

The Bimonthly Newsletter of the United Divers of New Hampshire

Come on in, the Water's *F-F-F-Fine*

By Gary Thuillier

Want DIVERsity? Dive New Hampshire.

Where else can you haul all of your equipment out onto a frozen lake while the air temperature hovers around the mid 60's? On February 22 our annual club dive on the "Lady of the Lake" went off as planned with a group of 16 divers and at least as many support people showing up at the site where so many come to see the 100+ year old steamer in her resting place. This one-time pride of Lake Winnepesaukee draws crowds every weekend from the time the ice is safe enough to walk on until official "ice out" and this day was certainly no exception.

At eight o'clock that morning people were already showing up to claim their spot over the wreck, in fact, one group from New York had come the previous afternoon to cut the familiar triangle out of the ice where they would descend the next morning. It was a good spot but ours was better being right over the middle of her deck. Along with UDNH and the New Yorkers were divers from Connecticut, Ed Burke from AquaVentures Dive Shop in Hudson and another entourage from who knows where making a total of five holes in the ice. Surprisingly there were no tangles! In six years of visiting the "Lady" I don't recall ever seeing that many people in one day, still all went off quite well.

With the air temperature being as warm as it was nobody thought the usual phenomenon of freeze-up would rear its ugly head so we opted to heat up Tom Trembley's Black Bean Soup instead of boiling water for the regulators. BIG MISTAKE!!! I'm sure there must be a photo kicking around of Lea Nichols trying to thaw Phil Morrison's first stage in a cup of soup (it looked and tasted more like chili to me). Funny thing was - it worked!!!

By two o'clock the clouds rolled in and treated us to a little rain along with some thunder and lightning. This in itself made me wonder - we're taught as children never to be out on the open water during an electrical storm - nobody ever said anything about *ice*. Also if seeing lightning in February isn't strange enough it was followed up by a beautiful rainbow. How's that for a complete afternoon? It was a really good showing for a club event, one I'm sure we'll all remember. If we can keep this kind of enthusiasm going, I think we are looking at a busy 1997.



Gary Thuillier and Wayne Russell prepare the hole for diving on the Lady of the Lake.

(photo by Lea Nichols)

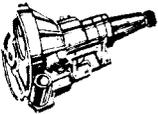


Dave Denoncourt prepares for his role as line tender for the ice dive.

(photo by Mark Absous)



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Hendersen 3mm shorty wet suit XXL \$35
6mm Wet Suit Hood with bib \$20 ea; Wenoka regulator bag \$15
Seatek 50# Lift bag w/dump valve \$20;
Aladin Pro Dive Computer \$250

DIVE LOG

The Newsletter of the United Divers of New Hampshire

Editors: Lea Nichols
Gary Thuillier

Submissions

Editorial contributions may be e-mailed to COMPTUS@aol.com or FAXed to 603-487-5513. Submissions can also be sent on paper or PC floppy to:

Lea Nichols
342 Lyndeboro Road
New Boston, NH 03070

Please include a brief byline and author contact information with your submission. Submission shall automatically constitute an expressed warranty by the contributor that the material is original and is in no way an infringement on the rights of others. While no compensation is paid for published submissions, a byline indicating the source of an article will always be provided. Authors grant *Dive Log* and United Divers of New Hampshire first print rights to the submission. *Dive Log* and its editors reserve the right to edit all materials as needed. The opinions stated in the articles in *Dive Log* are those of the writers and do not necessarily reflect the opinions of the United Divers of New Hampshire or the editors of the *Dive Log*. For further information, please contact Lea Nichols at (603) 487-2726.

Subscriptions

Subscriptions to *Dive Log* are included in the UDNH membership fees. Non-members may subscribe to the newsletter for \$15/year. Subscription inquiries should be addressed to Lea Nichols as well.

Advertising

Rates for a full year placement (6 bimonthly issues) range from \$75 to \$360, depending on placement size and location. For detailed information on advertising in *Dive Log*, contact Don Eva at (603) 672-5608

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Website:

Newsletters and other current info are available at our website: <http://www.strokeofcolor.com/udnh>, graciously hosted by Jake & Linda Richter.

DEMA 1997

(This continues Jake's report from the last issue.)

by Jake Richter

Dive Industry in Peril

In cruising the show floor, we got the sense that behind all the smiles and outward relaxed attitudes was a certain nervousness and anxiety, among both exhibitors and attendees.

As we learned, this anxiety stems from an overall decrease in business in the Dive industry. We heard reports that some manufacturers had seen revenue drops of 30% or more. Dive resorts weren't faring much better, with one well-known resort operator pleased that business had only dropped 15% in the last year. While everyone has comments as to what might have caused this downturn in business, there's probably no single answer. Among consumers, perhaps a leading contributing factor is that while most people made a little more money in 1996 vs. 1995, they spent less of it on recreation. Consumer credit debt is at an all-time high, which means consumers need to be more frugal in how they spend money.

In terms of the dive industry, there have been a number of recent mergers, acquisitions, and realignments as a result of the decrease in business. These changes have resulted in quite a bit of upheaval, especially among dive shops, who suddenly find their product lines changing, almost entirely out of control at times.

Many dive companies were started out of a love for the sport of diving, and not for reasons of profit. Now, many dive company owners are coming to realize that a love of the sport isn't necessarily enough to sustain a business - you need business acumen as well. The dive industry, in many ways, is still pretty immature. In

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INSTRUCTIONS

RENTALS

Continued from Previous Page

order to grow demand for dive products and services, dive businesses (manufacturers and dealers) need to work together, and stimulate new interest and rekindle old interests in diving. The best way to increase sales is to increase the number of qualified consumers.

DEMA estimates that while there are 6 million certified divers in the U.S., only about a third of those divers have made one or more dives in the last year. Only 250,000 new divers are certified in the U.S. each year. Those are small numbers relative to the number of vendors of products or services in the dive industry.

With that in mind, we noticed that at this year's DEMA show, just about every major manufacturer of wet suits had suits for children. Last year there were only two companies that had such product lines. This is a perfect example of trying to broaden the customer base for dive related product lines.

Products

While there were dozens of new products shown at DEMA '97, space in this newsletter is limited, as is our ability to cover them all. We've therefore picked a handful of products we thought you might be interested in. Note that the phone numbers provided below are intended to be used to let you find a dealer of these products near you. Most of these companies do not sell directly to consumers.

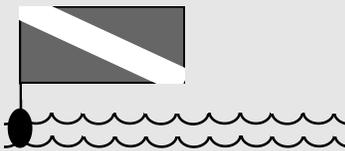
High-Tech Shark Repellent

Perhaps the coolest new product we found at DEMA '97 was the Shark Pod, from, aptly enough, SharkPod USA of Ft. Lauderdale, Florida (954-492-8646). Shark Pod consists of a pod you attach to a fin, with a wire running to a battery pack strapped to your tank, and a hand controlled switch, also hooked into the battery pack. As its name might imply, Shark Pod is an

electronic shark repellent. The pod on the fin and the battery pack act as two emitters of magnetic/electric fields. The field strength can be set to as large as a 20 foot radius, or as small as a few feet. Field tests have shown that the device works on all sorts of different sharks. The reason it works is that sharks are extremely sensitive to electrical fields, and tend to be attracted to them. This might be a bad thing, but Shark Pod changes the polarity of the field a couple of times a second, which upsets a shark's delicate sensing mechanism and forces them away. If left on continuously, a fully charged unit would operate for 75 minutes, by the way. Retail price is about \$800. Perfect for folks who encounter sharks on a regular basis, not intending to, right Joe and Mary?

Electronic Compass

TrueNorth Technologies Corporation of Concord, Massachusetts (508-287-4858, <http://www.tntc.com>) unveiled a prototype electronic compass for underwater navigation. This makes it the second such device announced, with UWATEC's unit already shipping. We've heard from users of UWATEC's electronics that it still needs a bit of work, since it does not currently come in a console mountable version, and can give inaccurate readings when near other electronic devices or sizable pieces of metal. TrueNorth's electronic compass is console mountable, and also offers the following features via its LCD display: automatic direction detection, return direction mode, auto-pilot mode (helps keep the user on course towards a given target), and elapsed time. Also, when the device encounters interference from metal and other things which might produce an inaccurate reading, the device reports that interference is present, instead of producing false readings. The device is expected to be available later this year, and while a price has not been set, I'd expect it to be between \$300 and \$500.



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Is it Time for a Rebreather?

by Carl Greenbaum

It felt weird. A quiet whoosh as I inhaled and exhaled. Breathing resistance was a lot higher than my normal regulator but I stopped thinking about it after a few minutes at the bottom of the pool. I was participating in the rebreather workshop at Northeast Scuba in Danvers on the day before the Sea Rover Show. I was wearing a 40 pound rig with enough gas to let me spend almost an hour on the Poling! It sure was quiet. With three other rebreather divers in the pool it was almost completely silent. Maybe this was what Jacques Cousteau really meant by "The Silent World"!

Rebreathers, as the name suggests, recycle exhaled gas for reuse by the diver. Exhaled gas fills a counter-lung or "breathing bag" within the rebreather. This bag is maintained at ambient pressure by the addition of gas on descent and venting of gas on ascent. There are two important rebreather processes, removal of CO₂ and the addition of oxygen to make up for metabolic usage.

Removal of CO₂ is accomplished by passing the gas through an absorbent canister full of a substance that chemically binds to CO₂. As it turns out, this process generates heat and gives off water vapor, hence rebreather divers inhale warm moist gas rather than the cooling dry gas we are accustomed to.

The technique for replenishing Oxygen depends on the type of rebreather. The oldest type, dating back to before the turn of the century, is the closed-circuit Oxygen rebreather. A single Oxygen tank fills the breathing bag and a demand valve bleeds in additional Oxygen to account for metabolic usage. The good news is that it's simple; the bad news is that it will kill

you below 20 feet. If you have taken a Nitrox course you learned that Oxygen partial pressures above 1.6 atmospheres absolute (ATA) can cause Central Nervous System(CNS) Oxygen toxicity resulting in a seizure (a bad thing underwater).

If we want to go below 20 feet, and who doesn't, we need to dilute the Oxygen with some inert gas, Nitrogen being the most obvious choice. Enter the Nitrox Semi-Closed circuit rebreather. If you want to dive to 100 ft. you fill your rebreather tank with a 36% Oxygen Nitrox blend (36% keeps you above 1.6 ATA at 100 ft.) . You then design an orifice that continuously bleeds additional Nitrox into the counter-lung to make up for metabolic oxygen usage. Since you are continuously bleeding in Nitrox but only using the Oxygen, the excess Nitrogen has to go somewhere, so it is slowly vented out of the breathing loop into the water (hence the term semi-closed circuit). In practice the Nitrox flow rates required to maintain enough Oxygen in the breathing loop result in gas consumption approximately 20% of open circuit SCUBA gas consumption rates. The good news with this concept is simplicity and a wider depth range, the bad news is that it "wastes " gas and the flow rates have to be carefully designed and tested to match the Nitrox Oxygen percentage. It is possible, if a very fit diver is working very hard, to metabolically consume Oxygen faster than it is bled into the loop. If this occurs, the Oxygen percentage in the loop can go down too far, resulting in hypoxia and possible blackout (also a bad thing underwater).

The optimum rebreather design, from a gas consumption standpoint, is the fully closed circuit rebreather. In this configuration there are two tanks,

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one contains pure Oxygen and the other, some gas to dilute the Oxygen (therefore called diluent gas). This design also requires an Oxygen sensor to monitor levels in the breathing loop. When the Oxygen goes below the "set point" an electrically controlled valve opens to add more oxygen. Diluent is only consumed when the diver descends and gas is added to the breathing loop to maintain ambient pressure. There's lots of good news with this design type. Gas consumption is negligible and dive durations are typically limited by the capacity of the CO2 absorbent canister. Also, Oxygen partial pressures can be maintained at optimum levels to minimize Nitrogen absorption in the tissues, hence greatly extending no-decompression limits or minimizing decompression times. Not surprisingly, there's lots of bad news as well, mostly in the form of electronics and complexity. Oxygen sensors drift and most designs use more than one plus a computer to decide which one to believe. Add to this the electrically controlled valves and back-up manual valves and the device gets complex and expensive quickly.

The rebreather I got to try is a semi-closed circuit design called the Atlantis I, built by Draeger in Germany, imported and marketed by UWATEC in the US. This is the same unit Dave Woods of York Beach SCUBA brought to the United Divers of NH meeting the previous Monday so I was already familiar with the layout of the Atlantis. The unit has an integral Zeagle BCD and is designed to work with four different Nitrox blends from 32% up to 60% Oxygen. Maximum dive depths and durations (based on the standard 30 cu.ft. tank) are shown in Table 1. You must match the Nitrox blend to the planned dive depth. This is a situation where you really must plan your dive and dive your plan!

Table 1

Nitrox Blend	Max Depth	Max Duration
32%	130 ft	47 min.
40%	95 ft	67 min.
50%	75 ft.	95 min.
60%	55 ft.	125 min.

The configuration includes a pony bottle and regulator for "bail-out" and BCD/dry suit inflation. The guts of the Atlantis I are pretty simple. The breathing bag, CO2 absorber canister, a small exhaust bag and the flow control regulator assemble with no tools, although I would do the assembly at home rather than on a pitching boat deck.

During the Rebreather workshop we spent a couple of hours learning about rebreather concepts, then I got to assemble and test the unit I would use in the pool. After lunch we spent a couple hours in the pool. Operating procedures were simple in concept but more difficult in practice. Since it is a constant flow device, the gas supply duration time begins as soon as you open the tank valve, so you do that just before you submerge. Also, the unit can flood so there's a mouthpiece shutoff valve to seal the breathing loop. The procedure is - mouthpiece in mouth - open mouthpiece valve - open tank valve. When you surface, you reverse the procedure. Unfortunately the mouthpiece valve is very hard to operate. It's a two handed task (at least on the brand new units) that must be done in situations when two hands are seldom available. Once under water and adapted to the higher breathing resistance, I enjoyed the quiet. Buoyancy control takes some getting used to. The usual practice

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(continued from previous page)

of controlling depth by inhaling and exhaling doesn't work with a rebreather since the buoyancy of your full lungs is equal to the buoyancy of the full breathing bag. I'm not sure yet whether this characteristic is an advantage or disadvantage.

I signed up for the Workshop for three reasons 1) I'm fascinated with the technology, 2) As an underwater videographer the quiet operation is reported to not scare UW wildlife making it easier to approach critters and 3) I'm getting too old or lazy to cart around lots of tanks. A system that will let me spend a total of 55 minutes on the U-853 (in two dives) using two 30 cu. ft. tanks rather than two sets of 200 cu. ft. doubles (at about 100 pounds a set) is very appealing. The full training course is about \$450. Current price for an Atlantis I is about \$3900.

For me the bottom line is a definite maybe. I've decided to complete the training course which includes four ocean dives, then I'll probably rent a unit occasionally. I usually try to avoid buying version one of anything. At the very least the Atlantis needs a better mouthpiece valve. While I wait, I will begin stuffing my piggy-bank. Anyone want to buy a set of dual Genesis 100's with an isolation manifold?



Last issue's crossword puzzle solution:

TECH SUB A HARD G W
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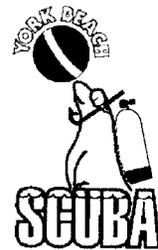
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Meetings and Events

April 7 Meeting - Video of New Zealand Underwater Hockey

April 14 DAN Oxygen course ~6:30 @YMCA.
Contact Jean Stefanik for info.

April 19&20 Isles of Shoals Seal Dive. Contact Ken Anderson for details (603) 335-6370

April ??? Tubing down the Piscataquog River.
Date depends on water flow. Contact Gary Thuillier 487-3001 for info.

April 21 Meeting. Topic TBD

May 3. Chester Poling Wreck Dive, Gloucester, MA.
Contact Lea Nichols (603) 487-2726 for info.

May 5 Meeting. Topic TBD

May 19 Meeting. Topic TBD

June 8 Jay Lewis Memorial Dive: Dive the Jay Lewis Memorial site at the Isles of Shoals. Jay was killed by a hit-and-run boater near this area. The memorial is dedicated to helping promote awareness by boaters of divers and the dive flag.

August 9 Jay Lewis Memorial Picnic - Great Island Commons, Newcastle, NH.

August 16 (tentative) Isles of Shoals Challenge
Underwater navigational marathon. Contact Gary Thuillier (487-3001) for details.

New UDNH Member

Congratulations to Jake & Linda Richter on the successful completion of their 36-1/2 week experiment code-named "Snumba". The result is an 8 lb., 19-3/4" creature formally known as Sebastian Anthony. The experiment was completed 3-1/2 weeks ahead of schedule, much to the relief of the leaders of the experiment.



Club Meetings

Meetings are held the first and third Mondays of each month, January through November. We encourage potential members to attend a meeting or two to experience our club before joining. The meetings are held at the YMCA on 30 Mechanic St. (off of Elm Street) in Manchester. The meetings start at 7:15 PM. Each meeting consists of a short business portion followed by a variety of presentations and discussions. Immediately following the club has an hour of pool time for swimming, trying out gear, and the occasional game of underwater hockey. Members and guests often meet afterwards at a local restaurant for food and drink.

Extreme Weather

Meetings will be held if the YMCA is open. You can call them at 603-623-3558. Check close to the meeting time as the front desk often has no advance warning of early closures.

Membership

Annual dues for membership for 1997 in the United Divers of New Hampshire are \$25/individual or \$40/family. Dues are not prorated for members who join later in the year. To join, please contact Don Eva at 603-672-5608

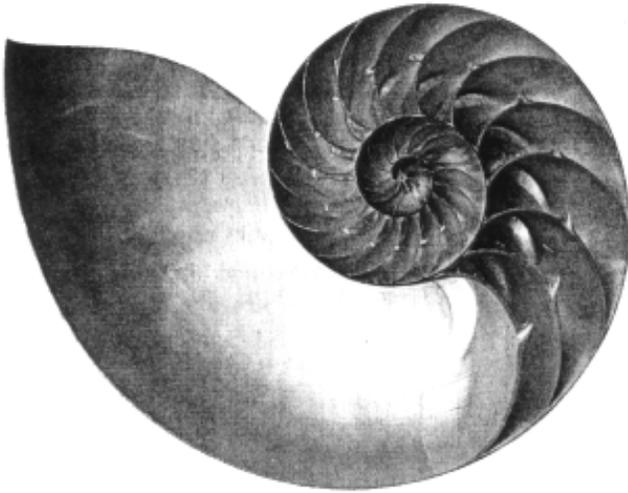
Get in the Swim

After every meeting, the YMCA pool is open to our dive club for an hour of fun and fitness.

Don't wait for the ice to thaw before trying out that new equipment, the pool is the perfect place. Check out the club calendar for special presentations in the pool like dive knife use or trying out a dry suit. So bring a suit and a towel to every meeting and get into the swim.

United Divers of New Hampshire Contact Information - 1997

President	Jean Stefanik	603-647-1063
Vice President	Mike Griffin	603-598-0151
Treasurer	June Bardsley	603-673-8539
Secretary	Don Eva	603-672-5608
Dive Coordinator	Ken Anderson	603-335-6370
Ass't Dive Coord.	Ron Mann	603-883-9015



The Oldest Scuba Gear

Like many of humankind's inventions, the scuba tank apparently was created first by nature. The first scuba diver was likely the chambered nautilus, which has existed for millions of years and is often called a living fossil. Scientists have long known that its shell (left) has about 30 gas-filled chambers, to which the animal adds or subtracts ballast water in order to regulate its ocean depth. Recently, zoologist Robert Boutilier at the

University of Cambridge in England and colleagues reported they have found strong evidence the nautilus also makes use of oxygen from the stores in its chambers.

The tipoff was a discovery that at times, oxygen in the animal's veins is at higher levels than in its arteries—a finding that stands basic physiology on its head. A resulting calculation, wrote the researchers in the journal Nature, "obviously gives the embarrassing result that blood is flowing in reverse." They added dryly, "We are reasonably certain this is not the case." Instead, they conclude, when the creature is especially oxygen-deprived during lengthy trips to the ocean floor, it slowly draws extra oxygen into a large vein located adjacent to the gas-filled chambers.



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DIVE LOG

Dive Log is the monthly newsletter of the United Divers of New Hampshire, an organization dedicated to educating divers and expanding the knowledge of diving in the State of New Hampshire and New England.

In This Issue:

- Annual Ice Dive report
- DEMA report
- Dive Crossword Puzzle solution
- Rebreather review
- Nature's own SCUBA system
- 1997 Upcoming Events

