Helmets of the Deep

## Russian Experimental 'Mystery' Helmet



**BY DAVID DEKKER**

I found this helmet several years ago and was told that it was purchased on board a Russian ship visiting the French harbor town Le Havre. At first sight, I was convinced that it was a prototype of an uncommon Russian helmet called SVV86. The Russian SVV86 helmet is in fact a complete diving system, built in the last days of the Soviet Russian era. Later the SVV86 appeared "commercially" as an improved version called the SVV97. This equipment is surface-supplied ventilated system, the SVV86 has a rebreather as a bailout system, the SVV97 a set of compressed air tanks.

Comparing this helmet with pictures of the SVV86 showed the great resemblance in style, and since some parts were missing — the neck-ring and the second stage of the exhaust valve — I decided to contact friends in Russia to see if I could either buy the missing parts or have them reproduced. Through friends with the Russian HDS, my request was sent to the designer of the SVV86 system himself, and much to my surprise, he replied that this helmet was not built by him but that it does contain some parts from it (the faceplate assembly). His impression was that ... "this helmet is an experimental model from an unknown company"

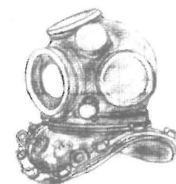
The helmet has a dome made of nickel-plated copper instead of the resin that was commonly used for helmets of this kind. The copper dome was built from three parts which seem to have been formed in a mould. There is a welding seam running straight over the helmet ending in the neck, showing that the main dome consists of two identical halves. The tunnel which holds the faceplate assembly was welded on, and the two parts on the sides where the rebreather hoses are fitted on have been both riveted and soldered. To connect it to the suit it had a three-bolt neck-ring in the same style as the early Comex Pro helmets. Inside, the helmet is entirely covered with a layer of light-grey rubber. Communications were fitted, but the speakers and microphones are now missing.

That this is rather a prototype of a helmet than of a standard product can be derived from the position of its top window, which was originally placed further to the back and then re-placed more to the front for a better visibility. Also, the lead compensation weights mounted on the neck-ring indicate that the helmet has been "tested" with different weights: if not they would have been made out of one piece of lead.

This helmet still is a bit of a mystery. Maybe there are HDS members who know more about it, or who will discover its history in the future.

# HISTORICAL DIVING SOCIETY CANADA

## Canadian Development of the Multi-Tissue Decompression Computer



BY PHIL NUYTEN  
HISTORICAL DIVING SOCIETY  
- CANADA

### Part 1:

*Presented at the HDS 2006 Seattle Conference...this is the story of two Canadian Military men — Derek 'Piet' Kidd and Roy Stubbs — whose pioneering work between 1955 and 1975 led to the development of the world's first dive computer, an evolutionary milestone for man in the sea.*

### Background: Early Ups and Downs

Pilots who flew at high altitudes in the unpressurized aircraft of WWII faced — among other things — the risk of decompression sickness (DCS) or, in diver parlance, the “bends.” Body tissues, such as organs, fat, muscles, skin and blood, are normally saturated with nitrogen to about 79 per cent of the 14.7 pounds per square inch that make up sea-level pressure. If a person moves quickly from a fixed pressure such as sea level to a very low pressure such as that found at great altitude, the nitrogen can bubble out rapidly from the body, causing symptoms ranging from headaches, nausea, dizziness, impairment of visual acuity to major symptoms of joint pain, chest pain and locomotive paralysis. Left untreated, severe cases of DCS can result in permanent physical impairment and even death.

The same pressure differential/gas diffusion process is the cause of DCS in divers, although the driving forces are typically greater than those experienced by high-altitude pilots in unpressurized aircraft.

In Canada, during WWII, all prospective pilots and aircrew were individually tested to determine their resistance to DCS. The trainees were exposed for two hours at a simulated 35,000-foot altitude with a 30-minute ascent rate. In most cases symptoms of DCS would appear.

By 1942, 12 decompression chambers had been built and installed at Halifax, Nova Scotia, for the purpose of evaluating each trainee's susceptibility or resistance to the bends. During the course of this wartime testing, some 17,000 exposures were made in this facility. Approximately one third of the people tested proved to have a physiological resistance to DCS, relative to the others. Attending doctors were able to determine that body morphology played a significant role in DCS susceptibility, as did the rate of ascent.



Derek 'Piet' Kidd & Bench Analog Computer (left), Roy Stubbs & MK 2 Diver Analog Computer, C1965. Photo credit: DRDC/DCIEM.

Work on decompression sickness by the Royal Canadian Air Force generated considerable interest among American researchers, but since the U.S. had barely entered the war at that time, the Canadian Institute of Aviation Medicine was considered by both the U.S. and the U.K. to be the clear leader in this field of study. Naturally, Canada shared its methodology and conclusions with its allies and most of the high-altitude exposure protocols used by the various Allied Nations came from this pioneering work.

### New Kidd on the Block

At the onset of WWII, an officer named Derek J. “Piet” Kidd had enlisted in the Royal Navy and subsequently became a submariner and a diver. As such he had a strong interest in the physiological problems related to undersea operations and was aware of the previous Canadian work on DCS. After the War Kidd had taken advantage of the free training opportunities offered by the English government (roughly equivalent to America's GI Bill), completing a multi-year medical program to qualify as a physician. He then applied for and was accepted into the Royal Canadian Navy (RCN). As a former colony Canada had strong ties with England, and personnel movement between their respective navies was a matter of routine.

Kidd was posted to Canada's East Coast at Halifax. At the time the young doctor's interest was “all the sorts of problems that were encountered in military diving operations.” Perhaps because of this, the chairman of the Defensive Research Board seconded him for special duty in the early 1950s. The powers-that-be in Ottawa told him, “We need to get into advanced research on underwater medicine.” Recalling the incident in a 2006 interview with the author Kidd said, “They plucked this particular “Kidd,” whose only credentials were a medical degree, wartime training as diver and a strong interest in that field, and gave him a ticket, essentially, to go anywhere in the world, learn what was being done in diving medicine, and produce a detailed report with recommendations on the direction Canada's Department of National Defence (DND) should take in the field of diving research.”

He spent considerable time visiting various diving research facilities, including a long stint at Britain's Royal Navy Experimental Diving Unit at Alverstoke. His



Early dive trials at Esquimalt, BC, July 1963. MK2 unit shown.

approach to the final DND report was comprehensive: “It was a big volume,” Kidd recalls. Its basic premise was just that — basic. In order to have a thorough understanding of a pressure-induced problem, there must be an accurate way to measure it consistently and repetitively. He concluded that only then could a researcher develop the most effective method to prevent such an occurrence or treat it after the fact.

The 1956 report recommended a number of specific actions. Kidd said, “I thought we (Canada) should immediately work toward some sort of analog computer management of decompression.” His thought was to build a device that would mechanically, or even electrically, match the gas diffusion or transfer characteristics of various human tissues after they had been exposed to pressure. He also recommended the building of a deep-diving research facility. “The next thing I knew,” they (DND) said, “right, you’ll be heading this thing up. At that time I was pushing

for the facility to be on the British Columbia coast in Saanich Inlet where there’s very deep water right next to shore ... and part of the plan included a tunnel or shaft connecting to a lock-out system.”

Back then, most of the Canadian Navy and its divers were located on the Atlantic coast in Halifax where Kidd was living. “The ‘brains’ in Ottawa were not keen on a new west-coast facility at Fleet Diving Unit-Pacific,” Kidd recalled. They said, “Wait, we have an Institute of Aviation Medicine (IAM) in Toronto, Ontario, and what is diving but the other end of the same stick—high pressure and low pressure? So the logical thing to do is to put this guy there.” Kidd laughed. “The fact that IAM was thousands of miles from the sea and had none of the high-pressure chamber facilities that we’d need, didn’t seem to faze them a bit!”

It was at the Institute of Aviation Medicine in Toronto that Kidd met Roy Stubbs. “Roy was a

superb physicist and head of the Physics Group of the Defense Research Establishment (DRE),” Kidd recalled, adding that he proved to be “a very pleasant, gentle fellow.” Stubbs had been a pilot during the war and as a specialist in the pressure-related problems of aviation medicine, was familiar with decompression. “We got on well and began talking and kicking ideas around, and that’s the way we got started together,” Kidd said.

“So, a high-pressure chamber was installed, the section was named something like “DND Experimental Diving Unit — Toronto” and we got onto how we could actually accomplish some of the things that I’d laid out in my original report.” Kidd remembers, “I wanted to develop an underwater breathing apparatus with “fixed oxygen” — a rig whose partial pressure of oxygen remained at a pre-set constant — say, for example, the surface partial pressure of 2.94 PSIA. This would be done by automatically changing the O<sub>2</sub> percentage as the diver went deeper or came back into shallower regions.”

All of the standard decompression tables of the day (mid 1950s) were based on one or more fixed breathing gas percentages. A typical military oxygen-helium dive of the time would commence with air, switch to a fixed percentage bottom mix, switch back to air at a narcosis-tolerable depth, and then switch to pure oxygen at the shallow-water decompression stops. The dive would often end with a rush to the deck chamber where the final deco would be completed on O<sub>2</sub>, interrupted with air-breathing intervals.

Kidd realized that an automatically variable oxygen percentage system would prevent oxygen poisoning, but would require a device to monitor the exact transfer rates into the diver’s tissues to be truly effective. No such device existed at that time. Accordingly, Kidd and Stubbs set out to design and build an analog decompression computer.

Kidd told me that he’d had this idea some years before: “In the early ‘50s, I’d built a liquid version, a simple prototype that used a piston to put pressure on a captured volume of liquid run through a restricted orifice. It didn’t work well at all! Very messy and very difficult to accurately measure the changes.” “But,” he continued, “Roy and I came up with the way to do it with pneumatics — air — fairly quickly. We used a parallel series of containers of different individual volumes, being pressurized through individual fixed orifices. This was our first multi-tissue computer.”

## How It Worked

The above serves to confirm that basic computers were very much in their infancy and that the work of Kidd and Stubbs should be viewed as a true pioneering effort.

The second version of the device that Kidd and Stubbs describe as the first analog decompression computer is a very simple system — almost eloquent in its simplicity. Each of the five tubes are of a different length and represent a different tissue compartment. The compartments differ one from another in the time that they take to reach equilibrium with an external gas supply through a very small fixed-size orifice. The pressure gauges are downstream of these orifices and will show the pressure in the tubes after exposure to pressure from either a fixed or variable pressure source. For clarity: if the supply is 100 psi (for example) then the smallest volume tubes — the shortest — will show the largest percentage of pressure equalization in the shortest period of time. If the shortest tube achieves 50 psi in 10 minutes, then the tube with twice the volume — the longest — will show 25 psi in that same time/pressure exposure. By manipulating the volumes and the orifice size and the

## 1950s Computer Technology

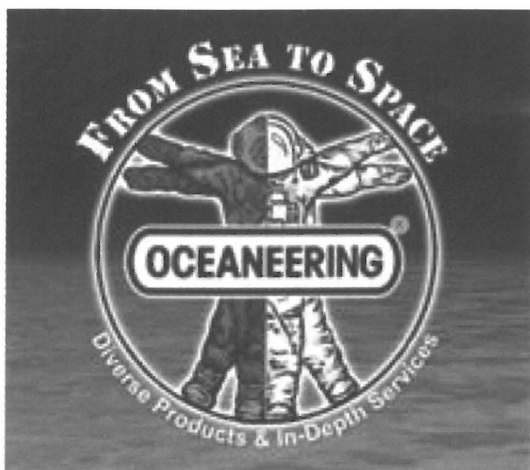
Since the substance of this paper is primarily the Kidd-Stubbs computer, it is probably appropriate to take a few moments to review the computer “state of the art” in the mid to late 1950s.

You’ll hear that it was a set of “decompression algorithms” that Kidd and Stubbs developed. “Algorithm” is a wonderfully modern-sounding word, even though Scotsman John Napier (1550-1617) formulated this mathematical process a very long time ago. Logarithms transform the difficult job of multiplying and dividing large numbers into the much quicker and easier task of simple addition and subtraction. His work is considered to be among the great mathematical discoveries of all time. Logarithms make calculators possible, but calculators are not computers — in the same way that wheels are not bicycles. Kidd and Stubbs used the term “computer” for their analog device with the clear understanding that it was the combination of the operator and the mechanical device that comprised the term “computer,” not the device alone (in the same way that an automobile serves little use without a driver). This distinction has become blurred over the years. It’s appropriate perhaps that both Kidd and Stubbs were of British background since it was the British mathematician Alan Turing who was first to come up with the design for a programmable computer. All computers in use today are “Turing machines.”

More than two centuries after John Napier’s algorithmic accomplishments, another British mathematician, George Boole (1815-1864), invented Boolean algebra in 1847. Boole’s logic system is the basis for all digital electronics.

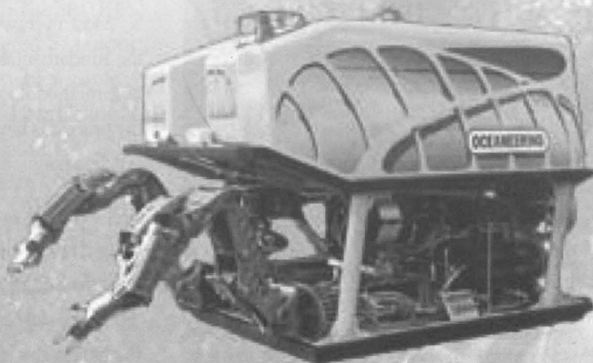
Most famous of the first true — primitive — computers was the Electronic Numerical Integrator and Computer (ENIAC). ENIAC was an enormous device with nearly five million soldered connections. Americans Presper Eckert and John Mauchly of the University of Pennsylvania developed ENIAC, which operated for a few years before final shutdown in 1955. This same year Derek “Piet” Kidd began experimenting with the (failed) liquid version of the decompression computer.

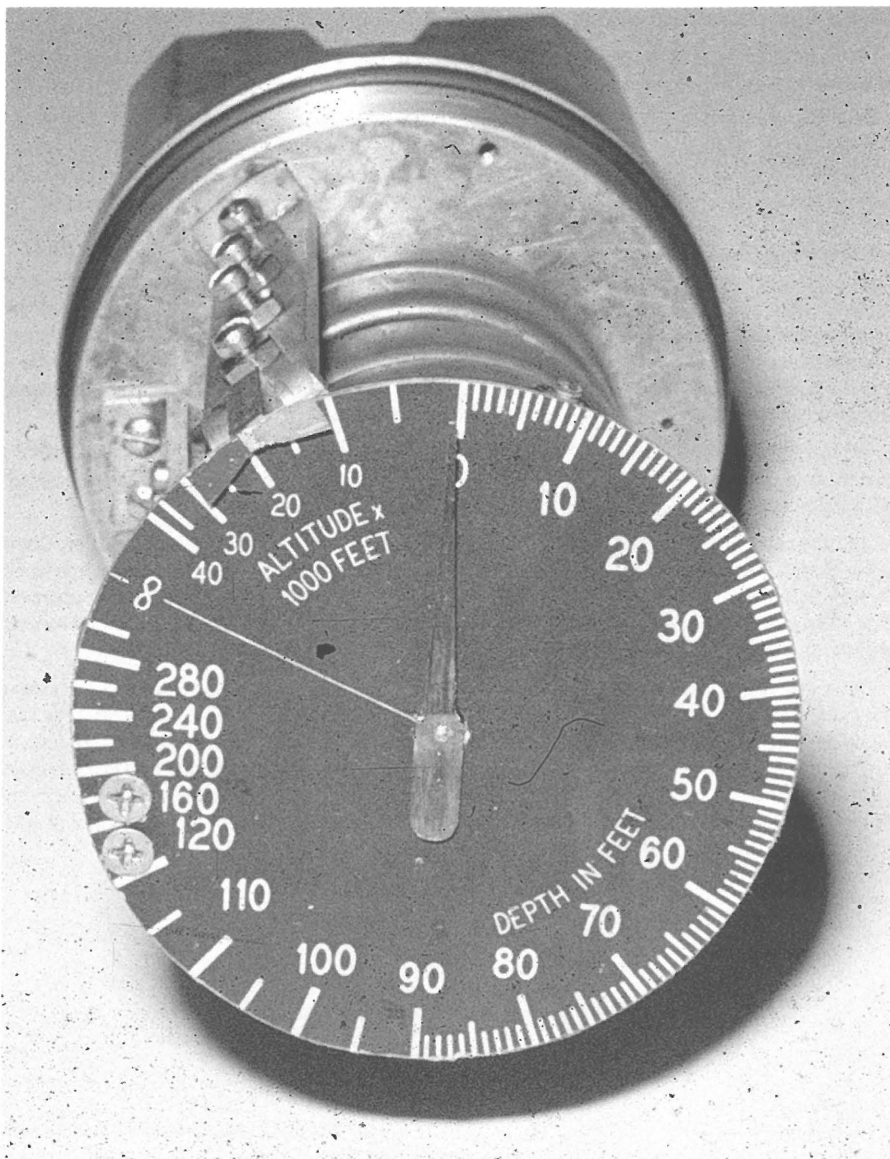
An historical perspective: In 1956 — only a year after Kidd’s first attempts to develop a decompression computer prototype — the giant U.S. firm International Business Machines (IBM) introduced the first disk drive computer it called RAMAC. The machine’s hard drive platters measured 24 inches in diameter, and a stack of 50 of them had a combined storage capacity of less than five megabytes. IBM rented out these storage units for \$35,000 per year — the price of a half dozen average American homes at the time! A present-day laptop hard drive measures about 2.5 inches in diameter and typically stores about 40,000 megabytes of data.



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Mark 3 dive computer face, showing safe altitude.

the surrounding pressure (saturation) is a function of time exposed to the pressure differential and the type of tissue considered.

3. The body can tolerate a certain over-pressure threshold (that is, a higher pressure in the tissues than the surrounding pressure) without the formation of inert gas bubbles and subsequent symptoms of DCS.

When you breathe gas underwater, it must be supplied to you at the same pressure as the surrounding water or you cannot expand your lungs (one-atmosphere systems such as hard-suits and submarines are the exception). This is the “automatic depth compensation” of a SCUBA regulator, for example.

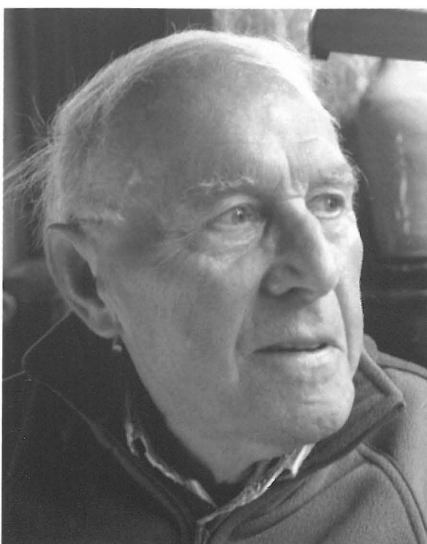
Different tissues saturate and desaturate at different rates; muscle tissue does so quickly, fatty tissue slowly, and there are also tissues between these extremes. For calculation, the tissues are referred to by their “times” — the time at a given pressure to achieve a given degree of saturation — so that 10-minute tissues are very fast and 240-minute tissues are very slow.

The body can “hold” or tolerate more pressure internally than the surrounding pressure. The degree of tolerance before bubbles form (the threshold) is a function of gas type: higher molecular weight gases have higher acceptable differential thresholds. Air, for example, has a tension threshold of about 2 to 1 (2:1). On that basis, you can always come directly to half the depth (pressure) to which you were exposed, regardless of bottom time. It is this fortunate piece of human physiology that makes the “no-decompression” tables possible. No matter how long you stay at 33 feet (29.4 psia), for example, you can always come back to half that pressure (14.7 psia) without risking bubble formation. Since 14.7 psia happens to be the surface pressure at sea level, you are home free. However, you may not go directly to the top of a high mountain, lest you exceed the pressure differential ratios and incur DCS. Hence the necessary precautions imposed on flying immediately after diving.

All of this is straightforward. The problem facing Kidd and Stubbs was the lack of any clear agreement on the exact tissue threshold times and the acceptable ratio thresholds.

*In part 2, Phil continues with Kidd and Stubbs continuing experiments with their MK 1 computer and refining the unit into more workable and portable models. Over the next twenty years (from 1962 to 1982) some 5,000 dives were conducted and monitored by the Kidd-Stubbs dive computer.*

*Phil Nuytten (c) 2006 All Rights Reserved.*



Surgeon Commander Derek J. Kidd, RCN-Retired. Photo credit: Phil Nuytten (2006), HDS Canada.

number of tubes, it is possible to simulate a number of tissues with different saturation / desaturation rates. These would represent muscle tissue, fatty tissues, etc., which have markedly different gas diffusion rates in the human body.

### Decompression Table Calculation

Most divers will be at least somewhat familiar with the fundamentals of decompression table calculation methodology. While a detailed description of the process is beyond the scope and purpose of this article, a couple of basics are worth reviewing:

1. The pressure of the inert gas in the various body tissues changes with any pressure change of the surrounding water or air.
2. The degree (percentage) to which the gas in the tissues and blood has reached equilibrium with





# HISTORICAL DIVING SOCIETY U.S.A.



## Historical “Auzzie Singing Sensations” Wow New Jersey Crowd

As mentioned in the last issue's column, the 2007 Board of Directors have undertaken a five-year strategic plan, and progress has been made in taking the first budgetary steps. Directors Leslie Leaney and Edward Cassano have been preparing draft budgets for the five-year period. The budgets are expected to be available for Board review in July. The strategic plan adopts a complete review of all existing Society operations and procedures. One of the first changes in operations is the addition of the Society eBay store, which was noted in the In the News column in issue #50. A complete review of the membership levels and fees will be undertaken by a Membership Committee later in the year. Pending that review, the Board voted in March to set the Lifetime Membership fee at \$1,500. Lifetime membership applications now require the sponsorship of a Director or an Advisory Board member and are subject to final approval by the Board. A review of the international status of *HDM* was also undertaken. This was somewhat prompted by the success of HDS SEAP in self-publishing their magazine *Classic Diver*, which replaces *HDM* as their official membership magazine.

Bob Rusnak and Wayne Collins staffed the HDS booth at this year's Boston Sea Rovers clinic, held on the first weekend of March. During the weekend HDS staff met with staff from Beneath The Sea to review joint preparation for that show's Legends series to honor Stan Waterman. Advisory Board member Ernie Brooks was inducted into the Sea Rovers by the traditional ducking in vodka and orange juice, joining HDS Chairman Dan Orr, in the select group of divers



Wayne Collins, Bob Rusnak, Valerie and Ron Taylor, and Greg Platt at the HDS booth.  
© 2007 Eduardo Grubicy for BTS.

who are club members. The Society thanks Dave Morton of the Sea Rovers for his assistance at this terrific gathering. The following weekend Society Co-Founder Leslie Leaney was honored in Santa Barbara for his role as a Founding Trustee of the Santa Barbara Maritime Museum. Leslie was joined by four original trustees at the event held among the displays of the ADCI Hall of Fame exhibit. The weekend following saw Kent Rockwell and Charlie Orr manning the HDS display booth at the Aquarium of the Pacific's Diver's Day weekend.

The gathering of most of the original film crew from *Blue Water, White Death* was the major highlight at New Jersey's Beneath The Sea (BTS) show in late March. They gathered to support the BTS/HDS Legends program which saw Stan Waterman receive the HDS Hans Hass Diving To Adventure Award, a granite sculpture by Viktor, and the BTS Legend of the Sea Award. “StanFest” would be an appropriate description of events (see the color center section in this issue). Among HDS members thronging the aisles were Sylvia Earle, Zale Parry, Ernie Brooks, Phil Nuytten, Bob and Ronda Hollis, Wyland, Ron and Valerie

Taylor, Rodney and Kay Fox, Bob Evans, Dr. Bill Hamilton, Lee Selisky, Dan Orr, Bret Gilliam, Bob Ricke, Maria Hults, Connie Morgan, Richie Koehler, John Chatterton, Dr. Richard Vann, and the event's hosts, Armand and JoAnn Zigahn. The BTS film festival appeared to be sold out, with the Australians showing some terrific shark footage, which we hope Carl Roessler will be able to “borrow” for his History of Great White Shark Diving presentation at this year's HDS Conference.

The BTS staffing is comprised of up to 150 volunteers helping to run this weekend event. Each year the key staff and volunteers hold a private dinner immediately after the show closes. Last year the show's visiting legends, Hans and Lotte Hass, were invited to join this private gathering, and did so. Following in this new “tradition,” Australian's Ron and Valerie Taylor, and Rodney and Kay Fox accepted this year's staff invitation. The Outback Steak House was a very fitting venue for the event, with Australian photographs and imagery on most walls. The Auzzies were clearly pleased with their treatment as guests in America, and decided to actually sing for their supper. Led by Valerie, “To show we are not a bunch of stuffy shirts,” and named “The Dangerous Reefers” by their manager Douglas Sieffert, the unrehearsed quartet sang the traditional Auzzie lament, “The Vegemite Song,” complete with facial gestures. A stunned but very appreciative audience roared their approval. As the room cleared several staff asked the singing stars, “What's Vegemite?”

*To be continued — Staff report*

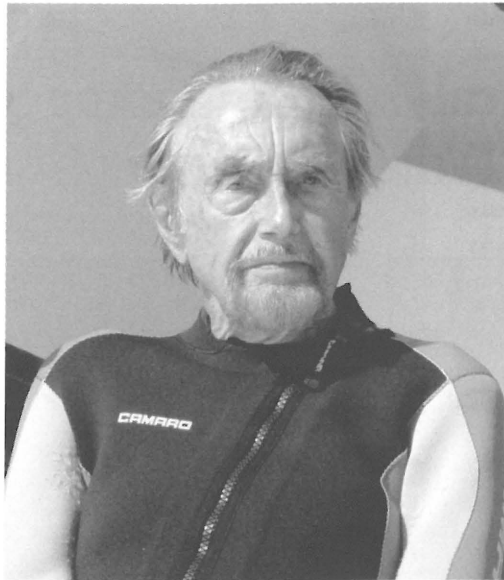
## Hans Hass Returns to the Red Sea

TEXT AND PHOTOS BY MICHAEL JUNG

The Austrian diving pioneer Hans Hass took the opportunity to visit some familiar places again. In February he and his wife, Lotte, flew to Port Sudan and joined the liveaboard dive boat *Sherazade*. With this ship, owned by the Italian Renato Marchesan, they made a seven-day trip to the reefs off the coast.

The 88-year-old Hans used the opportunity to dive on the famous wreck of the *Umbria* and at Shab Roumi where Jacques-Yves Cousteau made experiments for "Precontinent II." Hans last visit to this place was some 58 years ago, in 1949. It was in Port Sudan where he made his famous film *Under the Red Sea*, that is now available on DVD.

Hans enjoyed the trip and the dives and has already made new plans: One of his targets is to visit the wreck of the *Titanic* in the Northern Atlantic.



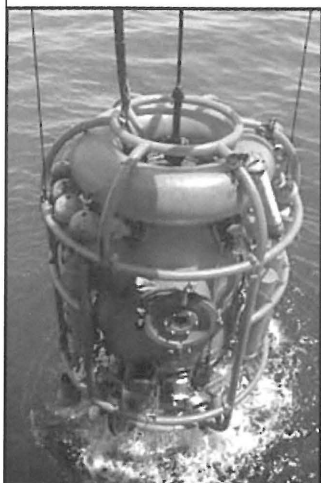
For more information about the ship see: <http://www.sherazade-redsea.com>

Left: Hans Hass aboard *Sherazade*.  
Right: Historic poster.  
© Picture and poster Michael Jung.



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# SCUBA WORKSHOP

## Aqua Lung's Mistral Regulator

BY KENT ROCKWELL

Several years ago Aqua Lung International introduced, for a limited time, their new and exciting "Mistral" double-hose regulator. The Mistral found acceptance among knowledgeable diving enthusiasts and now that production has ceased ... divers are rapidly buying up dealers' remaining stocks. I think it's time to take a closer look at this historical piece of scuba engineering.

Historically and technically astute scuba enthusiasts will be the first to say, "Wait a minute, the first diving lungs had double-hose regulators; how can that be new? And it has been obsolete for some 45-years. "How can that be exciting?" To understand the significance of Aqua Lung's endeavor let us first explore a little history and then take a look at this new piece of diving equipment.

In the early 1950's "Aqua-Lung" became a household word in scuba equipment and spurred the sport diving revolution with their rugged, over-the-counter, mass-produced CG-45 double hose regulator. Its' exciting debut can best be told in Cousteau's own words:

*One morning in June, 1943, I went to the railway station at Bandol on the French Riviera and received a wooden case expressed from Paris. In it was a new and promising device, the result of years of struggles and dreams, an automatic compressed air diving lung conceived by Emile Gagnan and myself. I rushed it to Villa Barry where my diving comrades waited. No children ever opened a Christmas present with more excitement than ours when we unpacked the*



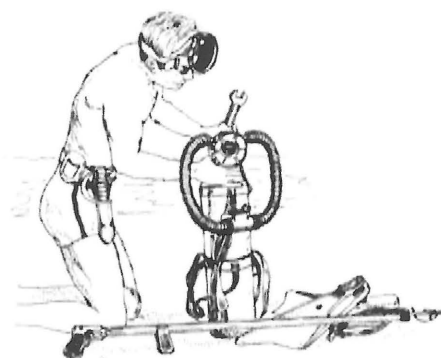
*first 'aqualung'. If it worked, diving would be revolutionized.*

Revolutionize diving it did. The very fact that it was mass-produced has given the Aqua-Lung the

enviable credit for spearheading recreational scuba as we know it.

Invented by Jacques-Yves Cousteau and his brilliant French-Canadian partner Emile Gagnan, the first-production Aqua-Lungs were manufactured by L'Air Liquide's subsidiary, La Spirotechnique, in Paris. Called the "Scaphandre Autonomes," units reached French markets in 1946 and began trickling into the USA in late 1947. Sporting the Americanized name "Aqua-Lung," they were officially distributed for a short time by the New York-based SPACO, Inc. in 1949.

By 1950, Frenchman René Bussoz, of René Sports in Los Angeles, California, had obtained an exclusive license to sell and manufacture



Aqua-Lungs. René incorporated his new enterprise and registered both the names Aqua-Lung and U.S. Divers Company. When his licensing agreement ran out, in 1956, René sold his shares and assets of U.S. Divers to the L'Air Liquide / La Spirotechnique group. U.S. Divers was eventually renamed Aqua Lung America (some 41 years later) to identify more closely with their worldwide Aqua Lung organization. (Note: The company name is printed "Aqua Lung" today while the references to the early diving units, pre-1997, are printed "Aqua-Lung.")

"Aqua-Lung," in the USA, referred to the combination of regulator, tank(s) and harness. The original French Scaphandre Autonome regulator, the two-stage CG45, was simply renamed the Aqua-Lung regulator with a reference to (D) in René's catalog. René began manufacturing more of the parts and importing less and in 1955 the (D) became the catalogued (DA) and an economical single stage version became the (DX).



Now with two regulators on hand, a distinction was necessary. With Navy-approved manufacturing, the (DA) officially became the Aqua-Lung Navy Type DA and the single stage became the DX Stream Air. In 1958 the DA was improved with a modified second stage to become the famous DA "Aqua-Master" regulator; the modified (DX) became the (DW) and then the DW Mistral (no relation to the new Mistral).

In 1966 the DA's tiny first stage poppet valve was replaced with a balanced poppet, and that unit, the Royal Aqua-Master, would soldier on until U.S. Divers discontinued double-hose regulator production in 1973. You may refer to Phil Nuytten's extensive article, "Emile Gagnan and the Aqua-Lung," in *Historical Diver* number 42 for an in-depth review of these variations.

Confusing? Not really. With so few changes over 30 years, the same basic CG45 of 1943

ended with the Royal Aqua-Master of 1973. What significance can be placed on this regulator design? Recent tests with sophisticated computer controlled breathing machines has revealed that the Royal Aqua-Master can hold its own with most current single-hose regulators—not too shabby for a 64-year-old design. Gagnan (and Cousteau) were so far ahead of their time that their design is still state of the art. And there's one more unheralded connection to the CG45: U. S. Divers medium-priced single-hose regulator of 1962, the Hydro-Lung Supreme and its progeny, the newer Titan line of regulators. We'll examine these regulators a little later.

So, what is the Aqua-Lung double-hose regulator? The first production Aqua-Lungs featured the CG45 (for Cousteau-Gagnan 1945) compressed-air demand valve (regulator), shaped like a round metal alarm clock and clamped to the shut-off valve on top of the



LE DÉTENDEUR ET LES ACCESSOIRES  
DU SCAPHANDRE AUTONOME

The first production Aqua-Lungs were manufactured by L'Air Liquide's subsidiary, La Spirotechnique, in Paris. Called the "Scaphandre Autonomes," units reached French markets in 1946 and began trickling into the USA in late 1947.

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1962 Hydro-Lung Supreme and 2006 Mistral.

compressed air cylinder(s). With the cylinders strapped to the diver's back the regulator rode level with his shoulder blades and delivered air through two, soft, corrugated rubber hoses connected to a mouthpiece assembly. The right-hand hose (over the right shoulder) delivered air to the diver and the left-hand hose (over the left shoulder) exhausted air back to the regulator and over board. This process of supplying air and dumping of the exhaust is called "open circuit scuba."

In principle, all open-circuit scuba regulators work in the same way in that a flexible diaphragm is used to activate the demand valve and equalize the air pressure in your lungs with that of the surrounding (ambient) water pressure. However, in operation the double hose and your "modern" (fifty-year young) single-hose regulators differ in some important ways. Both regulators supply air in two stages: the first stage reducing the high cylinder pressure to a manageable 150 psi or so and the second feeding the air to the diver at ambient pressure.

The two stages and diaphragm of the double hose reside in the regulator housing

atop the cylinder, while the single hose splits the two stages with the diaphragm and second stage held in the diver's mouth. It is the location of this diaphragm, mouthpiece and their relationship to the diver's lungs that make the difference.

With the diver in an upright or on his back position, the Aqua-Lung's diaphragm is below the mouthpiece creating a positive hydrostatic pressure that will aid inhalation or create a free flow should the diver lose his mouthpiece (in fact, this is one way to clear a double hose regulator mouthpiece as there is no clearing button.

The other is to roll to the left and blow the water down the exhaust hose).

Face- or head-down, the breathing resistance increases — the opposite of what a single hose does. However, these nuances are singularly minor and anyone can adapt to a double hose in less time than it takes to write about it. To the positive, the double hose is very comfortable with an even pull on the mouthpiece (denture wearers?) and is ever so quiet. You will notice this within seconds of your first dive, as the exhaust is a distant rumble behind you. The only real downside is the damage tolerance of the soft hoses, so you'll have to remain aware of them when dropping your rig on the boat deck or sticking your head into a jagged aperture (wrecks or *Jaws*).

In 1962, U.S. Divers introduced three single-hose regulators: their high-end Calypso, mid-range Hydro-Lung Supreme and the low-end tilt-valve Aqua-Dive Deluxe. Significantly, the Hydro-Lung was a single-hose regulator using Aqua-Master first stage parts and a pragmatic downstream Aqua-Master type second stage. In three years it would disappear, to return with a new cover as the famous Conshelf

VI. All later Calypso, Conshelf, and Aquarius regulators would use this second stage and the first stage would become the balanced Titan. Both stages would recombine into the new "Mistral" double hose-regulator.

Why bring back a double-hose regulator? Aqua Lung America's Tom Phillip (Product Manager for Regulators, BCs & Dräger Rebreathers) retold the story of Aqua Lung's "Legends Tour" of several years ago. This tour visited dealers all over the U.S. and in almost every city dealers asked, "Why don't you bring back the double-hose regulator?"

Whether from nostalgia, thoughts of ice diving and underwater photography, customer requests and/or just wanting something truly different, the dealers wanted one. So, "We listened to our dealer base." Aqua Lung France was hearing the same thing and accepted the challenge to see if they could build something to meet the European CE approval ratings, the EN 250:2000 standard.

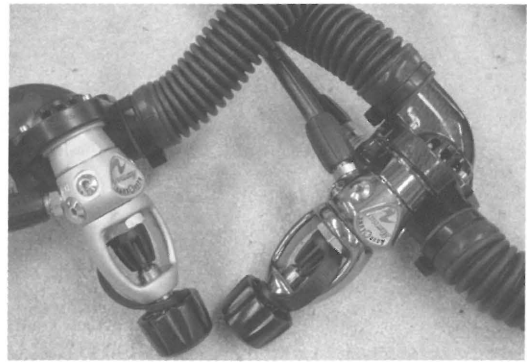
It was accepted that the Mistral would be in a "niche" market (i.e. lower sales projections than their single-hose models) and, therefore, the R&D had to be economical and dealer maintenance simple. Aqua Lung France's project manager, Thomas Maeckelberghe, chose the indestructible Titan first stage and the Conshelf downstream second stage. These were mated in cleverly designed second-stage housing with high-quality corrugated hoses and an adjustable mouthpiece. An added plus, of the "time proven" demand system was the Mistral's use of existing Titan "service kits" and maintenance training. Aqua Lung addressed the training issues as well, knowing that customers would easily adapt to the double-hose nuances and enjoy the regulator's benefits.

Now, after several years of sales history and use, the Mistral has found its own champions among discerning collectors and professionals alike. We have found it not too surprising that most owners have purchased more than one unit to complement their gear bag, and the Mistral's cult status is beginning to grow.

What do you get with this modern Scaphandre Autonome? You will find a no-nonsense double-hose regulator with an unimpeachable heredity. The Mistral is a comfortable and very quiet, easy-breathing regulator that's easy to maintain. It has an adjustable mouthpiece that allows you to swivel the hoses to the most comfortable position, is CE-approved and can be used with enriched air nitrox (EAN) of 40% oxygen or less. The Mistral is ideal for ice diving as both the first and second stages are environmentally dry sealed (no exhaled, moisture soaked air to wash over and freeze to the second stage internals). It features both high- and low-pressure ports for accessories (a problem when using the vintage Aqua-Lungs) and a slick regulator bag to protect your investment. Aqua Lung offers their Customer Satisfaction Guarantee and Limited Lifetime Warranty, and for something really special there is a collector's "Limited Edition Mistral" that comes in a fine wooden presentation case

(see *Historical Diver* issue 50, page 26). The Limited Edition sports a physical vapor deposition (PVD) finish that produces a high-gloss smoke color to the metal parts and a special coating that gives the molded parts a high-gloss carbon fiber look. With only 500 Limited Editions made for the Western Hemisphere (S/N's US001 — US500); these will be something to look for.

Why did Aqua Lung choose the name "Mistral?" The Mistral was U.S. Divers' popular single-stage regulator back in the late '50s. With its pioneering "Venturi" action it was seen as a "breath of fresh air." In France, the Mistral is a fierce wind blowing off the continent into the Mediterranean. It is described in the Admiralty Pilot as, "A northerly wind of marked individuality." With the new Mistral "a breath of fresh individuality" did indeed blow in on the wind.



**Standard & Limited Edition Mistrals.**

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*The original text of this article appeared in Dive Chronicles: The Digest of Diving magazine published by our friend Brad Nolan in Ft. Lauderdale, Florida (Email: news@divechronicals.com). I have rewritten certain portions to encompass new research and use of the Mistral regulator.*

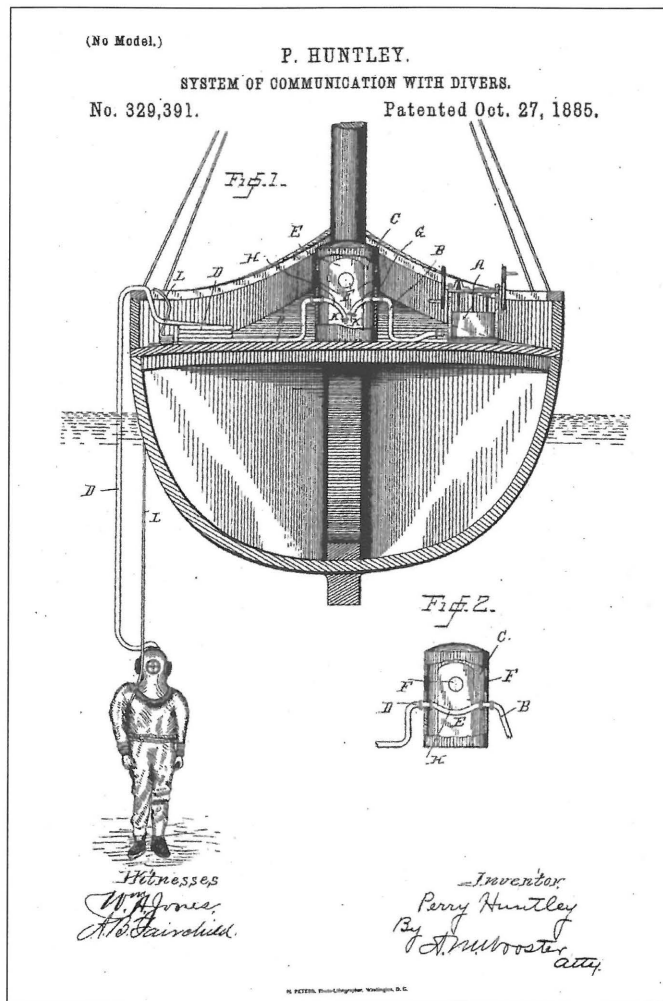
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# An Early Diver Voice Communications System



The system is uncomplicated and is illustrated in Figure 1. The center of the system is a chamber (C) on the deck of the ship or support vessel and was large enough to enable a person to sit in it. This was to be made of metal or wood and strong enough to withstand the pressures to which a diver might dive. The chamber was to be fitted with an airtight door (E) and a number of glass ports (F) so that the person inside could see signals and the action on the deck outside the chamber. The air pump (A) was connected to this chamber, by air hose (B) through a hub in the wall of the chamber where it was connected to a short piece of air line (G) and thus to a connector (K) on the end of the hose in the chamber. This flange (K) could be connected to another flange (also K) on another short piece of air line (H) connected to a hub in the chamber wall and then to the air line leading to the diver.

In operations, when no particular instructions were to be relayed to the diver, the two short pieces of the hose were connected, providing a direct air line to the diver, as shown in Figure 2. When instructions to the diver were needed, a person entered the chamber, the door was closed and the chamber pressurized to the depth of the diver. The short sections of air line in the chamber were separated. The person in the chamber could then hear the diver and relay messages on to him. The inventor states ... "The person within the chamber, by holding the end of pipe (H) near his ear, is able to hear not only every word spoken, but every sound made by the diver, and the diver able to hear with perfect ease conversation addressed to him by the person within the chamber."

He goes on to say ... "I have found in practice that I am able to converse as readily through a long tube as through a short one, which is owing to the fact that the deeper the diver descends the greater must be the density of air furnished to him."

This last statement leads me to believe that such a system was probably built. However, I have never found any mention of it anywhere else, so presumably it was never popular or thought not to be required enough to add the needed modifications to a diving set-up. Another reason may be that the telephone was patented in 1876, and by 1885 several systems were in use in the United States. Diver communications using a telephone system probably shortly followed.

I have not yet found a patent for a telephonic diver communication system but will continue to look. Perhaps one of the readers already has this information. If so, I would be happy receive that information.

BY JAMES VOROSMARTI, M.D.

In March of 1885 Perry Huntley, of Bridgeport Conn., applied for a patent entitled System of Communication with Divers. This was approved on 27 October 1885 and numbered 329,391. The purpose was to "... produce a means of communicating with divers when they are underwater, by which conversations may be carried on without difficulty between the diver and a person above the surface." He goes on to state that this system would "obviate the need to have the diver (or bell) surface if detailed instructions were needed for the diver to accomplish his job, thus saving much time on a job. The system would also provide much more detailed information than could be transmitted by the usual signals on the life line."

## Coming Events Schedule

Oct. 26-28, 2007. HDS Conference, Tarpon Springs Fla. [www.hds.org](http://www.hds.org)

Oct. 31-Nov. 3, 2007. HDS Exhibit booth. DEMA, Orlando, Fla. [www.demashow.com](http://www.demashow.com)

Jan. 29-31, 2008. Underwater Intervention 2008, New Orleans La. [www.underwaterintervention.com](http://www.underwaterintervention.com)

Feb. 2008. Divers Day. Aquarium of the Pacific, Long Beach, Calif. [www.aquariumofthepacific.org](http://www.aquariumofthepacific.org)

March 7-9, 2008. Boston Sea Rovers Clinic. Boston, Mass. [www.bostonsearovers.com](http://www.bostonsearovers.com)

March 28-30, 2008. Beneath The Sea. Secaucus, N.J. [www.beneaththesea.org](http://www.beneaththesea.org)

April 20-22, 2008. Ocean Fest, Fort Lauderdale, Fla. [www.oceanfest.com](http://www.oceanfest.com)

May 2008. Provisional date. HDS Annual Conference, including West Coast Chapter of ADCI Conference. Monterey, Calif. [www.hds.org](http://www.hds.org)

May 21-22, 2008. The Scuba Show, Long Beach, Calif. [www.saintbrendan.com](http://www.saintbrendan.com)

Oct. 22-25, 2008. DEMA 2008, Las Vegas, Nev. [www.demashow.com](http://www.demashow.com)

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The HDS-USA and HDM are not responsible for any errors in descriptions, listings or prices. Items that Failed To Meet their Reserve (FTMR) have their highest bids listed.

Internet auctions and sales during recent months. Prices are rounded to the next highest dollar. The content of this column is provided in good faith by members for general interest and is not a definitive guide. Vendors' opinions of what items are, and what condition is, are not consistent.

# Helmets in Auction

## Rare Australian Robison Helmet Again Fetches High Price

### AMERICA

DESCO USN Mark V, no serial number given, date 12-5-45. Appeared to be complete and to have most of tinning. Small solder repair at back of bonnet. Sold \$6,300.

DESCO USN Mark V, serial # 4049, date 12-07-51. Stated as matched, no tinning. Appeared in very good condition, with whip, air control, leather boots, knife, weight belt, gloves, dress, T wrench. All items stated as in perfect condition. Sold \$9,900.

Miller Dunn USN Mark V serial # 89, date 8-1-43. Tinned and complete with all matching numbers. The spit cock and comms elbow has been replaced. Sold \$11,500.

A.J. Morse & Son Inc. 3 light Continental bonnet only serial # 2688, missing face plate. Heavy wear with numerous dents. Incorrectly listed as a "breast fed" bonnet. Located in UK. Sold \$2,365

A.J. Morse & Son. Inc. 3 light Continental, bonnet serial number 3327 on breastplate serial number 3289. Retained most of tinning and appeared in very good condition. Sold \$4,500.

Morse Diving Equipment Co. Inc. Successors 4 light commercial serial # 4320. Several dents in the crown of the bonnet. Sold \$5,600



Yokohama Kirby style 4 light helium recirculator.

Morse Diving Equipment Inc. USN Mark V serial # 2034 date 9/02. Unused in mint condition, with whip, air control, T wrench and Morse promotional items. Sold \$5,600.

Savoie stainless steel air hat. No serial number given. Appeared to be in excellent condition. Sold \$6,000.

A. Schrader's Son USN Mark V # 215B, dated 6-43. No tinning. Appeared to be in good condition apart from a dent at the back of the bonnet. Sold \$7,500

### AUSTRALIA

Robison 3 light. 1945. Stated as never used and appeared to be in mint condition with various military stampings. Well described and photographed. Located in Australia. Sold \$33,000.

### CHILE

Chilean 3 light with A. Hale Co. stamped in the breast plate. Numerous repairs to the bonnet. Polished finish. Sold \$3,560.

### EAST GERMANY

MEDI 4 light in very good condition. Located in Austria. Sold \$5,837.

### JAPAN

TOA 3 light. Front screw locking device. Missing non-return portion of the air inlet, and also the blanking cap for the comms. Appeared in good condition. Sold \$3,300

Yokohama traditional 4 light commercial. No tinning and polished. Appeared to be complete and in good condition. Sold at Live Auction for \$5,000, plus possibly 5 to 20 % Buyers Premium.

Yokohama Kirby style 4 light commercial with lexan ports. Last style of bonnet with front locking pin. Appeared in very good working condition. With dress and under garment. Sold \$7,500.

Yokohama Kirby style 4 light helium recirculator. Last style of bonnet. Appeared to have most of its nickel plating finish and to be in very good condition. Sold \$8,402.

### ENGLAND

Siebe Gorman & Co. Ltd. 3 light, 6 bolt. Serial # 7395 on 15024. Missing manufacturer's plaque but in good condition. Located in UK. Sold \$4,799.

# Scuba Auction



## VINTAGE SCUBA

Christensen Viking regulator and manual in nice condition. \$638.  
 Dacor R-2 double hose A1 condition. \$149.  
 Dacor R-3 clean Dial-a-Breath two hose. \$185.  
 Divair w/ original green hoses & black Hope-Page mouthpiece. \$411.  
 Healthways Scuba two hose w/ box, both good condition. \$547.  
 Healthways Scubair nice w/ box. \$67.  
 HR-M74 double hose regulator (German?). \$256.  
 Nemrod Snark III clean double hose regulator. \$254.  
 Northill Air-Lung pre-production model, very nice. \$440.  
 Northill Air-Mite single hose regulator w/ holes drilled in cover. \$548.  
 Scaphandre Autonome ser. #5614 w/ fabric covered hoses & hooka style. \$1766.  
 Scott Hydro-Pak first stage regulator w/ modified yoke. \$209.  
 Scott Hydro-Pak commercial mask & reg. w/ speaker & aux-vent hose. \$133.  
 Scott Hydro-Pak mask and regulator. \$306.  
 Scott Hydro-Pak mask, regulator and single tank. \$500.  
 US Divers Calypso single hose regulator. \$23.  
 US Divers Jet-Air w/ maroon Phenolic housing

and replacement hoses. \$461.  
 US Divers Jet-Air w/ original yellow hoses. \$300.  
 US Divers over-pressure breathing single stage double hose. \$350.  
 Spaco ser. #1431 with heavy corrosion. \$3403.  
 US Divers Triple tanks, late 1950's w/ good galvanizing and harness. \$1232.  
 Voit Conqueror single hose w/ corrosion. \$36.  
 Voit 50 Fathom clean but w/ black hoses. \$305.

## SCUBA ACCESSORIES

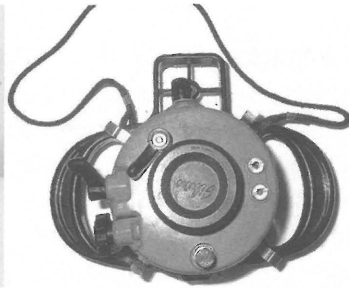
Healthways / Cressi Caribe snorkel w/ box. \$136.  
 Hurricane Rafale French 1950's speargun. \$341.  
 Lace up fins w/ no name. Green rubber and nice looking. \$108.  
 Mk VII CO2 speargun 1950's. \$576.  
 Mordem speargun, short model. Some rotten rubber. \$689.  
 Mordem speargun, complete some corrosion. \$373.  
 USN Mk 1 Mod O non-mag wrist depth gauge. \$362.  
 Panerai Radiomir 1936 Military watch, Italian XMAS frogman original owner. \$14,000 + purchased off eBay for undisclosed amount well above starting bid.

Swimmaster Spearfisherman gum rubber mask w/ box in excellent shape. \$356.  
 Swimmaster Special Edition knife w/ gold plate trim. \$227.  
 US Divers Rocket fins red/white/blue. \$161.  
 US Divers Sea Hawk knife red/white/blue w/ sheath. \$103.  
 US Divers Vulcan knife and sheath. \$168.  
 Voit Deluxe Skin Diver knife w/ blue handle. \$500.  
 Voit Snug-Pack blue twin tank back pack w/ no tank bands. \$240.  
 Wooden Japanese Speargun, incomplete. \$625.

## BOOKS & EPHEMERA

Christensen Viking brochure, clean. \$119.  
 Healthways 1960 dive gear catalog, ratty condition. \$136.  
 Northill Air-Lung brochure w/ Zale Parry on cover. \$87.  
 Skin Diver magazine, Aug. 1954 w/ Creature cover. \$305.  
 Sportsways 1960 equipment catalog, clean. \$54.  
 Up Periscope movie poster of James Gardner. \$25.  
 Voit 1960 dive gear catalog. \$47.  
 White Stag dive gear catalog, clean. \$62.

# Underwater Camera Auctions



## UNDERWATER CAMERAS

Calyпсо and Nikonos camera collection, 2 Calypsos, 8 Nikonos models 1-4, 5 BC flash attachments and various accessories, plus a heavy duty carry case. \$2,608.

Calyпсо, 3 Camera bodies w/o lenses. \$261.-\$406.

Calyпсо, 4 Cameras, w/lens, lens cap and neck strap. \$494.-\$542.

Eumig Nautica Super-8 movie camera. \$299.

Healthways Mako Shark camera and flash attachment. \$61.

Nemrod Siluro Camera with flash attachment. \$208.

Nemrod Siluro Camera unusual newer version, red plastic body with dual handgrips, shutter speed and aperture control. \$198.

Nikonos I 3 Cameras with lens. \$51.-\$81.

Nikonos I Camera , lens, and sport-finder. \$148.

Nikonos I Camera, lens w/cap, neck-strap, leatherette case. \$140.

Nikonos I Camera, lens w/cap, manual and guarantee certificate. Excellent condition. \$299.

Nikonos II Camera and lens. 3, \$54.-\$87.

Nikonos II Camera and lens with Ikelite optical viewfinder. \$47.

Nikonos II Camera, lens, and sportfinder. \$91.

Nikonos II Set including 2 cameras, light meter, BC flash, electronic flash, mounting plate

with handle, metal carry case and multiple accessories, \$223.

Nikonos II Camera, lens, neckstrap, sport-finder, BC flash, Sekonic Marine Meter, carry case. \$123.

2 Calypсо / Nikkor (Nikonos II) camera and lens. \$90.-\$114.

Nikonos III camera, lens, sport finder, and Oceanic light meter. \$120.

Nikonos III Camera, carry case and accessories. \$156.

Nikonos III Camera, carry case and accessories. \$163.

Nikonos III Camera, underwater photography book and various accessories. \$275.

Nikonos III Camera and accessories. \$560.

Nikonos III Camera, lens, strobe and accessories, hard plastic case. AU \$153 (\$126. US).

## ACCESSORIES

Nikonos Accessories

Novatek 20mm auxilliary lens. \$85.

## HOUSINGS

Bright Wilkings camera housing, appears to be for 35mm reflex camera. \$142.

Bolex underwater housing and H-16 REX camera with 10mm Switar lens. \$1,525.

Davco housing with Kodak Brownie camera. \$129.

Fujica Marine-8 AX100 housing and Single-8 camera. \$31.

Homemade plexiglass movie camera housing with light and battery case. AU \$500. (\$413 US).

Hugy Fot movie camera housing. excellent condition. \$199.

Jordan Klein Mako housing for 16mm movie camera with wooden shipping case. \$636.

Mar-Vel movie camera housing. \$181.

Ricoh Marine Capsule and Hi-Color Camera. \$10.

Rolleimarin Housing appeared complete and in good condition. \$456.

Rolleimarin Housing and manual. \$661.

Seahawk Mark II housing, less back plate, with Argus C3 camera. \$52.

Sekonic Auto-Lumi housing for L-188 light meter, new in box. \$29.

Underwater Photographic Services with Kodak Instamatic 100 camera. \$55.

US Divers/Giddings Cine Mar housing and Super 8 camera. \$172.

## BOOKS & EPHEMERA

Fenjohn catalogs, 2, undated. \$55.

Fenjohn catalog, 1, undated. \$44.

Hasselblad underwater photography book. \$5.

*How to Use Your Camera Underwater*, Horace Dobbs, GBP 3.

*How to Build Your Own Underwater Camera Housing*, Mart Toggweiler. \$17.

Mako Underwater Photo Products equipment catalog. \$103.

Paillard Bolex Underwater housing brochure. \$131.

Seahawk Products underwater photo equipment catalog. \$103.

Movie poster, Rachel Carson's *The Sea Around Us*, 1953. \$51.

## FILMS/VIDEOS

16mm Early 1950's Spearfishing film, 400 ft. \$36.

Super 8 home movie, appeared to be coral reef and possibly 1970's dive gear. \$16.

## CORRECTIONS:

### HDM Number 47

I was re-reading the article by Peter Dick on Rubber in #47 page 15. Is it possible that the captions to figs 2 and 4 have become transposed? Certainly the mention of "waist seal and cuff tied with rope" seems to match the illustration of Fig. 4 rather than Fig. 2 where it actually appears.

*Richard Walsby via email*

You have a sharp eye Richard, very few people noticed this slip. Peter Dick responded to your question and his reply follows.

— Editor

I edit the *Historical Diving Times* in the UK, and you are quite right, the picture captions are not in the proper order. I believe the drawing, showing the hand picking up the stone, came from Bethell's patent and was intended to show how the cuffs were tied down.

*Regards, Peter Dick*

### HDM Number 49

In the 2006 Historical Diving Society Conference article in issue 49 page 10 reported that a presentation was given that included "a fascinating look inside Jacques-Yves Cousteau's Mediterranean

home." This report was incorrect, and there were no images shown of the inside of the home. We apologize for this misleading statement and for any inconvenience it may have caused.

— Editor

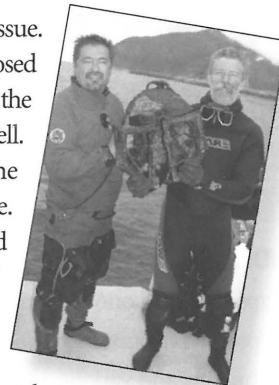
### HDM Number 50

A few errors cropped up in this issue. On HDS Canada's page 30 we transposed letters in Phil Nuytten's name and lost the text and photo credits for Ross Cowell. On page 42 we managed to get the caption wrong on Ben Brigg's article. It should read, "Kevin Rottner and Greg McCune with recovered helmet." Photo credits to Diane Wilson.

And, In Memory of (DESCO's) Thomas Fifield, on page 45, we didn't catch InDesign's text reflow that ran beyond the bottom of the text box, cutting off the last word, "resided," from the last sentence.

Our apologies to all.

— Editor



*U.S. Navy Mark V  
Diving Helmet*

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## Starkey's Boys:

*The U.S. Salvage Navy and Navy Deep Sea Diving in the Hawaiian Islands*

By Christopher P. LaVoie

REVIEWED BY NYLE C. MONDAY

As is the case in many aspects of life, the glory for the few is usually earned by the sweat of the many, and in the military this is particularly so. When thinking of naval divers, the exploits of the SEALs and UDT Teams are usually the first things to come to mind. Yet behind them is a greater diving community, one that seldom grabs the headlines but performs a much larger role and certainly one of at least equal importance. Christopher LaVoie, in his recent book *Starkey's Boys: The U.S. Salvage Navy and Navy Deep Sea Diving in the Hawaiian Islands*, offers the reader a brief look into that community and thereby adds an interesting new perspective to the literature on current Navy diving.

This book covers a portion of LaVoie's own diving career, beginning in about 1988, and focuses on the two year period he was assigned to the USS *Reclaimer* (ARS 42) under the supervision of Master Diver Ed Starkey, the archetypal senior NCO who quite literally knows how to do everything and, as was once said of another of his ilk, "answers only to God." One small disappointment in the book is that the reader never really gets to know this man who inspires such a mix of fear and respect among his subordinates. It would have been interesting to learn more about his career and personality, but perhaps he was/is the type of character who is best viewed from a safe distance. This is the way he seems to come across in this story.

*Starkey's Boys* is not a work of fine literature. It is a short, 154-page softcover book

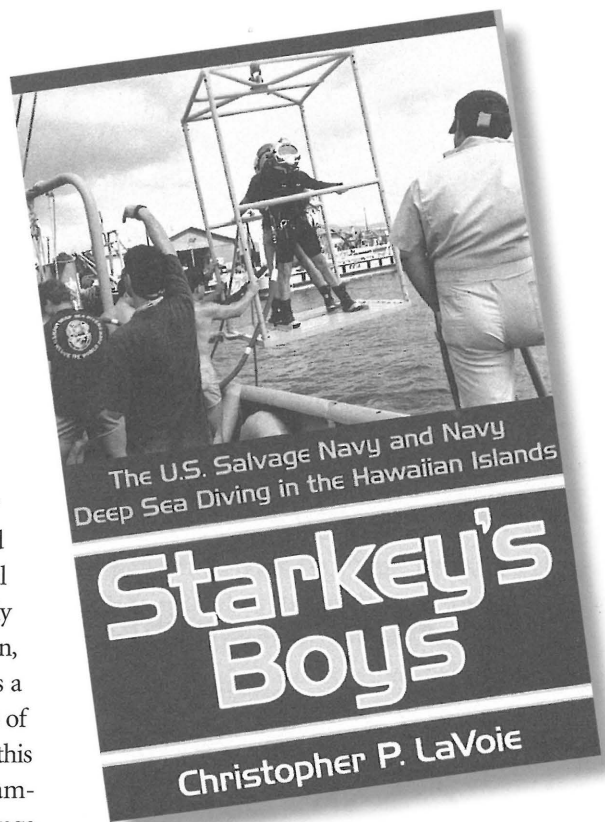
that can easily be read in a sitting or two. While it could probably have used a little more editing and perhaps an additional check for spelling, it is nevertheless a useful and welcome addition to the literature on Navy diving. It is certainly not a view of the Navy a recruiter would be likely to provide potential enlistees, but it will be instantly recognized by any ex-serviceman, whatever his or her branch, as a realistic look into the daily life of average troopers engaged (in this case) in the decidedly unglamorous work of maritime salvage.

This volume is not a technical account of salvage work, and in fact deals more with what goes on above the water than below, both on and off duty. In spite of that, it paints an accurate picture of the multitude of tasks that are undertaken by fleet salvage vessels on a daily basis to keep the rest of the fleet safe and operational. In this account the job comes across as dirty and largely thankless, yet not without its challenges and satisfactions. The prospect of diving in some of the clearest water in the world no doubt added to its attraction. Moreover, the lifestyle of the sailors brings to mind Kipling's line that "single men in barracks don't grow into plaster saints." This reviewer was surprised to learn that some of his own college hangouts (including the semi-legendary Anna Banana's) were also

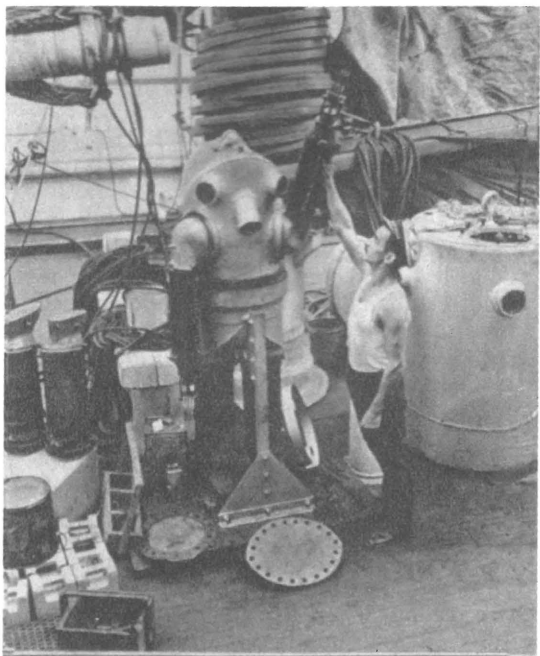
regular haunts of Navy salvage divers . . . but, then again, perhaps the alcohol blurred the distinction at the time.

LaVoie succeeds in presenting a realistic picture of the type of work that the majority of Navy divers are actually doing. It would certainly be an excellent read for anyone contemplating becoming a Navy diver as it presents an unvarnished look into the realities of the life. It certainly proves the old adage that divers are not paid to blow bubbles—diving is only a means of getting to where the real work begins.

*Starkey's Boys: The U.S. Salvage Navy and Navy Deep Sea Diving in the Hawaiian Islands*  
Bloomington, IN: AuthorHouse, 2006  
ISBN 1-4259-1993-6



## Info Wanted



Questo è lo scafandro meccanico Merman che il Capitano Alvan Loesche usò in un vano tentativo di recuperare il tesoro del Merida;

### Merman Diving Suit

Faustolo Rambelli of HDS Italia sent two images, one from the April 1950 issue of *La Scienza Illustrata*, in an article by West Peterson regarding sunken treasures. The photo caption states, "This is the mechanical diving suit Merman that Captain Alvan Loesche used during a useless attempt to recover the *Merida* treasure." Please note the arms and legs are made of rubber. The two legs are positioned upside down, on the left of the picture.

Publisher Leslie Leaney recalls seeing photos of a similar suit in an American magazine of the 1950s. The suit may be "Iron Mike," which he believes was on public display in New York before being acquired by a diving museum exhibit. If anyone can provide information please contact the editor at [krseahunt@aol.com](mailto:krseahunt@aol.com) or Faustolo Rambelli at [f.rambelli@iperbaricorave](mailto:f.rambelli@iperbaricorave).

Please note their new postal address: HDS Italia C.P. 75 Viale IV Novembre 86/A I - 48023 Marina di Ravenna (RA).



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## Classic Diving Equipment Groups

who are members of the HDS-USA. The activities of these groups are not official HDS-USA functions and the HDS-USA is not involved in any of the activities of these groups. This column is produced solely for the interest of our readers. Please consult the HDS-USA disclaimer at the front of this issue.

Due to the prevailing liability laws in America the HDS USA 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



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### Weeki Wachee Springs 2nd Annual Dive into History

Vintage divers from around the country participated in one of the largest gatherings of vintage diving enthusiasts at the 2nd Annual Dive into History Day on March 31 at the world-famous Weeki Wachee Springs in Florida.

Crystal-clear water, a one-of-a-kind 500 seat underwater theater, and those elusive mermaids made this one of the greatest events of its kind anywhere in the world. On hand for the event was a historic dive gear collection bridging the last 100 years of diving. John Gallagan, for the Historical Dive Society, brought a collection of brass helmets and showcased vintage video footage showing the top secret Navy diver training in Wakulla and Silver Springs during WWII.

Dive history was made in the early 1940s when Newt Perry and Ricou Browning taught themselves to breathe underwater by disconnecting the air supply hoses from the Navy's brass helmets and then breathing directly from the venting air hose. Perry and Browning brought the underwater breathing technique with them when they established the very first underwater show program at Weeki Wachee Springs in 1947. Weeki Wachee Springs is celebrating their 60th anniversary this year, and the breathing technique is still being used today by the world-famous mermaids.

Original UDT gear from the UDT/SEAL Museum in Fort Pierce, Florida, and authentic dive gear from the television series "Undersea World of Jacques Cousteau" made the event unique. "Dive gear with this kind of historical value actually being dove is something to see" said Christopher De Felice, Weeki Wachee Dive Dept. Manager and dive event coordinator. "We are very fortunate to have such a collection of vintage gear on hand for our guests to see."

Diver Jeredan Bibler donned a 1945 Morse MK V helmet and walked across the bottom of the spring. In his arms he held Mermaid Karri, a sight not overlooked by Allen Klauda, who was emceeding the presentation inside the theater. "This is very rare for us," Klauda said jokingly. "I've never seen that before." In between mermaid shows, divers swam across the front of glass of the underwater theater in front of the spectators in decades-old scuba equipment. Klauda and several of his fellow vintage dive enthusiasts, many of whom traveled from as far away as Maine, Arkansas and Ohio, converged on Weeki Wachee Springs Saturday to participate in the Dive into History Day.

One of the highlights of the 30-minute show was the sight of Ryan Spence, an avid Cousteau gear collector, in a bright, silver suit. A spotlight was mounted on Spence's head and shined into the eyes of those watching him from the other side of the glass. Brian Pennington with VintageDoubleHose.com was on hand to answer questions about the *Sea Hunt*-era equipment and explained that a majority of the vintage equipment can be completely rebuilt and is fun to dive.

There were two shows in the early afternoon, which were followed by vintage diving demonstrations and photo opportunities.

— Capt. John Gallagan of HYB Diving: [info@brasshatdiver.com](mailto:info@brasshatdiver.com)

### California Classic Equipment Divers

On April 21, we were invited to attend the Open House at the College of Oceanography in Wilmington, Calif. With Ken "Bud" McElvain as divemaster, our first man was in the water at 10 a.m. (Charlie Orr) diving a Yokohama designed from the famous Kirby air hat but manufactured in Japan in the early '60s. Ben

(Continued, next page).



Charlie Orr.

*Congratulations Charlie, but I think at least Ben will take exception to the "old guys" handle.*

— Editors

## HDS UK Conference National Maritime Museum, Falmouth, England October 20, 2007

### Speakers:

Henri Delauze, President Comex  
 Karina Kowalska, Warsaw Diving Museum, Poland  
 Dr. Ajit Kulkarni, History, of Indian Diving  
 Lt. Mark Northcote, Officer in charge of the Plymouth Diving Unit.

Tickets for the Conference cost £20 and include morning and afternoon refreshments and a buffet lunch. Tickets for the Society's annual dinner, to be held at the Falmouth Hotel on the Saturday evening, cost £40.

For further information on the speaker's papers and all other information please contact: [enquiries@thehds.com](mailto:enquiries@thehds.com)



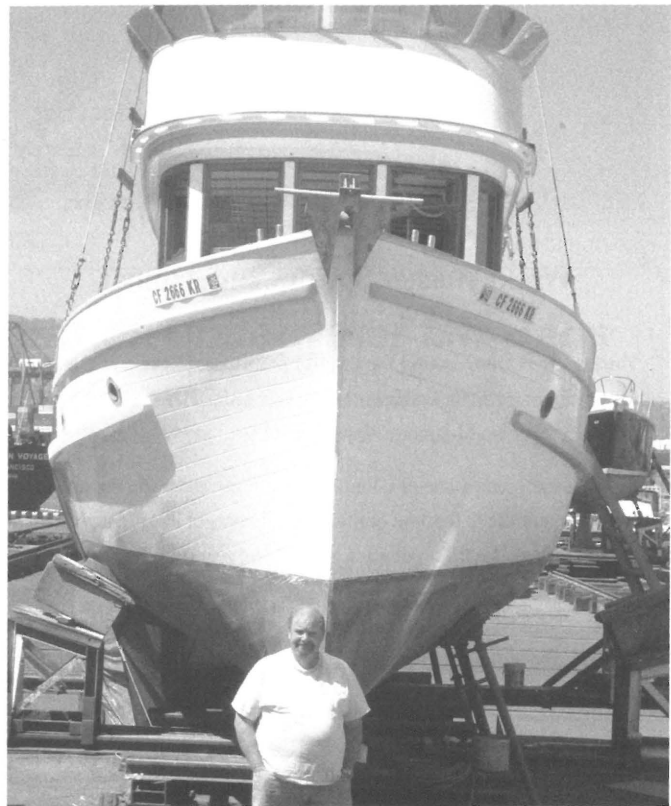
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 Fax: +44 1384 896079  
 Email: [enquiries@thehds.com](mailto:enquiries@thehds.com)

Briggs was on hand with a "work in progress," a 1930s Morse shallow-water hat that actually belongs to his neighbor. To the neighbor's delight, Ben is restoring it to its original 1930 condition.

Besides the "regulars," charter member "Earl the Pearl" Weatherby drove up from Thousand Palms. Several COO students were allowed to dive the vintage gear, which took little coaxing. And we still have a promise from COO's Ella Morgan to don the MK V "someday soon."

At the lunch time BBQ provided by the COO and staffed by COO volunteers, a surprise 60th birthday celebration was held for Charlie Orr (thanks in part to Duke Drake). A beautiful hand-made card from "Law Dog Larry" was passed around for everyone to sign, and a huge cake shaped like the American Flag was provided by Ken and Barb McElvain with "Happy Birthday Neverbent" Charlie said that he wouldn't be here today if it hadn't been for the old guys like Leslie Leaney, Rocky Rockwell, Mark Howell, Jocko Robinson, Wild Bill Kurka, Big Al Pilkington, Brad Speer, Ben Briggs to name just a few.

*Charlie Orr: [neverbent@aol.com](mailto:neverbent@aol.com) or [www.CalClassic.org](http://www.CalClassic.org)*



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## In Memory Twila Bratcher-Critchlow Nov. 29, 1911-Dec. 24, 2006



Left: Twila in December 2005. (Scripps Institute of Oceanography photo).  
Right: Billee and Twila in 1995. (Bonnie Cardone photo).

In 1953, Twila Bratcher became one of the first women in the U.S. to be certified as a scuba diver. She went on to travel the world and was one of the first to dive some of the world's most remote and now legendary locales. Twila was joined in many of her adventures by her younger sister, Billee Gerrodette.

Twila began her adventurous life in a time when women were expected to stay at home. She was born Twila Langdon on November 29, 1911, in Smoot, Lincoln County, Wyoming. With parents in the restaurant business the family moved to Lewiston, Idaho. While still in her 20s, she made her debut as a rough-water swimmer by braving 15 miles of the wild Clearwater River in Idaho. The young thrill-seeker had been inspired by the newly released movie *The African Queen*. With sister Billee she performed on a professional synchronized swim team and continued in California, competing in the annual La Jolla rough-water swim, and there, the sisters perfected their breath-hold skin diving techniques.

In Lewiston, the girls finished college, and Twila met and married Ford Bratcher, the owner of a local movie theater. After World War II, the Bratchers moved to southern California and Ford continued in the theater business. Ford passed away in 1991 and in 1993 Twila married Tom Critchlow and they moved to La Jolla to live closer to sister Billee.

Twila's career has included winning awards as a journalist; she was president of the Southern California Women's Press Club and contributed to the travel section of the *Los Angeles Times* (as well as articles for *Skin Diver* magazine and other publications). She also doubled as a fashion model while working at the Walker-Scott department store. Here she met Lamar Boren, a renowned underwater photographer and member of the famed San Diego Bottom Scratchers' dive club. Lamar invited her to try skin diving, and for many years the two would share ownership of a light plane. Women were excluded from the male-only Bottom Scratchers, so Twila, Billee and two Bottom Scratchers' wives formed the women-only Sea Nymphs dive club. Twila and Billee attended E.R. Cross's Sparling School of Deep Sea Diving in Long Beach and, in a 1953 *Hawaiian Shell News* article, Cross wrote, "Twila was the prize student of my first (scuba) class." She was still going on diving expeditions well into her 80s.

During the 1950s, Twila often piloted her plane to Baja California, then a little-known destination on the frontier of diving. It was during a trip to the Sea of Cortez off Baja that she picked up her first sea shells. Although she collected *Murex* and cone shells from around the world, she specialized in *Terebras* and became a widely published malacologist (seashell expert). According to Cross, Twila was "one of the world's foremost authorities on the *Terebridae* family of marine mollusks."

The 1987 book, *Living Terebras of the World*, co-authored by Twila and Walter O. Cernohorsky, is the definitive book on the subject and took fifteen years to publish.

Following a severe stroke, Twila decided to create a charitable remainder annuity trust to benefit Scripps Institution of Oceanography. Scripps and Twila have a long-standing relationship. Prior to becoming a certified diver, she enjoyed a brief introduction to scuba under the supervision of diving pioneer Conrad Limbaugh, the first diving safety officer at Scripps. Starting in 2002, Twila began making annual gifts to Scripps, using the income from her trust. Her support created the first endowment for the Collections as featured in their *Explorations* publication.

Twila belonged to many malacological societies and associations. She was an associate of the Los Angeles County Museum of Natural History where she provided endowments for LACM's Malacology Section and donated major shell collections in her name. Twila is extensively featured in and on the cover of the July 12, 2007 issue No. 7 of *The Festivus*, published by the San Diego Shell Club and sent to us by their club VP, Carole M. Hertz.

Twila Bratcher-Critchlow passed away on December 24, 2006 in La Jolla, Calif., at the age of 95.

*This compilation made possible by Bonnie Cardone, Women Pioneers in Diving, HDM issue No. 4, Spring 1995, Carole M. Hertz for her copy of The Festivus (<http://hostingprod.com/@terryarnold.net/SDSC/festinfo.htm>), Dr. James H. McLean, curator emeritus at the LA Co. Museum of Natural History ([www.nhm.org/research/malacology/collections.html](http://www.nhm.org/research/malacology/collections.html)), and Lawrence Bailey, Senior Director of Development at Scripps Institution of Oceanography (for his original obit). (<http://supportscripps.ucsd.edu>).*

— Editor

## In Memory Robert E. Petersen Sept. 10, 1926 - March 23, 2007

Robert E. "Pete" Petersen, an entrepreneur who single-handedly created the largest special-interest publishing company in America, died on Friday, March 23, at St. John's Hospital in Santa Monica, Calif., after a short battle with neuroendocrine cancer. He was 80.

A native of Southern California, Petersen's mother passed away when he was 10. He was raised in desert towns east of Los Angeles where his Danish-immigrant father, Einar, maintained vehicles working on the Hoover Dam for the Los Angeles Department of Water and Power. As a young man he picked up his father's skills, learning to weld, de-coke engines, and hone his fascination with cars.

After graduating from Barstow High School in the mid-1940s, he moved to Los Angeles, working at MGM studios as a messenger boy. Following service in the Army Air Corps toward the end of World War II, he was laid off by MGM. With other ex-colleagues he formed Hollywood Publicity Associates. While searching for clients, he met Wally Parks, then head of the Southern California Timing Association, and later the National Hot Rod Association, which staged races in the flats of the Mojave Desert. In February 1948, the two decided to organize a hot rod show at the Los Angeles Armory. To promote it, Petersen borrowed \$400 and produced 10,000 copies of *Hot Rod* magazine, which he sold for 25 cents each. Petersen landed Parks as a client and quit his firm to publish *Hot Rod*, and in 1949 added the more mainstream *Motor Trend*, still the industry leader.

Petersen spent decades as Chairman of the Board of Petersen Publishing Company, which was at one time America's leading publisher of some three dozen special-interest consumer magazines. Among its other diverse titles were

*Teen, Sport, Rod & Custom, Guns & Ammo, Motorcyclist* and *Skin Diver* magazines.

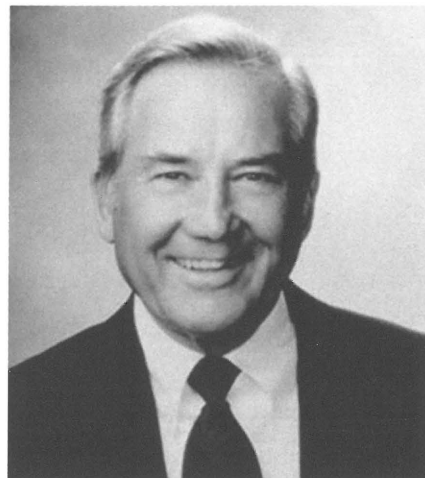
An avid sportsman, scuba diving was one of his many favorite hobbies. Petersen Publishing bought *Skin Diver* magazine from Chuck Blakeslee and Jim Auxier in August of 1963 and put his money and energies into improving the magazine and its circulation.

He headed a wide variety of businesses including ammunition manufacturing, real estate development and aviation services that each reflected another passion he shared (with his wife, Margie, a former model whom he met in 1966 and proposed to on their first date, he owned and ran Scandia restaurant on Sunset Strip in Los Angeles for nearly a decade).

He served as Shooting Sports Commissioner for the 1984 Los Angeles Olympic Games, where he was responsible for building that venue from an old dairy farm within six months. He endowed Los Angeles' Natural History Museum with \$5m, and by the 1990s Petersen featured regularly in the *Forbes* magazine list of America's richest men.

Mr. Petersen had one lasting vision: an educational museum to pay tribute to the automobile. Passing the abandoned Orbach's department store on Wilshire Boulevard's Miracle Mile, he had the idea for a museum. On June 11, 1994, Petersen opened the 300,000-square-foot automotive museum named in his honor, made possible by his \$30 million endowment. It featured cars from Petersen's extensive collection, and real-estate developer Bruce Meyer's collection of custom cars.

In 1996, Petersen sold his magazine empire to investors for \$400m and donated a further \$28m to the museum to endow it as an inde-



pendent non-profit foundation.

He was active in support of numerous children's charities and served as a member for the Los Angeles City Library Commission. Both he and his wife have been major contributors to the Music Center of Los Angeles and the Los Angeles County Museum of Art. Additionally, he was a founding member of the Thaliens social society, which raises money for the Mental Health Center at Cedars-Sinai Medical Center. His ongoing contributions to the community earned him numerous special citations from the Los Angeles County Board of Supervisors and Los Angeles City Council.

Robert Einar Petersen, magazine publisher and car enthusiast, born September 10 1926; died March 23 2007. He is survived by his wife, Margie.

*The above tribute to Mr. Petersen was compiled from several internet sources: notably JMPR Public Relations for the Petersen Automotive Museum, visit link: <http://www.petersen.org> 2007 © All Rights Reserved. Insightful material from Michael Carlson for The Guardian, Friday June 22, 2007 and Mitch Boehm of Motorcyclist magazine. Photo is courtesy of Petersen Automotive Museum.*

## In Memory David Owen September 2, 1924 - April 11, 2006



(Photo by Woods Hole Oceanographic Institution, circa 1954)

The Woods Hole Oceanographic Institution received word of the passing of David M. Owen on April 11, 2006, at the Saanich Peninsula Hospital in Saanichton, British Columbia, Canada. David was 81.

David Moore Owen was born September 2, 1924, in Saco, Maine and studied pre-med at Bates College in Lewiston, Maine for two years before joining the U.S.

Navy during World War II. He served as a radar operator aboard the heavy cruiser USS *Fall River* during his three years of active duty. After his discharge from the U.S. Navy Dave pursued his longtime interest in the sea and desire to work in research and began corresponding with Woods Hole in July 1946. He was hired in August of that year as an observer working for Val Worthington on project B-38, collecting oceanographic data at sea and working with the findings ashore. Through the 1950s Dave met regularly at Smith Laboratory as part of a U.S. Navy Reserve research panel making monthly trips from his home in Massachusetts to the New England Submarine Base in Groton, Ct. He later said he never returned to finish college because the projects travel and personal relationships in the scientific community “seemed more interesting and pertinent.”

Dave developed his interest in photography while at WHOI and became skilled in underwater photography, cameras and equipment, working with Doc Harold Edgerton, Tex Hoadley, Brackett Hersey and others in what was then a field in its infancy. On his first long cruise aboard research vessel *Atlantis*, a seven-month trip in 1947-1948 to the Mediterranean and Aegean seas, Dave was assigned to operate a Ewing deep sea camera to take flash photos of the sea floor. He is credited with taking the deepest photograph of the sea floor (18,000 feet) at the time, a record that stood for years. The photo was later published in *Life* magazine.

In 1954, Dave was appointed a research associate in underwater photography. He conducted extensive deep-sea camera operations on many expeditions, including three cruises between 1972 and 1974 near the Azores as part of Project FAMOUS (French-American Mid-Ocean

Undersea Study), a milestone in understanding seafloor spreading and continental drift.

In addition to his skills in photography, Dave Owen pioneered the use of scuba at the Institution as the need increased for direct, personal observation underwater. David was a good friend of Jacques Cousteau and with him helped introduce the Aqua-Lung to the United States. He served as the Institution’s chief diver, later called the diving safety officer, from 1953 until his retirement in 1980. As such, he was responsible for training scientific divers, keeping diving records, and diving on many projects. Owen received a NOGI in Science in 1962.

In 1959, then-Governor of the Commonwealth of Massachusetts, Foster Furcolo, appointed a committee to study the safety and education in the field of scuba diving. Dave Owen was asked to serve on that advisory committee. His 1955 publication, *A Manual for Free-Diver’s Using Compressed Air*, was considered by many as the “bible” for scuba activities and was one of the first instructional manuals on aqua lung-type diving in the world. He spoke at many underwater conferences and symposiums on both underwater photography and diving, and was the author or co-author of 28 publications on underwater photography, diving and diving technology.

Through the years, Dave Owen worked in geology and geophysics and in marine operations, operating and maintaining deep-sea underwater camera systems. While performing heavy underwater work in 1970 he suffered a heart attack, an experience that led to more extensive medical exams in connection with diving and a paper, “Heart Attack at 110 Feet,” published in 1971 in *Skin Diver* magazine. After the heart attack, Dave continued to run instructional diving programs from the surface. He took an early retirement and left the Institution in 1980. Survivors include his wife, Helen Owen of Victoria, B.C.; two sisters-in-law, JoAnn Outerbridge of Brentwood Bay, B.C.; and Margaret Owen of Washington; and three nieces.

A memorial service was held April 22 at the Brentwood United Church in Brentwood Bay, British Columbia. Memorial donations may be made to the Saanich Peninsula Hospital, 2166 Mount Newton Crossroads, Saanichton, British Columbia V8M 2B2 Canada.

*Shelley Dawicki, Media Relations Office, April 2006 and updated: May 7, 2007 Copyright ©2007 Woods Hole Oceanographic Institution, 266 Woods Hole Road, Woods Hole, MA 02543, USA, All Rights Reserved.*

## In Memory

Dr. Jerry Stachiw, Dr. Ron Bangasser, Larry Smith, Dr. Joseph Bauer, Jr.

### Dr. Jerry Stachiw 1913-2007

Dr. Stachiw passed away on April 25, 2007. He was the staff scientist for Marine Materials in the Ocean Engineering Division of the Engineering Department at the Naval Ocean Systems Center in San Diego for many years. He retired in 1994.

He was considered the world's leading authority on the structural application of plastics and brittle materials used in external pressure housings and hyperbaric chambers. His books on acrylic plastic, *Acrylic Plastic Viewports and Handbook of Acrylics for Submersibles, Hyperbaric Chambers and Aquaria*, are standard references on the subject. Dr. Stachiw was the author of over 100 papers technical papers on the design and fabrication of pressure-resistant viewports and on pressure housings of various materials and designs.

The Navy honored him with the Military Oceanographer Award and the Lauritsen Bennett Award. The American Society of Mechanical Engineers elected him to the grade of Life Fellow, and presented him with the Centennial Medal, Dedicated Service Award, and Pressure Technology Codes Outstanding Performance Certificate.

Dr. Jaroslaw (Jerry) Drahomyr Stachiw was born May 23, 1931, in Lviv, Ukraine, to Frances and Matthew Stachiw. He immigrated to the United State in 1949, received his B.S. degree from Oklahoma State University in 1955 in Mechanical Engineering and married Joan Atkerson. They had two sons, Michael and Mark. After serving in the U.S. Army he returned to school for his Master's and Doctorate from Pennsylvania State University.

*Sourced from The Marine Technology Society. All rights reserved.*

### Dr. Ron Bangasser 1950-2007

Dr. Ron Bangasser died of cancer May 2 in Redlands, California. He was 57. Dr. Bangasser interned at San Bernardino County Medical Center, trained in hyperbaric oxygen research at St. Luke's Presbyterian Hospital in Milwaukee and trained at the Navy Diving Medical Officers' Training School.

Dr. Bangasser and his wife, Susan, held a deep passion for scuba diving. They are nationally recognized for their contributions to diving, diving medicine and diving physiology. He also served as an instructor for the San Bernardino County Sheriff's Department recovery team.

In 1986 he founded the Paul F. Bangasser Wound Care Center at Redlands Community Hospital, dedicated to his father, in 2005. Dr. Bangasser was chairman of the Professional Division of the United Way fund-raising campaign and worked to protect the interests of patients and physicians, by writing and influencing legislation and legislators. He received many awards including the Nicholas P. Krikes, M.D., Award for Outstanding Contribution to the San Bernardino County Medical Society; the American Medical Association Pride in the Professions Award; the California Medical Association Young Physician's Joseph Boyle Young at Heart Award; the Riverside County Medical Association's Outstanding Contribution to Organized Medicine Award; the James C. MacLaggan, M.D., Political Action Award; and the Medical Board of California's Physician Humanitarian Award.

*Edited from information provided by Dr. Sam Miller III.*

### Larry Smith

Larry Smith was a well known dive guide in Indonesia. Smith was in his 50s and died in Sorong, Raja Empat after a short illness. He had spent two days in hospital in Kakfak with suspected pneumonia before being released, only to feel unwell again en route to Bali. He died of complications associated with pneumonia after being admitted to Sorong's Pertamina hospital. Smith was an avid wildlife enthusiast, whose knowledge and spirit for discovery rubbed off on fellow divers. According to John Bantin of UK's *DIVER* magazine, the beefy, bull-necked Smith talked like a cowboy: "Time to saddle up and mosey down to the dinghies," he would say. Ironically, given his substantial presence, Smith particularly loved tiny creatures such as pygmy sea horses and skeleton shrimps. He is credited with introducing the activity of muck diving, based at Kungkungen Bay Resort in Indonesia's Lembeth Strait. Thanks to Smith, hordes of divers now know what a "critter" is, after rummaging with the father of all muck divers. Smith's diving companions included filmmakers Ron and Valerie Taylor and leading global tropical marine ichthyologist Dr. Gerry Allen.

*Sourced from DIVER magazine. All rights reserved.*

### Dr. Joseph Bauer, Jr.

Dr. Joseph Bauer, Jr., passed away in April in Cleveland, Ohio, after a short illness. He was 76. Prior to retirement from his surgical practice, Dr. Bauer was known nationwide as a specialist in general, laser and colorectal surgery. With his wife, Dr. Sally Bauer, he founded the History of Diving Museum in the Florida Keys, and was the author of the chapter on the hard hat diving helmet in *The Pictorial History of Diving*.

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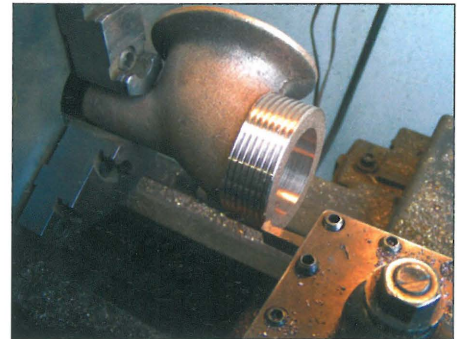
DESCO has been commissioned by the Historical Diving Society USA to produce 26 US Navy Mark V Helium Helmets to commemorate the successful salvage of the USS *Squalus*. This operation was the first practical use of Helium Oxygen diving, and was the culmination of years of research by the US Navy and civilian experimenters. The 26 helmets also commemorate the 24 crewmen and 2 civilians who were lost when USS *Squalus* sank during a training dive May 23, 1939. (See *Historical Diver* magazine issue 51, page 6.)



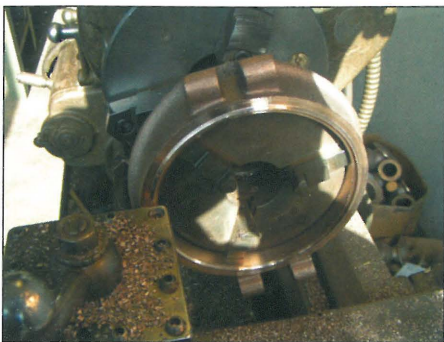
1) Pattern rack.



2) New canisters.



3) Machining a canister elbow.



4) Machining the front frame.



5) Buffed bonnets cut.



6) Breastplate assembly.



7) Assembling the parts.



8) Nearly completed helmet and breastplate.

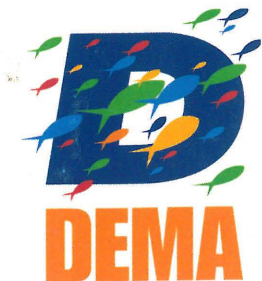


9) The finished helmet and breastplate.

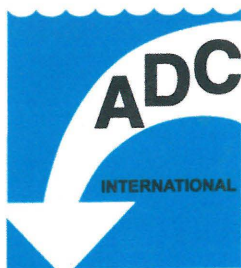
These helmets are the third commemorative series produced for the HDS. Each helmet in the issue will bear a special USS *Squalus* Commemoration tag, and will be numbered 1-26 to 26-26. The production run will be offered first to HDS members who were purchasers of previous commemorative helmets issued by HDS. Any helmets not claimed by the previous commemorative helmet purchasers will be offered to general HDS members. To obtain one of the remaining helmets contact Ric Koellner at 414-272-2371 or [diveq@execpc.com](mailto:diveq@execpc.com).

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