

NDA

NAUI

"Safety Through
Continuing Education"

NAUI NEWS

NOV./DEC. 1975

NEWSLETTER OF THE NATIONAL ASSOCIATION OF UNDERWATER INSTRUCTORS
AND THE NAUI DIVING ASSOCIATION

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Incorporate New Skills That Could Save a Life

by Bill Busch, NAUI 2981

In California during 1971 more than eighteen scuba fatalities were recorded. Of that eighteen, fifteen of the victims had returned to the surface at least once before they went down the last time. This statistic might have been avoided had the divers considered and practiced, prior to initiating their dive, the points that are listed in the following paragraph.



Bill Busch

Five minutes after my students have completed an exhausting 100-yard swim is the best time to lecture safe diving techniques at pool side. Your first impression of a 100-yard swim may well be "anyone can do that." All I ask you to do is try it and evaluate it after playing by my rules. Students must:

1. Be over-weight by 6 pounds.
2. Stay in the prone swimming attitude.
3. Not use the snorkel tube attached to their mask. (It will be used later.)
4. Not have a regulator attached to the full 71.2 cubic foot tank.

Most of the points that will be covered in this article are brought home to roost very dramatically when the students are just able to struggle the last few feet in the prone position. As they finish they are asked to hold on to a diver's flag supported by an inner tube at the center of the diving well.

I begin while they are still in a condition of oxygen debt and respiratory distress with a series of "do you know whys?". "Do you know why you need an adequate bouyant support at the surface, such as a diver's flag?" They are immediately aware of how nice it is to be able to grasp the inner tube just after the swim. I know it feels to them as if God has extended a life-saving hand to them.

The stress situations sighted above can become compounded and lead to the panic syndrome, which is an overpowering terror resulting from ungrounded reasoning and fear. In this dilemma, the diver cannot cope with a terrifying situation. If he is not assisted immediately by his buddy, the end result may be disastrous.

Let us use the example of a struggling diver at the surface. He is trying to support his head

(approximately 25 pounds) out of the water. The harder he claws and struggles in the water, the higher his head is carried above the surface. In less than 1 minute, he has developed cardio-respiratory output which may never have been equaled during his life-time. Exhaustion now has him in its clutches.

The key to avoiding the above problem is an early detection of the stress syndrome. Corrective measures become paramount in preventing an incident from becoming a catastrophe. This situation can be greatly diminished with proper pool and open water training in the diver's basic training course, providing his instructor cares enough.

At poolside we overteach skills so when we go to open water they are so ingrained the student is much more apt to use his head, instead of instinct and impulse. This way, he will stay just ahead of the stress syndrome, which could alter his ability to control a panic situation.

After reading many accident reports, I would say the greatest bane to the diver is the weight belt. If the diver has been taught correctly, the moment he starts to struggle, he will jettison the weight belt. A man, but seldom a woman, may push himself beyond the brink if his prestige is threatened. This can be an extremely serious problem to anyone, especially the male diver. His anxieties begin to mount, and soon these minor problems have quadrupled themselves. He is now in a state of extreme apprehension. He must prove his masculinity by taking undue chances. He becomes a hazard not only to himself and his buddy, but also to anyone within reach.

The next question is: "Do you want to be neutrally bouyant before starting a dive?" This is rather obvious after having to struggle to get back to the diver's flag during the 100-yard swim.

Seldom, if ever, do the students have to help one another finish this skill. At the end of another 100-yard swim I ask them to tread water and reach down with their right hand, jettison their weight belt and inflate their buoyancy compensator. The immediate relief is overwhelming. I then ask them, "Do you know why you must wear a buoyancy compensator while floating motionless on the surface?" The buoyancy compensator is again reinforced in the next pool session with a series of skills in which they will be exposed to underwater buoyancy control and mouth to mouth resuscitation.

All the reasons I mention in the lecture are quite practical and meaningful and I certainly get their undivided attention. I cite several other points they must always remember before undertaking a dive. "Do you know why you consider tides and currents?" "Do you know why

CONT. NEXT PAGE

INCORPORATE NEW SKILLS . . . Cont.

you do not over-extend your air supply?" "Do you know why you maintain a minimal degree of fitness?"

Here the well-trained basic diver overcomes his problem of stress and simply recalls affirmatively to himself, "I can handle this situation, I have been taught what to do. I have been at or beyond this point in my basic training and managed to rectify the situation." This may be just enough for the diver to survive. If the stress syndrome is not checked, the next step will be uncontrolled reactions, which are life-threatening to the panic-stricken diver.

A panicked diver is extremely difficult to assist. He should have been taught to ground this panic through self-control, anticipating stress situations and through physical conditioning. The diver must learn how to apply the brakes smoothly, engage the brain, and let out on the clutch slowly.

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WHAT THE DIVER SHOULD KNOW ABOUT ALTITUDE DIVING

by Sydney J. Albright, NAUI 2546

Diving at high altitudes is not like diving in the ocean. It's hazardous. Depth gauges and decompression meters don't read correctly, ascent rates vary, use of the dive tables is different and so on. There's a lot of highly technical theory behind all



Syd Albright

of this which—except perhaps to the academician—can be confusing and complicated.

The following information covers the highlights, setting aside the theory, which if followed will enable the sports diver to dive safely at high altitude:

1. If you live at sea level, then drive to the mountains for a high altitude dive in a lake or river, remember that your body is saturated with nitrogen at one atmosphere of absolute pressure. That means that you are already in a repetitive dive group. To figure your dive group, use the following table:

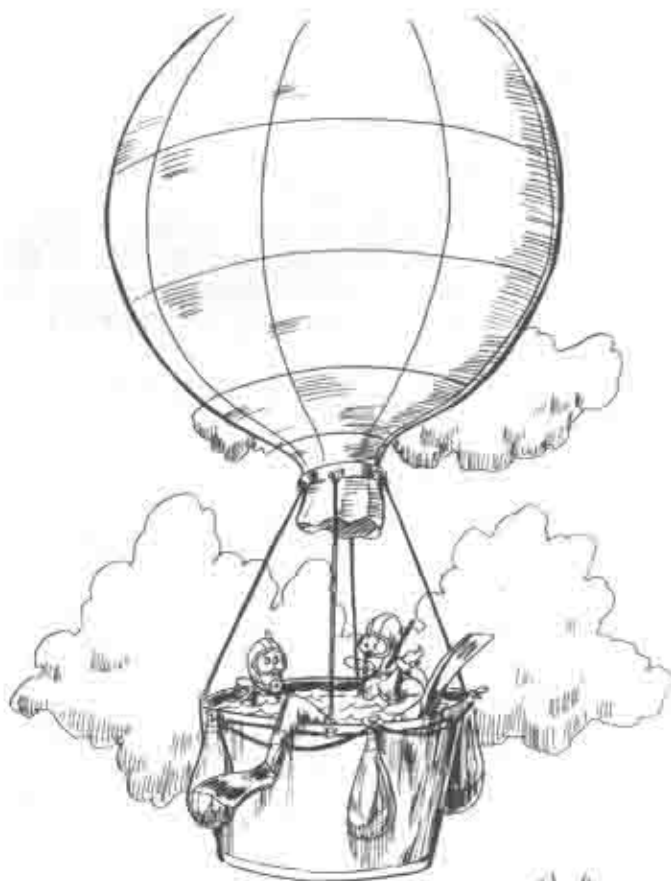
Altitude in feet	Repetitive group
2,000	D
4,000	D
6,000	D
8,000	F
10,000	H
12,000	H
14,000	J

Remember, this is the dive group you will be in when you arrive at altitude. After 12 hours, your body will have adjusted its nitrogen content to that altitude and you can dive without being in any dive group.

2. Depth gauges will not indicate true depth at altitude. They must be adjusted. The best kind to use at altitude is the capillary type Navy gauge. Read them directly and use the Navy Dive Tables. The only drawback to this type of gauge is that it will not indicate your true depth. It will read deeper than you really are.

If for some reason you really must know your exact depth, here's how to correct your capillary gauge reading: subtract 3 percent of the reading per 1,000 feet of altitude for any altitude above 3,000 feet (below that, it's not enough to worry about). Here's an example: You're diving at 5,000 feet and your capillary gauge reads 100 feet. Three percent of 5,000 feet is 15 feet. Subtract that from the 100 feet and your true depth will be 85 feet.

3. For all other type depth gauges, add one foot per thousand feet of altitude and use the High Altitude Decompression Tables developed by E.R. Cross:



NOTE: Capillary gauges read deeper. That works to your advantage. All other gauges read shallower. Your gauge doesn't tell you how deep you really are. That's bad.

CONT. NEXT PAGE

WHAT THE DIVER SHOULD KNOW ABOUT ALTITUDE DIVING . . . Cont.

If you must know the your true depth while diving at altitude and you are using an open or closed-bourdon gauge, diaphragm or oil-filled gauge, here's how to do it:

Add one foot per 1,000 feet of altitude, then add an additional 3 percent of the gauge reading.

Example: You are diving at 5,000 feet altitude and your gauge reads 100 feet. Add 5 feet (one foot per 1,000), then add 3 feet (3 percent of gauge reading). Your true depth, therefore, will be 108 feet.

4. To adjust an oil-filled depth gauge, remove the screw. There will be a bubble of air in the gauge. Add a drop or two of 3-in-1 oil and replace the screw. Then the gauge will read correctly for that altitude. Remember to let the oil out when you return to sea level.

5. The best advice is to use a capillary gauge when diving at high altitude.

6. When diving at altitude, you must also slow your rate of ascent from the normal 60 ft. per minute. To calculate your ascent rate, subtract 2 feet per minute for each 1,000 feet of altitude. Example:

A dive at 5,000 feet altitude would mean an ascent rate of 60ft./min. minus 5 x 2 ft. That's 60-10. Your ascent rate therefore is 50 ft. per minute.

7. To slow your rate of ascent, stick your fins out.

8. Don't use decompression meters. They aren't accurate enough. No two meters read exactly alike and they don't correspond to the Navy Dive Tables. Furthermore, at altitude the dial has to be readjusted.

9. High altitude diving is more hazardous than sea level diving. Don't take chances. Be conservative. **STAY AWAY FROM THE KNIFE'S EDGE.**

A great deal of research has been done in high altitude diving. Most of it is very technical. Because of its complexity, it is difficult to teach to students. Yet the hazards of high altitude diving make it mandatory that divers know the rules.

These notes on high altitude diving are designed to provide some safe and simple guidelines, which if followed, will permit one to dive at high altitude safely. Some authorities may question some of the figures and perhaps some of the rules. We know, however, that all these rules are well within the safe diving limits that will keep the diver away from the *knife's edge*.

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Yet More Flying After Diving

by C.L. Smith, NAUI 2299

Many policies and tables have appeared in the past advising how long to wait after an ocean dive before flying. The advice has ranged from a fixed waiting period of 12 to 24 hours, to determining the required surface delay using the high altitude dive tables or others involving repetitive group letters. While delaying flight by 12 hours or more is still the conservative thing to do, it does not accommodate those who must board a plane on the last day of their diving vacation, or even those who dive in the ocean and live at some elevation. Recent tables have shown reduced waiting periods, and indicate that in most cases a delay of 3 or 4 hours is enough.

Yet another table is given here. It differs from previous surface interval schedules in that the required time delay before flying or proceeding to high elevation is given directly for particular sea level dives. In most cases maximum, single, no-decompression dives are shown, but some shorter shallow dives are included.

MINIMUM WAIT REQUIRED BEFORE ASCENDING
TO ALTITUDE FOLLOWING AN OCEAN DIVE

Depth feet	Bottom time, minutes	Elevation above sea level, feet					
		Ocean Dive	2000	4000	6000	8000	10,000 12,000
30	310	0 ^m	:30	1:10	1:50	2:40	3:50
30	120	0	0	:10	:30	1:10	2:20
40	200	:20	:50	1:20	2:10	3:00	4:00
40	120	:10	:10	:30	1:10	2:00	3:10
50	100	:20	:20	:50	1:30	2:20	3:30
60	80	:10	:20	:30	:50	1:40	2:50
70	60	:10	:20	:30	:50	1:40	2:50
80	40	:10	:20	:30	:50	1:30	2:40
90	30	:10	:20	:30	:40	1:00	2:10
100	25	:10	:20	:30	:30	1:00	2:00
110	20	:10	:20	:20	:30	:50	1:40
120	15	:10	:10	:20	:30	:30	1:10
130	10	:10	:10	:10	:20	:30	:40

Above delay times are in hours and minutes

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All in favor of
saving gasoline
Raise your right foot!

Teaching Diving in Chile

by Skip Schaller, NAUI 2926

Two years ago when I took my new job at an astronomical observatory in the Chilean Andes, I wondered if there would be any opportunity to teach diving in Chile. I soon found out that the field is wide open.

Chile has 2500 miles of coastline. The water temperature ranges between 40°F in the winter to 60°F in the summer. Although it spans nearly 40° of latitude, Chile has similar conditions throughout its length, due to the average effect of the Humboldt Current. The visibility can frequently exceed 30 feet. The coast is rocky and the fish are plentiful. Consequently, the sea, and likewise, diving have become a very important part of Chilean life.

Of the 7000 divers here, about 40 per cent are exclusively spearfishermen. They always practice their activity by snorkeling. Compressed air equipment is very expensive and besides, most feel that the use of tanks is not very sporting. Just about all of the remaining 60 per cent of the divers are shellfishermen. They use hookah equipment and take abalones, mussels, crabs, etc. The last group is the salvage divers. There are probably less than 50 of these extremely well-trained divers in the country. The number of instructors is equally low.



Skip Schaller

were afraid to put on mine. Other equipment problems were weight belts without quick releases, spearguns without safeties, poorly filtered air compressors, no tank testing facilities, and the lack of recompression chambers. Procedural difficulties include hyperventilation, solo diving, tank harness crotch straps over the weight belt, and misunderstandings of the decompression tables.

Teaching diving in Chile has become a major challenge for me. In my spare time, I am instructing at the Centro de Investigaciones Submarinas in Coquimbo, the heart of diving in Chile. I have teamed up with a group of dedicated, ingenious divers to improve safety and fix the problems mentioned above. Just teaching has its difficulties. In addition to translation of diving knowledge into Spanish and the metric system, we do our confined-water training in a small, protected bay with relatively warm and frequently clear water. There are very few swimming pools in Chile.



The first NAUI divers to be certified in Chile.



Introduction of inflatable vests into Chile.

When I arrived, I discovered many lackings in the equipment and safety procedures used here. Most noticeable was the complete absence of inflatable vests. They just didn't exist. Most divers didn't even know what they were; some

We have come a long way in two years. The history of diving in Chile took a major step forward in October of 1974 with the introduction of inflatable vests into the country. We have imported a handful of vests, and I have taught the divers how to use them. Now everybody is convinced that they are necessary and we are looking for the means to import more. Another historic step was the certification of the first NAUI divers in Chile in February of 1975. The name of NAUI has become well-known throughout the country and has become synonymous with safety in diving.

We are still improving. We are importing newer and better equipment, and are developing safer diving procedures. We have NAUI-sanctioned courses going on continuously, and are looking forward to the day when we will have more NAUI instructors in Chile.

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DO IT: DON'T TALK IT

by Dick Jacoby, NAUI 2987

The most common difficulty an instructor faces in pool instruction is effective teaching while maintaining student control. There could hardly be a worse environment in which to teach safe and enjoyable diving. If it's an indoor pool it echoes. If it's outdoors it probably isn't heated and the students either swelter in wet suits or freeze without them. Usually the students shiver and wait. There are many other difficulties, but the most serious is how to talk to your class in the water.



Dick Jacoby



The easiest way to teach students is *not* to describe each procedure in detail but to let them do it. For example, introduce the students to skin gear by letting them use it before you describe how to use it. Pass out mask, snorkel and fins to the novices and tell them to don the gear in the shallow water and swim a half dozen laps. Give them as few pointers as you can while they put the gear on. Surprisingly many of the students will require little assistance, so you can concentrate on those who need the most help. You and your assistants can stop swimmers during their laps and correct the obvious errors quickly. They'll know what you are talking about because they just experienced the problem.

This method makes quick learners and happy students because the novice doesn't know what to listen to or look for if you describe it first. The importance of spitting in the mask, strap position and which part of the mask should be up will be very clear when the student faces the problem. Students won't consider putting on a mask difficult because you won't detail the problems beforehand.

After they complete their laps explain to your students many of the pool activities will be run in the same manner. They will be told briefly what you want them to do, and in certain exercises they will see a demonstration of the technique. Then, if there are no questions, you will tell them "DO IT". They are not—repeat *not*—to perform any exercise until you tell them to "DO IT". This is your protection against an outbreak of uncontrolled chaos.

Scuba exercises can be accomplished in the same manner. First be certain that you have sufficient assistants and be sure the students understand the signals you will use. Then take your students on scuba to the bottom of the pool, organize them in a semicircle and demonstrate an exercise. When you are ready give the "OK" signal to each student individually. The same signal should be returned if understood. Send anyone who doesn't understand to the surface for an explanation.



Ted Boehler photo

After the students know what you want, point to each diver *one at a time*. This is that person's signal to do what you demonstrated. If you have enough assistants more than one student can perform an exercise at the same time.

Some exercises need more explanation than others, but nearly all can be learned efficiently and safely if you remember to say DO IT rather than talk it. Students will enjoy their water work because it's fun to perform a skill rather than hear somebody talk about it.

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THE NAUI WAY

by Dennis Graver, Editor/Publisher

"Safety Through Continuing Education" is a commendable motto for our organization, but do you know of the overall training available through NAUI? "The NAUI Way" is a philosophy of the Association—a method which will assure safety and growth for diving. Are you aware of the 19 certifications available from NAUI? Do you know which certification is the most important to obtain? As an instructor, would you like to reduce your overhead, increase your enjoyment and help the sport? The answer to these and other questions are contained in this explanation of the "NAUI WAY".

GETTING STARTED

Far too often people begin learning to dive by enrolling in a Basic Scuba course. How much more motivated these people would be if they could get a taste of the underwater world prior to signing up for that Basic Course. For years resort diving facilities have been conducting introductory courses for non-divers with complete safety and great success. What better sales job for diving than to actually visit the underwater world in warm, clear, fish-filled waters. NAUI recognizes the benefit of these resort programs and is currently developing guidelines for the introductory course in diving. No credential will be issued, but rather the Diver Training Record may be used to enter the person's participation in an introductory diving course. The person would be recommended to a local instructor for further instruction in diving.

If a person is a capable skin diver, the task of making them a safe, effective scuba diver is greatly simplified. Skin diving is fun, simple and a sport unto itself. Many divers are short-changed when skin diving is integrated into a Basic Scuba course. The ideal situation would be to have a steady flow of certified skin divers enrolling in basic scuba courses. It can be done. We will examine one excellent source of trained Skin Divers later in this article.

The NAUI WAY is to have people experience the underwater world before taking a Basic Scuba course. The introductory course (which can be offered anywhere, not just in resorts) and the skin diving course will provide this experience.

The Basic Scuba course is the hardest course in diving to teach! The most radical changes in student behavior are required during this course. Students, often with limited aquatic background, must be transformed into knowledgeable, skilled, open water divers in an average of one month's time. The physical and mental changes compressed into the Basic

course are vast. Somehow, NAUI Instructors get the job done. The average basic course taught is 30-40 hours in duration with 3-4 open water dives. The newly certified students are able to survive in open water. Is this sufficient? Is this all that's needed to assure safety for our sport? Nearly everyone realizes the need to have a nationally recognized credential in order to dive. Is that enough?

Skin Diver Photo



An Introductory Course in diving motivates people to learn how to dive.

FOLLOWING THROUGH

What happens to new divers? They may be referred to a local diving club, or contacted about a few diving activities, but for the most part, they're on their own to seek underwater enjoyment as best they can. These neophytes are often lacking in knowledge of where to dive, how to find buddies and what to do when they do go diving. New divers procrastinate on buying equipment. It's a shame that the history of a new diver can read like this:

Two weeks after completion of his basic course, Joe Diver rents gear to go diving with his buddy who also just completed the course. Not knowing where to dive, they return to the site of their open water training dive. The bottom is flat, sandy, barren and lifeless with poor visibility. The next weekend our two divers decide to try a more productive site, so they put out the money for gear rental again and drive a couple of hours

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Editor's Note: The concept of presenting all the certifications as a unit called "THE NAUI WAY" was suggested by Fred Calhoun, North Atlantic Branch Manager. NAUI philosophy has always been for continuing education, but Fred's idea gets the thinking.

THE NAUI WAY . . . Cont.

to a new location. Upon arrival, the water looks rather rough, but they feel they can make it, so suit up. . . they barely survive the experience. Neither diver ever dives again. . .

This is *not* the NAUI WAY, and if the diver were able to take care of everything independently after a Basic course, the course would have been prohibitively expensive and time consuming. The Basic course should be just that—a *BASIC* course. How then, do we help Joe Diver and the thousands of other neophytes, increase their safety, and reduce the incredible diving drop out rate? We do these things by providing supervised open water dives to increase diving proficiency and knowledge about dive planning, diving locations, and diving activities. These additional open water dives are provided through the NAUI Sport Diving Course. It is during this course when diving really becomes enjoyable for the new diver.



When newly certified divers go out on their own and have bad experiences, it is not THE NAUI WAY.

The Basic course did little more than provide "a license to learn how to dive". The divers learn how to dive by actually diving in the Sport Diving course. This course is fun, inexpensive and conducted entirely in and around open water. If divers complete the required six open water dives in the Sport course and the dives are fun and challenging, the divers will be much more effective in open water, will own most of their own gear and will remain in diving. The Sport Diver course is the most important course NAUI has to offer for it is here divers are really made and retained. The Basic course is a sorting out process for people to see if they really are interested in diving—the Sport Diver course turns on those who are interested and keeps them in diving.

The need for the Sport course must be established all during the Basic course. The basic card is not the end of training, but the

beginning. Likewise, the Advanced Diver course must be sold during the Sport Diver course. Did you know the hours and dives in the Sport course count toward the Advanced requirements? Now we're getting closer to the NAUI WAY.



The Basic and Sport Diver certifications . . . think of them as one course in learning how to dive.

The Sport Diver course developed and refined open water diving skills and settled new divers into the sport. The objective of the Advanced Diver course is to provide an *introduction* to advanced diving activities. The advanced course is not a series of mini-specialty courses, but a series of exercises and opportunities to enable divers to determine which areas of diving are of interest to them.



The Advanced Diver Course is an *introduction* to advanced diving activities. It is fun to take and fun to teach.

Advanced and Sport courses are excellent courses for Instructors to teach for other reasons. A pool is not required; equipment does not need to be lugged around; the overhead is lower, so profits are greater; the students already have open water experience, so the trauma is greatly reduced; and it's fun to teach because for the most part, these courses are diving, not just talking about it.

If we as an Association can convince divers of the need to be trained *at least* to the advanced level, how much safer and enjoyable our sport could be. Properly trained advanced divers keep diving and dive safely. This is the NAUI WAY.

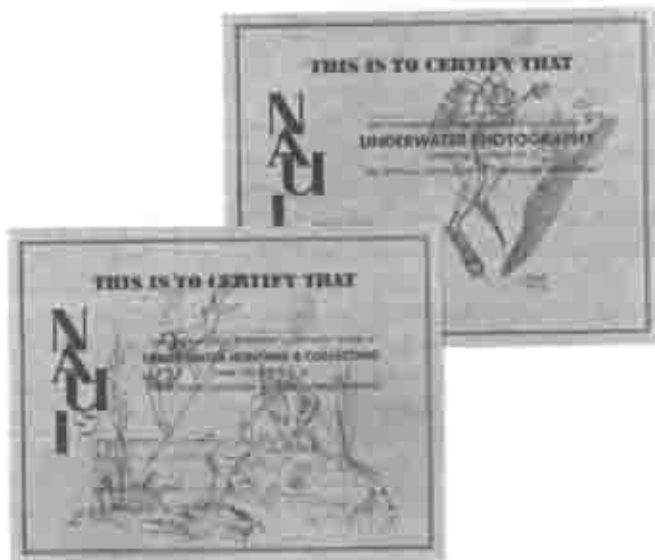
BRANCHING OUT

The Advanced course was an introduction to advanced diving activities. The advanced student has the opportunity to determine the diving areas of greatest interest. Once the advanced course is completed, divers can select specialty diving areas and acquire formal orientation to these areas. In the old days of diving, many divers strove to become instructors, for there was no other way to recognize a diver's ability other than spearfishing competition. Now a diver can gain recognition in a specialty area of diving with instruction being only one of many special interest areas. Divers can gain renown as photographers, environmentalists, collectors

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THE NAUI WAY . . . Cont.

and professional divers. This is also the NAUI WAY, so NAUI offers ten specialty diving certifications. The Advanced or Sport Courses are *not* prerequisites for the NAUI Specialty courses, but are recommended.



NAUI offers ten Specialty certifications as part of the NAUI WAY.

THE INSTRUCTIONAL SPECIALTY

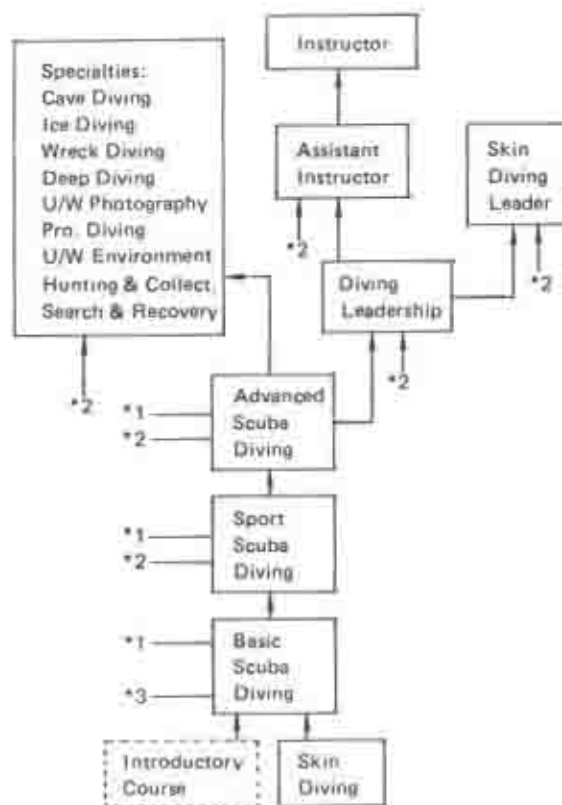
Should a diver decide on instruction as a special interest area, one of the ten specialty certifications available is Diving Leadership. This course prepares the diver to function as a Dive-master, safety diver or training assistant. With this preparation, the would-be instructor can enroll in either the Assistant Instructor course, to qualify for an Instructor Training Course, or the NAUI Skin Diving Leader course. The Skin Diving Leader course was created to increase the certification of skin divers by certifying aquatic teachers, camp directors and swim coaches to teach sanctioned NAUI Skin Diving courses. If instructors would teach local aquatic professionals how to teach skin diving, there would be a constant source of qualified skin divers enrolling in their scuba courses. This too, is part of the NAUI WAY.

The NAUI Assistant Instructor program evaluates the knowledge and physical ability of instructor candidates to qualify them for attendance at an Instructor Training Course where they learn how to teach diving.

STILL MORE

No matter what your level of certification or your specialty, there are vast geographical differences in diving. Regional orientations should be required for all divers and are recommended by NAUI. Whenever you travel to a new diving environment, seek a formal orientation to that area. Your diving will be much safer and more enjoyable. This is part of the NAUI WAY.

THE NAUI WAY



*1 Experienced Divers

*2 Divers certified by other agencies

*3 Junior Scuba Diver meets Basic scuba requirements

There is no end to education in diving, for the sport is constantly changing, growing and improving. Even when the total ladder of certification levels has been climbed and special interest levels developed, there is still a great deal to learn and share. This is done through numerous Seminars, Workshops, Conferences, and Symposiums. NAUI conducts many programs each year to further diver education at all certification levels. This is the NAUI WAY.

We should add one word to the NDA motto—"Enjoyment". Diving and learning to dive must be fun. Let's get out of the classroom and spend more time learning to dive by diving. Let's dive in more locations and environments in the process of continuing our education. Let's meet and dive and work with other *people* and have fun while making ourselves safer and more comfortable underwater. Let's develop areas of special interest in diving and share our ideas and accomplishments. When diving is more than getting a C-card; when it's a never-ending series of fun activities promoted universally; when completing a Basic course is the beginning of diver education, we will achieve the NAUI WAY. What are your plans? Want to become part of this incredible, enthusiastic, fun philosophy? We have the WAY. . . .

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NAUI STANDARDS

Significant Changes Go Into Effect

In a series of resolutions, the Board of Directors has recently changed a number of the NAUI standards. An extensive update to the NAUI Instructor Handbook is currently being prepared. This update will include all these and other recent changes. Listed here are the most significant changes for your review and implementation in your NAUI diving courses.

GENERAL STANDARDS FOR DIVING COURSES

In Item 12, the maximum allowed student to instructor ratio of 10 to 1 during water work is listed along with the types of assistant instructors that may be used. This ratio was changed two years ago to a lower ratio then changed back again to the 10:1 ratio. The ratio remains the same at this time, but the use of assistant instructors has been modified.

A NAUI Instructor may use as an assistant: another NAUI Instructor, a certified instructor of another association, or a certified Assistant Instructor, no others may qualify to be counted as assistant instructors during a NAUI diving course. Advanced or experienced divers may be used as helpers or safety divers but not counted as assistant instructors for the student to instructor ratio requirement.

In 1973, two additional statements were added to the General Standards. "To be certified as a NAUI diver of any level the student is required to be able to find and rescue a non-breathing buddy of equal size using the open water diving equipment appropriate for the course." Item 20 was also added, "All NAUI scuba diving courses are to include an orientation to cardio-pulmonary resuscitation. In addition, students are to be encouraged to take formal training in this area." Additionally this year, Item 21 was added which reads, "All NAUI scuba diving courses are to include information on the importance and procedures for logging dives, with students actually using log books."

Note that two of these refer to scuba diving courses, but would also be good for skin diving. The item about rescue applies to ALL diving courses.

The essence of the rescue requirement is: to be a safe, effective buddy for another diver, you must be able to assist that diver.

Additionally, in order to make students more conscious of both the safety and lifesaving requirements of CPR and the use of a log book, the orientation or participation in these activities will bring about an awareness on the part of the student.

BASIC SCUBA DIVING COURSE STANDARDS

Minimum course duration is now 27 hours versus the 24 hours it used to be. Of this time, 16 hours or more are now required in water rather than 14 hours. The requirement that at least two of those 16 hours be in open water remains the same. The minimum number of open water dives is now increased to three (3) rather than two (2) as previously required. Additionally, it is stated in the new requirements, "One of these is to be a skin dive and two are to be scuba dives. No more than two dives per day can be counted towards this requirement." Additionally, in 1973 two sentences were added to this section which read, "At least one of these open water training exercises is to take place to a depth of 20 feet. Exposures in excess of 40 feet are not recommended." These changes should end a great deal of confusion and greatly strengthen the basic course.

We have learned that open water training under the supervision of a qualified instructor is the most important aspect of diver safety and training. This also defines just how many of what kind of dives must be used and precludes doing all the open water training on one day, therefore, the student has a series of exposures to be better prepared for open water work.

Of interest, we recently did a survey of the training offered by NAUI Instructors and discovered the vast majority of NAUI Instructors exceed 30 hours of instruction and meet or exceed three open water dives.

SKIN DIVING LEADER COURSE STANDARDS

With the advent of the Assistant Instructor rating and several years of use in the field, the Leader standards have been updated. The Skin Diving Leader privileges, requirements, course content and required skills have remained essentially unchanged, but the NAUI Instructor requirements to teach the course have been significantly changed. They are now nearly identical with the requirements for teaching Assistant Instructor courses: "The Skin Diving Leader Course as set forth in these standards may be taught by one or more NAUI Instructors who have met the following requirements: Currently active teaching instructor(s) who has the training, experience, qualifications to train others to teach skin diving and has been a NAUI instructor for over one year."

CONT. NEXT PAGE

NAUI Standards — Significant Changes . . . Cont.

JUNIOR SCUBA DIVING COURSE STANDARDS

There are essentially no changes in the junior scuba standards, but because the junior scuba diver is an under-age basic scuba diver who must meet all the requirements of the basic scuba course, junior scuba divers must now meet and renew basic scuba standards.

SPORT SCUBA DIVING COURSE STANDARDS

The most widely accepted of ratings other than basic is the Sport course for open water diver training. This is probably the best possible course NAUI has available. This is where you take people who have received an introduction to diving in the basic course and make them into real divers. There were no changes to these standards at this time, but in 1973 two sections of this standard were rewritten. They read as follows: Item 4, "Minimum course duration is 12 hours of open water experience with at least six (6) open water dives. Any classroom or pool time is in addition to the minimum open water experience. The entire course is designed to be taught in the open water setting. Briefings and debriefings are to be used and may be included in the minimum course duration but are not to exceed 25 percent of the total time." Item 5, "The instructor is required to carefully screen and evaluate all divers before any open water diving to insure they understand diving safety and possess the necessary skills to be safe in open water. Curriculum and skills from other NAUI skin and scuba diving courses may be used to evaluate, review and improve the diver's understanding and proficiency."

SPECIALTY DIVING COURSE STANDARDS

The specialty diving course standards will be included in the Handbook this year. The major change here has been a simplification of the instructor requirements for some of the specialty courses. There are 10 specialty courses and any active teaching NAUI Instructor who has been an instructor for more than one year may teach any of these courses without special application except for *Cave*, *Deep*, *Ice* and *Wreck* diving. For these the instructor is required to submit an application as listed in the standards. This means that NAUI Instructors with more than one year of experience may teach Diving Leadership, Professional Diving, Search and Recovery Diving, Underwater Environment, Underwater Hunting and Collecting and Underwater Photography without special application to NAUI.

The list of special student and course requirements for specialty diving has also been changed. Among the 10 different specialty courses, all of them require a minimum of 12

hours except for Cave Diving, Diving Leadership and Search and Recovery diving. These each require a minimum of 24 hours. The minimum student ages have been increased to 15, except for Cave Diving, Deep Diving, Diving Leadership, Ice Diving and Wreck Diving which all have a minimum age of 18. The minimum certification level of the students has been increased to basic scuba for all courses except for Cave Divers, Deep Divers, Diving Leadership, Ice Diving and Wreck Diving which require certification as a Sport Scuba Diver or equivalent.

The previous experience level of the student has been dropped from the requirements as many students want, need and are ready to go directly into a specialty course from previous diver training. The student to instructor ratio has been reduced to a maximum of 8 to 1 in all courses except for Cave and Ice Diving, where it is 2 to 1 plus Deep and Wreck Diving where it is 4 to 1. The remainder of the specialty course material is unchanged.

ASSISTANT INSTRUCTOR STANDARDS

The Assistant Instructor standards have now been added to the Handbook and are the same as those provided with the Assistant Instructor package Instructors purchase when training assistants.

IMPORTANT NOTE—

Please review all the NAUI diving course standards when you receive your Handbook Update. By reviewing these standards carefully, you may be pleasantly surprised at how much information is provided there and how many questions and problems you can solve for yourself by utilizing the material provided in the standards. Additionally, by reading the standards of some of those courses you do not normally teach, you may have another pleasant surprise: you really should be teaching Sport, Advanced or Skin Diving courses in addition to your Basic courses.

As diving becomes more sophisticated and the pressure for self regulation becomes greater with the threat of government intervention, you are most likely to see changes in the basic scuba course, particularly dealing with the length of the course, the open water training, the instructor to student ratios and skill performance objectives.

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AUGUST INSTRUCTOR TRAINING COURSES

NORFOLK • TURKEY • CHICAGO • SEATTLE • SANTA CRUZ

TURKEY '75 ITC

by Jim Haynes, NAUI 2115, Director

Well, we finally did it! 30 miles from the birthplace of St. Paul; 20 miles from the Cilician Gates, carved out by invading armies' engineers in 1000 B.C.; and just down the road from Issis, where Alexander the Great defeated the Persian King of Kings Darius III, the first NAUI ITC in Europe was held at CDE, Adana, Turkey. Sponsored by HQ US Air Forces, Europe and hosted by the Incirlik Skin & Scuba Club, the Course Director was Jim Haynes, NAUI 2115. Tom Kenney, 1038 was flown in from the States to co-direct the course.



The Turkey ITC candidates and staff, Course Director Jim Haynes on the left and Co-Director Tom Kenney on the right.

Actual students (non-divers) were used for the candidates to practice and demonstrate for evaluation their teaching capabilities. These students were signed up by the Host diving club to receive their basic scuba training during the ITC. This gave Tom and myself the perfect opportunity to observe the candidates, and more importantly, gave the candidates the chance to observe the results of their individual attempts to teach both in the classroom and in the water. The students received about 32 hours of training and will finish the remainder of their training by one of the instructors remaining here at Incirlik after the ITC. Tom Kenney will be making a separate report to NAUI, and we both will attend the course directors seminar at IQ7 to present the proposal that actual basic students be used at future ITCs.

With a cadre of NAUI instructors now in the European theater, we should have no difficulty in supplying candidates for an ITC next year. In fact, we are at the present attempting negotiations with the base commander of an air base in Italy to host an IQC/ITC next August. Look for us at NAUI ITC ITALY—76.

NORFOLK '75 ITC

by Ron Johnson, NAUI 1543, Director

There were 31 candidates at the Norfolk ITC. Of these, 10 were fully certified, and 19 have minor provisional requirements to clear (such as lifesaving and first aid training) in order to obtain certification. This represents the highest percentage to pass any Instructor course I've been associated with. The Assistant Instructor program is starting to pay off. The photograph shows the staff and candidates on Monday when we were all fresh. We were dragging a bit later in the week . . .



I sincerely appreciate the help the staff of this course gave during the week. Staff included: Dr. Ed Hipp, Jr. (#3005), Training Director; George Hecker (#2576), Blue Team Leader; Dr. Mike Heeb (#3004), Red Team Leader; Dr. George Simmons, Jr. (#3449), Green Team Leader; Roy Smith (#0897), Ass't. to Training Director; and Evaluators Dr. Joel Clark, Jr. (#3470), Harvey White (#3447), Barrett Payne (#3855), E. Leigh Griffin (#2567), and Don Griffin (#3463). Most of the staff also gave one or more lectures. Guest lecturers included Jay Wenzel (#3861) on legal aspects, Dr. Paul Heine on teaching methods, and Dr. Mel Williams on human performance. A special note of thanks to branch secretary, Florence Kvaines and D. Lee Kvaines, Mid-Atlantic Branch Manager.

Dick Jacoby photo



The Chicago ITC candidates and staff.

CONT. NEXT PAGE

Tom Wetzel ph



Santa Cruz ITC candidates and staff. Every candidate met standards and was certified!

THANKS TO '75 ITC DIRECTORS

Each year a handful of highly qualified, talented and enthusiastic members dedicate themselves to NAUI by taking on the task of organizing the programs to acquire new members for the association. Only those who have been involved in the complexities of course organization, scheduling and finances can fully appreciate the sacrifices of these unselfish individuals. NAUI wishes to express the greatest appreciation possible to the following Course Directors who were superb at instilling NAUI philosophy into the 1975 ITC's.

Director

Glen Egstrom, NAUI 937
D.H.H. MacKenzie, NAUI 1069
Mark Flahan, NAUI 2080
Homer Fletcher, NAUI 1833

Fred Calhoun, NAUI 380
Dave Addyman, NAUI 1211

Jabe Wills, NAUI 3428
Jim Haynes, NAUI 2115
Ron Johnson, NAUI 1543
Lee Somers, NAUI A-13
Jim Foley, NAUI 2557
Spence Campbell, NAUI A-20
Glenn Taylor, NAUI 3070

Course Location

Honolulu, HI
Toronto, Canada
San Diego, CA
Slippery Rock, PA
Santa Cruz, CA
Rockport, MA
Peterborough, Ont., Canada
Houston, TX
Incirlik, Turkey
Norfolk, VA
Ann Arbor, MI
Chicago, IL
Seattle, WA
West Palm Beach, FL

WITH GREAT
APPRECIATION TO
ALL THE STAFF MEMBERS
FOR THE 1975 INSTRUCTOR
COURSES.

IN-HOUSE ONE LINERS

1. A recent survey of student registrations shows 60% of NAUI registrations are for card, certificate, crest and decal. Why don't you take the package deal to help NAUI and promote diving.
2. Dave McLean, NAUI 4182, Assistant Chief Ranger for Lake Mead's Visitor Services, has been appointed Western Regional Dive Officer for the National Park Service.
3. Bob Brandeberry, NAUI 2938, organized a NAUI sanctioned Diver Rescue Seminar at San Mateo, CA for the Tiburon Scuba Club. There were 61 participants. Great job, Bob!
4. NAUI is opposed to the use of any compressed air equipment being used by untrained people. There is a plastic helmet available to the public for breathing compressed air under water. Do your part to warn the public against devices such as this.
5. Want to register your students with NAUI for free? Get them to join NDA. You will receive \$3.00 for referral which will more than cover the registration costs.

BOD ELECTION RESULTS

Lee Somers	762
William High	628
Fred Calhoun	394
Ken Heist	288
Total	2,078

Congratulations to Lee on being re-elected. Bill, welcome to the Board.



Lee Somers



Bill High

Newly
elected
NAUI
Board of
Directors
members.

Remember

AN ASSOCIATION IS KNOWN
BY THE MEMBERS IT KEEPS



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STUDENT REGISTRATION FORM

(Please use a separate form for each type of training.)

Please Print or Type only.

Name	AS IT IS TO APPEAR ON CARD. 24 CHARACTERS AND SPACES MAXIMUM	REGISTRATION NO. (Office Use)	Mailing Address - Must include Zip Code	Sex	Age
					1
					2
					3
					4
					5
					6
					7
					8
					9
					10
					11
					12
					13
					14
					15

NOTE CHANGES ON THIS FORM

- You keep a copy (4th)**
- Instructions in Handbook Revision**
(no longer on back of form)
- New required information**
(number of open water dives)

ALSO . . .

- Remember to personally sign each form.**
- Use a separate form for each level of certification.**
- You (not students) complete the form.**
PLEASE type or print.

Thank you

I certify that the students listed above will have completed the NAUI training course indicated and will have reached the proficiency level required by NAUI standards before their NAUI Certification is issued by me, and that the instruction was carried out by the NAUI Instructor/Leader(s) listed here. In addition, I agree to send and return all cards not issued.

INSTRUCTOR/LEADER SIGNATURE ON EACH SET OF FORMS

INSTRUCTOR/LEADER NAME (print or type) NAUI NUMBER

3 DIGITS	4 DIGITS	4 DIGITS	
Total Course Hours	Month Year Class Closing Date	Instructor/Leader NAUI Number	

NUMBER OF OPEN WATER DIVES

COURSE HOURS:

Lecture _____ Hrs. Pool _____ Hrs. Open Water _____ Hrs.

COURSE DATES:

Starting _____ Closing _____

Total number of students in this class _____

Number of students to be certified _____

Number of assistants used _____

Names of assisting NAUI Instructors/Leaders: _____

COURSE LOCATION _____

PLEASE REVIEW INSTRUCTIONS – SUBMIT THREE PARTS AND AN ORDER FORM – KEEP FOURTH COPY FOR YOUR RECORDS

THE NAUI CHRISTMAS OFFER



People have repeatedly commented that it would be helpful if NAUI, with all those books and emblems available for sale, would set up a way to send Christmas gifts to divers. Well, here it is:



- Take a look at the price list.
- Select the items and who you want to send gifts to.
- Complete the order form with the asked for information.
- Tear off and fold the order form—it is a pre-paid mailer.
- Enclose payment.

THAT'S IT. . . .

No trip to the Post Office, no packing, no postage, no crowds or lines, no wrong sizes. . . . All in all—less time, money and effort on your part to give excellent gifts that will be appreciated by your friends.

There is something for all divers and divers companions. NAUI handles all the details: packing and postage along with Christmas stickers and "Do not open until Christmas" stamps. You will receive the receipt and your friends will receive the gifts.

It's simple and done for you, but don't forget yourself or immediate family.

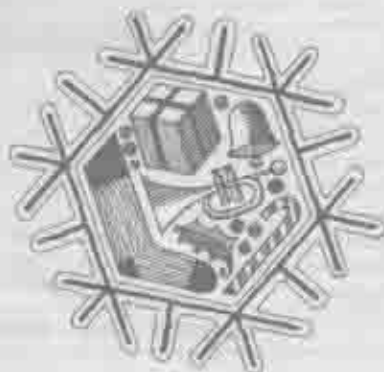
Please act early—Books, emblems or NDA memberships are all available for the ordering with the usual discounts. Unfortunately, we cannot handle foreign orders.

Christmas is a time for family and friends—we hope that this offer will help make it a relaxed Christmas for you and yours.

From the NAUI staff, may you have the best of Christmases. It has been our pleasure serving you this year.

Sincerely,

Jon Hardy
NAUI General Manager



NAUI HAS THE SPIRIT OF CHRISTMAS FOR YOU

NAUI CHRISTMAS PRICE LIST FOR 1975

Publications

- 101 NAUI INSTRUCTOR HANDBOOK \$10.00
 102 PROCEEDINGS OF THE SIXTH INTERNATIONAL CONFERENCE ON UNDERWATER EDUCATION \$16.00
 103 DELUXE 3-RING BINDER \$4.00
 104 THE COMPLETE GUIDE TO CAVE DIVING \$3.95
 105 COLD WEATHER AND UNDER ICE DIVING \$3.95
 106 DOWN TO THE SEA WITH BOOKS: NAUI INTERNATIONAL BIBLIOGRAPHY OF DIVING AND RELATED SCIENCES \$2.95
 107 DIVING LOG-BOOK AND TRAINING RECORD COMBINATION \$3.00
 108 DIVING LOG BOOK \$1.50
 109 DIVER TRAINING RECORD \$1.50
 110 DIVING LOG TRANSFER SLATE \$1.00 (for two)
 111 SCUBA TANKS: HIGH PRESSURE CYLINDERS FOR DIVING \$3.95
 112 SCUBA REGULATORS: AIR PRESSURE REDUCTION VALVES FOR DIVING \$2.95
 113 INTERNATIONAL LISTING OF CHAMBERS 1974 EDITION \$2.95
 114 LEGAL ASPECTS OF UNDERWATER INSTRUCTION \$3.95
 115 NU-WAY CHARTS \$7.00
 116 NAUI NEWS-SUBSCRIPTION \$12.00 per year
 117 DECOMPRESSION TABLES: Sets of 50—\$5.00, Sets of 10—\$1.50
 201 PILOTING, SEAMANSHIP AND SMALL BOAT HANDLING \$9.95
 302 BOATMAN'S HANDBOOK \$3.95
 303 BASIC SEAMANSHIP AND SAFE BOAT HANDLING \$4.95
 301 DIVING COMPANIONS: SEA LION, ELEPHANT SEAL, WALRUS \$12.95
 302 OCTOPUS AND SQUID: THE SOFT INTELLIGENCE \$9.95
 303 THE LIVING SEA \$12.50
 304 WORLD WITHOUT SUN \$17.50
 305 LIFE AND DEATH IN A CORAL SEA \$10.95
 306 THE WHALE — MIGHTY MONARCH OF THE SEA \$9.95
 307 THREE ADVENTURES: GALAPAGOS, TITICACA, BLUE HOLES \$9.95
 308 DIVING FOR SUNKEN TREASURE \$10.95
 309 THE SILENT WORLD \$10.95
 310 THE SHARK: SPLENDID SAVAGES OF THE SEA \$9.95
 311 CAPTAIN COUSTEAU'S UNDERWATER TREASURY \$12.50
 401 THE NEW SCIENCE OF SKIN AND SCUBA DIVING \$4.95
 402 DIVING FOR FUN \$3.50
 403 GENE PARKER'S COMPLETE HANDBOOK OF SKIN DIVING \$1.95
 404 SKIN DIVING AND SNORKELING \$1.75
 405 THE DIVERMASTER MANUAL \$3.55
 406 THE TREASURE DIVER'S GUIDE \$15.00
 407 DIVING WEST \$3.95
 408 HUMAN PERFORMANCE AND SCUBA DIVING: PROCEEDINGS OF THE SYMPOSIUM ON UNDERWATER PHYSIOLOGY \$3.50
 409 COMMERCIAL OIL FIELD DIVING \$12.50
 410 BUSINESS OF DIVING \$14.95
 411 SAFE CAVE DIVING \$7.50
 412 JEPPESEN SPORT DIVER KIT \$8.95
 413 SCUBA-SAFE AND SIMPLE \$8.95
 416 SKIN AND SCUBA DIVING (Manual) \$6.95
 416 SKIN AND SCUBA DIVING (Study Guide) \$3.50
 417 SAFE SKIN AND SCUBA DIVING \$6.95
 501 CAMERA BELOW (Out of Print)
 502 DIVERS AND CAMERAS \$5.95
 601 DIVER'S NAVIGATION MANUAL \$2.75
 701 AQUATIC SAFETY AND LIFESAVING PROGRAM \$4.95
 702 LIFESAVING AND WATER SAFETY TODAY \$2.95
 703 NATIONAL LIFEGUARD MANUAL \$4.95
 704 MEDICAL ASPECTS OF SPORT DIVING \$7.95
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 803 DIVING AND DIGGING FOR GOLD \$2.00
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 906 COMMON SEASHORE LIFE OF SOUTHERN CALIFORNIA \$2.25
 907 COMMON SEASHORE LIFE OF THE PACIFIC NORTHWEST \$2.25
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 909 THIS GREAT AND WIDE SEA — AN INTRODUCTION TO OCEANOGRAPHY AND MARINE BIOLOGY \$3.50
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 911 DANGEROUS MARINE ANIMALS \$5.00

EMBLEMS

Sew on Crests	\$2.00 each
Lapel Pins	\$4.00 each
Pressure or Water Transfer Decals	\$.50 each
Rubber Wet Suit Decals	\$1.50 each

No.	LEVEL	Crests	Decals	Pins	Wet Suit
01	Skin Diver (Sr. the same)	A	A	NA	A
02	Skin Diving Leader	A	A	NA	NA
10	Junior Scuba Diver	A	A	NA	NA
20	Basic Scuba Diver	A	A	A	A
30	Sport Scuba Diver	A	A	NA	NA
40	Advanced Scuba Diver	A	A	A	A
50	Specialty Diver	NA	NA	NA	NA
60	Assistant Instructor	NA	NA	NA	NA
70	Instructor	A	A	A	A
A — Available NA — Not Available					

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Gifts To Be Sent _____

浙江音乐学院 音乐学系 白薇 李欣桐

PLEASE NOTE:

- Be sure to mark which gift goes to whom and put your name on each label.
- Orders will be shipped day received by surface rate; orders mailed to NAUI after Nov. 30 should include extra postage for priority mail (10% of cost) to be sure of delivery by Christmas.
- Sorry—no foreign orders or foreign money can be handled on this special offer.
- Be sure to provide current, complete, correct addresses—including zip codes; if we have any problem with the addresses we will send the gifts directly to you.

CHRISTMAS GIFT ORDER

NO.	ITEM	PRICE	QTY.	AMOUNT
	NDA Membership			\$18.00
TOTAL				

\$5 to \$25 Deduct 10% \$50 to \$100 Deduct 30% \$25 to \$50 Deduct 20% Over \$100 Deduct 35%	
Subtotal	
Calif. residents only add 6% sales tax	
Subtotal	
Priority mail add .10%	
Total to send with order	
OFFICE USE:	
Check No. _____	By _____ Total _____

USE YOUR MASTER CHARGE

Card No.

Bank No.				Date Expires		
----------	--	--	--	--------------	--	--

Signature of Buyer _____

Your Name _____

Street Address _____

City _____ State _____ Zip _____



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POST OFFICE BOX 630
COLTON, CALIFORNIA 92324

PLEASE BE SURE . . .

- Your form is complete
- Your check for the full amount is enclosed
- Your return address label is complete and clear
- Your order is properly folded and sealed with two staples

NAUI DIVING ASSOCIATION

Post Office Box 630

Grand Terrace (Colton) California 92324



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FIRST FOLD



Christmas Orders from NAUI
Save Time, Money and Effort
Send a Gift that will be Truly
Appreciated by a Diver



FOURTH FOLD



BUSINESS REPLY ENVELOPE

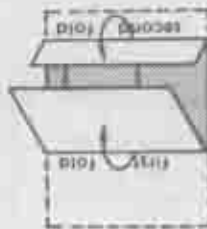
First Class Permit No. 148 Colton, California 92324

STAPLE

STAPLE

HOW TO USE
THIS
CONVENIENT
FORM

1. Complete your order and address.
2. Fold as illustrated.
3. Enclose check.
4. Seal with staples only.
5. No stamp required, just mail!



SECOND FOLD

THE MEDICAL EDITOR'S COLUMN

by Dr. Charles Brown

We interrupt the diving lore schedule this month to spotlight important information from hyperbaric authorities including Dr. Al Behnke. The way to avoid lung overpressure damage (air embolism, etc.) is to emphasize exhalation during ascent!!!! Wrong! Actually, that's a good way to embolize. Dr. Hattori of Pacific Grove has described two cases in point, both students exhaling under control while visibly exhaling all the way.

The rule should read: divers must avoid breath-holding during ascent. Apparently it seemed to instructors that the surest way to avoid breath-holding was to exhale, and somewhere along the line the emphasis changed from not breath-holding to actively exhaling. So what's wrong with this?



Lung tissue will be subjected to overpressure and will tear during ascent in either of two general situations. The first is indeed breath-holding: there is a general over-inflation till the weakest part gives way. The second is localized over-inflation behind an obstruction in a smaller airway.

Imagine that you have in one small air passage a growth, or swelling, or mucus plug, or spasm, or constricted scar—anything that nearly but not quite obstructs the passage. At depth, high pressure ambient air will slowly get through to the alveoli beyond. During a normal ascent, however, that same air cannot escape past the near-block rapidly enough, so the lung tissue behind the block becomes distended and ruptures. This is one reason all diver candidates should have chest X-rays, preferably PA and lateral, at full inspiration and expiration.

The big news is a similar sort of localized block and rupture can occur on a purely physiological basis. It is explained by the summation

of three factors. First, since the lung contains blood and tissue fluid, the upright posture imposes a hydrostatic pressure difference between the upper and lower parts of the lung, while air in the lung is at essentially the same pressure throughout. The tendency of liquids to run downhill means that in lower lung areas blood vessels will be fuller and tissue fluid more plentiful than in upper lung areas.

Second, immersion of the body in water instead of air negates the effect of gravity, at least below the rigid rib cage. In air, gravity causes blood to seek the abdomen and legs more than the head and chest, but in the water this effect is cancelled because higher pressure in the lower parts of the body is balanced by the higher ambient water pressure about them. The result is a net shift of perhaps a liter of blood into the chest, at the expense of air space, so all airways get smaller.

The third factor is exhalation. The lung's total volume changes greatly with inhalation and exhalation, while its liquid volume changes very little, so the change is primarily in airway volume.

To put it all together, certain small air passages in the lower lung, selectively narrowed by higher hydrostatic pressure due to upright posture, and further narrowed by fluid shift due to immersion, are finally shut down completely by the reduced lung volume at full exhalation. If exhalation is maintained during ascent, air in alveoli beyond these shut-down tubes must expand and rupture lung tissue.

So what must we teach? No breath-holding, but neither full exhalation. The ascending diver should either maintain his chest volume at the neutral comfort level, allowing air to spill out as it will, or should breath with a normal, comfortable tidal volume range.

MEDICAL EDITOR'S BOOK REVIEW

Medical Aspects of Sport Diving by Christopher Dueker, M.D.

For a single author to address a broad subject and produce a book both complete and accurate is a rare feat indeed. Dr. Dueker with his new edition has accomplished just this.

This volume takes the reader through a review of basic physics and physiology to a well informed layman's view of hyperbaric medicine today.

Recognizing the accelerated research makes any textbook a wee bit obsolete before it goes off the ways, we can nevertheless recommend this as the best available to interpret current diving medicine knowledge to the serious aficionado.

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DIVERS WIN FREEDOM INSTRUCTORS STILL IN BONDAGE

A REPORT ON THE L.A. COUNTY SCUBA DIVING ORDINANCE

An Editorial by Jon Hardy, NAUI General Manager

During September, The Los Angeles County Board of Supervisors reviewed the reports of the L.A. County Department of Parks & Recreation calling for repeal of most of the Ordinance and the reports from the diving community calling for total repeal of the Ordinance. After several weeks of discussion with additional written and verbal input, including TV, radio and press coverage, the Board of Supervisors voted for partial repeal of the Ordinance.

Two Supervisors, Hayes and Schabaram went for total repeal but Ward and Edelman blocked this and deadlocked the issue so only partial repeal was possible.

During this whole issue NAUI has been leading the way for freedom in diving with the support of the other members of NSTC, DEMA, USA, CBOA and others. Repeatedly in behalf of the diving community, I went to the Supervisors and Department asking for total repeal and providing the mass of evidence that is now documented and is available for use wherever there may be legislative problems.

A major part of my testimony before the final vote included:

20 years ago the County of Los Angeles started the first diver and instructor training programs. One year ago, the diving community came to a greatly increased awareness of responsibility to the citizen diver.

Now through a major cooperative effort by the County and the diving community, we are on the threshold of a new era in diving safety. This can be done through self regulation, by the diving industry, with the support and monitoring of the County. Together we can take the time to do it right; to gather the information and to find the causes of accidents, so that effective regulations can be put into effect to prevent accidents. As of yesterday, we received final approval from all national training organizations; we have now increased the open water training minimum to meet or exceed the County Ordinance on a national level. This is a breakthrough as we have learned that the best way to decrease diver error is to increase open water training.

Rather than using an unenforceable law as a threat to decrease diving accidents by greatly decreasing diving activity; together we can upgrade both standards and ethical behavior on a national level, rather than a local level. A precedent here of a local scuba law would encourage a multiplicity of local laws, each different, which would make it impossible to establish or maintain any reasonable national standard.

CONT. NEXT PAGE



We know the Department of Parks & Recreation wants and needs the cooperation of the diving industry, in this area of diving safety. We have given that cooperation and wish to continue together. In order to keep the entire diving community behind this effort, we believe total repeal of the Ordinance is necessary.

In spite of this and the original report submitted justifying total repeal with the hundreds of pages of evidence and the later report directly to the Board of Supervisors, the Director of the Parks and Recreation recommended partial repeal. There is absolutely no evidence that any of the remaining parts of the ordinance will as a law, make diving any safer than self regulation. All the diving community's cooperation and support was based on total repeal.

So there is a law which sets the precedent that any local government can have its own scuba diving law. The County carefully removed all those parts that may have been unconstitutional so that a legal injunction would now serve little or no purpose. Additionally, the parts about recertification that most enraged the citizens were removed in order to stop the public protest.

There are now *no* parts in the Ordinance which affect already certified divers, so divers are now free of possible criminal action. The standards for the training of divers and instructors remain, along with boat safety equipment requirements. The only possible criminals are now the instructors and boat operators. The diver training organizations and their instructors must be careful when teaching in LA County that all standards are met. This care includes being careful about changes which may be an innovation or striving for excellence which may not be allowed for in the Ordinance.

The Ordinance no longer deals directly with diving safety, but it appears that political face saving influenced the decision over and above the rights and interests of the citizens who make up the diving industry.

The diving community has paid the price and learned a great deal. We can have enforcement of responsible self regulation on a national level through industry cooperation, not laws.

Therefore, we must move on for we have many divers to serve whose lives and safety are far more important than the politics of Los Angeles County. The L.A. County Underwater Program was the first of its kind. It outlived its usefulness and is now a political tool—that is sad.

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Another year has come and gone. Time flies when you're having fun, and putting out NAUI NEWS is one of the more enjoyable duties I have at Headquarters. I compared this year's issues of NAUI NEWS to those of 1974 and was pleased to notice the improved format, graphics and features. The outstanding contributions by members such as C.L. Smith, the fine column by Medical Editor, Dr. Brown, and the illustrations by Jim Mitchell have helped greatly to improve our newsletter. We also had input from NDA members and instructors of other organizations.

The 1976 NEWS will incorporate new ideas to make our communication tool more attractive and appealing. You will find longer, more technical articles on diving in each issue; each month a Personality Spotlight column will focus on an outstanding member of NAUI; and there will be more practical information for the diver.

On behalf of NAUI, I'd like to thank very much all the contributors to the NEWS for 1975 for their articles and photos, and to invite all the readers to contribute to NAUI NEWS for 1976. If you have a personal conviction on a diving subject, express it in NAUI NEWS. If you have a super photo or some artwork you're proud of, get it published. All graphics will be returned if requested. NAUI NEWS is a communication tool where many policies and philosophies are expressed and developed. You can influence NAUI by supporting the NEWS.

My goal is to continue to improve NAUI NEWS with your support and to get it to you consistently on time. I wish you the warmest season's greetings and good fortune for '76. I hope to meet and correspond with many new contributors in the coming year.

Peace,
Dennis Graver
Editor/Publisher

AN AID FOR FARSIGHTED DIVERS

by Joel A. Clark, Jr., M.D., NAUI 3470

At about age forty most people develop some degree of difficulty in clearly seeing small objects close to the eyes, while retaining relatively normal visual acuity for distant observation. This condition which is known as presbyopia (from the Greek meaning "old eye") results from a reduction of elasticity of the lens of the eye and is a consequence of the normal aging process. Reading glasses or bifocals are usually employed to compensate for this difficulty.

Presbyopia presents a problem to older divers in that they may experience difficulty in reading instruments and dials under water. This is particularly troublesome in conditions of poor illumination or dirty water when the instrument must be held closer to the eyes to be adequately visible.

Several years ago a diving friend of mine introduced me to a simple and inexpensive modification of equipment which may be of interest to other instructors and divers who are affected with presbyopia or who are simply farsighted. This consists of a small magnifying lens cemented to the inside of the face plate of my mask slightly out of the line of my normal forward vision. Since my watch, depth gauge and submersible pressure gauge are carried on my left side, I place the lens in the lower left corner of the mask as shown in the photograph. The lens is plano-convex and has a flat surface on one side to fit flush against the flat surface of the face plate. It is held in place by clear epoxy cement but perhaps special lens cement would be preferable if available. I chose a lens of 15 mm diameter with a focal length of approximately 150 mm but in retrospect I believe a focal length of about 180 mm would be preferable.



These lenses are relatively cheap and several diameters and focal lengths could be tried before final selection by temporarily fixing them to the face plate with clear cellulose tape. I also found this tape useful in holding the lens in place until the cement dried. These lenses can be purchased from optical supply firms such as the Edmund Scientific Company.

CNCA ANNOUNCES SCUBA VISUAL AIDS

The Council for National Cooperation in Aquatics, Inc. (CNCA) announced the availability of visual aids to complement its popular scuba diving text, *The New Science of Skin and Scuba Diving*. "Bernie" Empleton, Executive Director of CNCA, said arrangements had been completed with Hytone Film Lab, Inc. of Des Moines, Iowa, to make all the illustrations and tables contained in "New Science" available in the form of 2x2 slides and overhead projection transparencies. "Our hope," said Empleton, "was to make these visual aids available at a low cost, easily obtainable basis. I feel we have succeeded."

Jay Hytone, president of the Des Moines firm indicated instructors will be able to order the aids in either format by plate number in "New Science." Slides will cost fifty cents each or \$40.00 for a set of all illustrations. Overhead transparencies will sell for \$2.50 each. Ordering details are available from the firm. Hytone is a certified YMCA scuba instructor and also serves as Scuba Commissioner for Mid-America Region YMCAs. He has been field testing the visual aids for the past year.

Interested instructors should contact: Hytone Film Lab, Inc., Box 541, Des Moines, Iowa 50302

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NEW REGULATOR CHARTS AVAILABLE

Healthways is now offering to Dive Shops and Instructors a set of six regulator and valve charts that show the principle of regulators and valves as they are made today and the way they were made in the past. These easy to read, five color, 18" x 21" charts are laminated in plastic to make them pool-proof. They are designed to help students understand how their regulators and valves work. Healthways is offering this long time lasting chart set for only \$13.49. For further information or ordering contact: Healthways, 5340 W. 102nd St., Los Angeles, CA 90045



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The Current Status of Underwater Archaeology

by John R. Fietemeyer, NAUI 2760

In the May issue of this newsletter, Mr. Daniel Lenihan suggested the need for dialogue dealing with the question of our role as instructors in helping preserve marine antiquities. I am delighted that this is finally being aired and feel some additional thoughts should be mentioned.

Before expressing my personal feelings, however, some comment on Mr. Lenihan's article is required. Lenihan correctly recognizes the distinction between treasure hunting and archaeology. The former is usually profit motivated, lacking any concept of proper excavational methods while the latter is supposedly versed in these and has some kind of historical and/or anthropological objective. Lenihan also states, "legitimate underwater archaeology can only be conducted under the supervision of professionals who are doing it in the overall context of a general resource management plan being coordinated by a state or federal agency or academic institution."

Having been directly involved in Middle and later Stone Age excavations in Africa and having surveyed the recent literature dealing with underwater archaeology, I feel this statement requires some modification and perhaps a strong objection! If we were to compare the excavational reports of an underwater site and, for example, a cave site, we would probably conclude that the former is often conducted in a haphazard and extremely naive manner. The former also seems to lack a rigorous concern for retrieving the total cultural complex and for the standardization of excavational methods. Furthermore, most underwater "digs" seem to be interested in retrieving only the most ostentatious objects which after only a cursory analysis, go directly to the museum displays. It is, therefore, my belief that the emerging field of underwater archaeology cannot be classified as a "legitimate" pursuit. Instead, it appears to be little more than glorified treasure hunting.

With this assumption in focus, I believe any immediate plans to retrieve underwater antiquities should be stopped, or at least postponed, until a board can be created from the community of underwater archaeological practitioners who can evaluate and standardize current methods of exhuming submerged cultural remains. In a few cases this may not be possible since some sites are in danger of being destroyed from man-made or natural causes. These sites should be "dug" under close supervision of this board and used as learning sites so that future generations of underwater

archaeologists may gain valuable field experience and competency in a highly technical field.



Many African countries have similar boards to the one I mention. Areas with high concentrations of archaeological deposits are placed under direct supervision of the "keeper of monuments." His duties involve recording all new discoveries and periodically inspecting known ones to make sure they are not being tampered with and to evaluate their overall condition. Similar positions could be created along our seaboard and in the Great Lakes to insure the continued existence and preservation of our submerged sites until we can develop more legitimate methods and build upon existing programs in our universities geared at training competent individuals to excavate them. Only in this manner do I believe underwater archaeology will evolve beyond its current stage of "antiquarianism" which its big brother, land-based archaeology, passed through many decades ago.

What can members of the ranks of NAUI do? First, we must continue to maintain a dialogue and decide upon a plan of action. It is our job to educate our students and the public at large as to the urgent and critical need to preserve our marine cultural remains. We must not forget that archaeology is basically destructive. Once a site has been excavated, it is gone forever. Many countries have become cognizant of this and require by law that part of the site be left intact so that future generations of archaeologists with their improved training can extract additional data on levels which had previously not been possible. This method is not feasible in underwater archaeology. We, therefore, must support and introduce legislation at all levels which is aimed at putting strong restraints on all marine excavations. Only if we do this will this valuable and endangered resource be protected so that future generations will enjoy and learn.

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Diving Safety and Lung Ventilation*

By Edwin G. Vail, Ph.D.
Naval Coastal Systems Laboratory

For many years, it has been stated that *inadequate lung ventilation is the single most prevalent disorder of pulmonary function in the undersea environment* where the diver retains carbon dioxide regardless of his activity level. What is the cause? How can it occur?

The cause can now be identified as *abnormal upper airway response* as the density of the breathing gas increases. This abnormal airway response is characterized as *airway collapse with gas trapping*. This condition is called *hyperbaric airway obstruction*. It is associated with asymptomatic upper airway respiratory disease. People with asymptomatic upper airway disease may trap, during rapid fast breathing, gas volumes ranging from 0.7 to 2.5 liters.

A summary is presented of five years of study and analysis of the dynamic pulmonary function capability of more than 500 divers, non-divers, and patients with respiratory disease. The following new facts have been learned about human respiratory mechanics affecting diving safety.

It has been established the maximum expiratory flow rate (MEFR) that anyone can produce with maximum effort, at sea level, is limited by upper airway collapse with gas trappings. The volume of gas trapped appears to be directly related to the degree of abnormal airway response to peak flow rates caused by the existence of upper airway disease.

Human pulmonary function may be defined as follows: Normal pulmonary function is defined as any individual who traps less than 0.7 liters of gas during performance of the maximum expiratory flow rate (MEFR), maximum breathing capacity (MCB), and maximum ventilation volume (MVV) maneuvers with a normal vital capacity.

Asymptomatic upper respiratory disease is defined as any individual who traps more than 0.7 liters of gas during the MEFR, MCB, and MVV maneuvers with a normal vital capacity and is not conscious of any breathing difficulty at sea level.

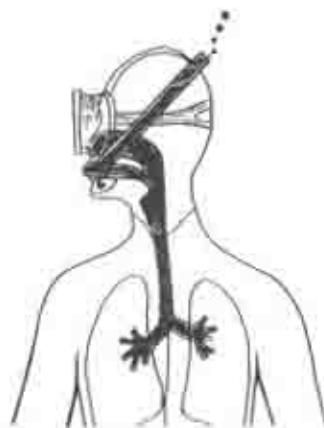
Clinical reports indicate that most human obstructive respiratory disease is probably initiated by *environmental and industrial air pollution*. These air pollutants irritate and damage the upper airways which are then very susceptible to secondary bacterial infection leading to

*Funded under the Navy Independent Research Task 0401-37. Opinions expressed are those of the author.

bronchitis. What pathological evidence exists indicates the disease process is slow, but additive, over periods of 5 to 15 years or more before becoming symptomatic. Individuals will vary in susceptibility to upper airway damage.

In an elastic tube, there will always be a peak flow rate at which the elastic tube will collapse. Human upper airways are described as visco-elastic tubes. As such, human upper airways will respond and vibrate differently to flow rates produced during inspiration and expiration. This airway response during rapid breathing is characterized by inspiratory airway closure followed by flutter, and expiratory airway collapse followed by flutter at the critical peak flow rates. As the gas density of the breathing mixture increases, this airway closure-flutter and collapse-flutter will occur at lower and lower peak flow rates.

In an elastic tube, when a peak flow rate causes collapse, there is an instantaneous reversal of gas flow opposite to the initial flow direction. This results in the loss of mass acceleration of gas out of the tube. This is the cause of gas trapping in the human lung. The volume of gas trapped is related to the total number of tubes which collapse. The volume of gas trapped represents an increased residual volume or added physiological dead space through which oxygen and carbon dioxide must diffuse to the ventilation units and the pulmonary capillaries before effective gas exchange can occur. Adding or increasing expiratory resistance does not prevent collapse of an elastic tube. It only changes the point in the tube where collapse occurs.



Read about hyperbaric airway obstruction.

Does this mean that people with asymptomatic upper respiratory disease must stop diving? Not necessarily, they should know the extent of any airway problems which may interfere with adequate lung ventilation. They should be aware that they may have a *safe diving depth limit* due to the increased density of the breathing gas. Diving beyond this limit may lead to inadequate lung ventilation resulting in hypoxia and carbon dioxide accumulation.

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What are the diving safety implications?

We must consider the ventilation problem for people with asymptomatic upper airway disease who trap more than 0.7 liters of gas. Because of their abnormal airway response, there is a greater possibility that airway collapse with gas trapping will occur at lower flow rates than for normal airways while diving. The probability of these people becoming both *hypoxic* and *hypercapnia* (high retention of carbon dioxide) at any activity level over resting is very great while diving.

We have been successful, with both divers and patients with pulmonary insufficiency, in establishing a flow rate-volume-time cycle which provides adequate lung ventilation for light and moderate exercise without gas trappings.

We know that the normal *elastic limit* of mammalian lung tissue under static pressure load is approximately 100 mm Hg at rupture in the closed chest. We *do not know* what localized lobular infection will do in reducing the elastic strength of human lung tissue. The number of incidents of spontaneous pneumothorax reported in the medical literature leads one to suspect that *lung rupture may occur at differential pressures of 1 psi or less in the presence of disease.*

Diving Safety Rule: Always maintain sufficient breathing gas for a normal safe ascent. Never make an emergency ascent at a rate faster than expired gas bubbles rise toward the surface. Never hold your breath.

It is strongly suspected that those individuals who are identified as abnormal *gas trappers* at sea level may be *more susceptible* to *decompression hits* while diving on *standard bottom tables*. This is based upon the study of more than 20 divers who after pulmonary function tests were identified as abnormal gas trappers. The ventilation problem was carefully explained to each diver. They learned to breathe while diving in a manner that avoids their abnormal airway response. On the other hand, two divers have been studied after decompression hits who trapped more than 1.0 liters of gas during the MEFR maneuver breathing air at sea level. One diver (civilian) was studied after a spinal hit and the other (a professional) after his third hit. Both of these divers were hit after dives to approximately 100 feet on compressed air using standard bottom tables.

Using dynamic pulmonary function data, the cause of the bends incidents for these two divers may be reconstructed. The gas trapping in the above case represents 31% of the divers vital capacity. *This is a significant increase in lung*

deadspace through which oxygen and carbon dioxide must diffuse before gas exchange can occur with the pulmonary capillaries. The resultant effect can only be inadequate lung ventilation leading to hypoxia and carbon dioxide rapidly increases in the blood, it will begin to interfere with oxygen transport as well as gas exchange in the ventilation units of the lung. The stage is set for bubble formation on decompression. It is strongly suspected with the high diffusion rate of carbon dioxide that once a bubble is formed any excess carbon dioxide could rapidly equilibrate within the gas bubble, causing it to grow in size. Result can be bends. An excess of carbon dioxide must be suspected as a contributing cause.

Diving Safety Rule: Inadequate lung ventilation may play a significant role in the production of bends for individuals whose pulmonary function test shows evidence of abnormal gas trapping. *Each diver should know their dynamic pulmonary function capability. Each diver should know their estimated maximum safe diving depth for breathing compressed air.*

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Jack McKenney photo



What is your respiratory depth limit?

DIVING SAFETY . . . Cont.

Thoracic squeeze and rate of compression may also be contributing factors in deep dives leading to inadequate lung ventilation. Dr. Jacques Chouteau, faculte des Sciences Saint Charles, Marseille, France, has reported animal data which suggests that a rapid compression rate may produce localized areas of atelectasis (lung collapse) as a result of rapid gas compression. He found this does not occur if compression stops are used at stated intervals in attaining maximum diving depth. Add to this, thoracic squeeze from increasing hydrostatic pressure and the possibility of localized areas of lung collapse in some individuals may actually occur. Once collapse occurs, it is very difficult to breath deep enough in a short period of time to re-inflate such a lung.

Diving Safety Rule: It may not be wise to make a very rapid descent wherein rapid compression may reduce effective lung volume. When this occurs with thoracic squeeze and gas trapping then inadequate lung ventilation will lead to *hypoxia and immediate accumulation of carbon dioxide*. Therefore, a carefully planned dive should include stops at stated intervals to allow the lungs to equilibrate with the pressure changes.

Experiment: If you have a decompression chamber available, you can check this compression problem. Simply take a balloon and fill it with air, put it in the chamber and rapidly compress it to two atmospheres or more and note the decrease in size. Seeing is believing.

Summary

The results of five years of study into the cause of *inadequate ventilation with carbon dioxide accumulation and hypoxia* in divers can be explained as *caused by abnormal upper airway response to the increased density of the breathing gas resulting in airway collapse with gas trapping*. The physiological effects of hyperbaric airway obstruction correlate with the ventilation problems of patients with chronic obstructive respiratory disease.

Individuals with asymptomatic upper airway disease will experience breathing problems while diving which can compromise diving safety. However, identification of the extent of the upper airway problem and the quantity of gas trapped can be used to establish flow-volume-time respiratory cycles which can assure adequate lung ventilation to their estimated *maximum safe diving depth*.

One of the first signs of *inadequate ventilation* is a headache on returning to the surface. This problem has been solved in a number of divers by establishing a new breathing pattern.

An optimum breathing pattern was found to be 8 to 12 cycles per minute with a volume of 1.5 liters. It is interesting to note that in the professional divers studied with 15 years or more diving experience, who have never had bends or "Narcosis" at any depth down to 180 feet breathing compressed air, were found to breath at 6 to 10 cycles per minute with volumes ranging from 1.5 to 3.5 liters. Volume is related to vital capacity.

Don Morrison photo



Do you know the optimum breathing pattern?

It is strongly suspected that bends incidents are directly related to *inadequate ventilation* in the diver. What goes in through the lungs must come out through lungs. It is also suspected that excessive carbon dioxide may play a more significant role in both bubble formation and growth in producing bends.

It is not always popular to doubt accepted hypothesis. Hopefully, the information contained herein will help divers improve their lung ventilation while diving, avoid bends incidents, and "Narcosis." It is important to remember all divers will have a maximum safe diving depth breathing compressed air which will avoid these problems. Dive Safer! For beyond your safe diving depth, there may be trouble.

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CHECK YOUR TANK— HAVE IT HYDRO TESTED

We would urge all members to regularly check their tanks for signs of corrosion, especially in the neck/valve area and under the tank boot. Although the law states that tanks need only be hydrostatic tested every five years, you will find that most Air Stations (including UNEXSO) require a test at least every two years.

An example of the absolute necessity for regular inspection and testing was evident at UNEXSO's air station in March 1974. An aluminum scuba cylinder of British manufacture was brought in for filling. The pressure rating of the tank was 4950 psi and a recent hydro test and visual inspection had been carried out. As the charging pressure reached 2900 psi the cylinder ruptured, causing extensive damage within the immediate area, and completely destroying the water filled, reinforced concrete bunker specially constructed to contain such an explosion. This reinforced 8" thick concrete bunker no doubt prevented serious injury to the two persons who were in the immediate vicinity at the time.

Take a few minutes *NOW* to check your tank.

- Has it had a Hydrostatic Test within the last two years?
- When was the last time it was internally visually inspected?
- Remove the tank boot—any corrosion?
- Open the valve and see if any water vapor sprays out. Dry air is clear, damp air is whitish.
- Take a whiff. Wet rust smells damp and metallic. Dry air is odorless.
- Press your ear against the cylinder, tip it, and listen. Good tanks are quiet.

Remember . . . A tank exploding in the back of your car could really spoil your day!!!

Reprinted from The Underwater Explorer

TOO PROUD — TOO ASHAMED

by Paul Johnston, NAUI 2677

Are you too proud or too ashamed to tell your students of diving errors you have made that were dangerous or potentially harmful? Would you rather your students think of you as a "God-like super diver" or as a really super instructor that can admit he is human and has made mistakes?

Think of things you have done incorrectly while you have been diving and tell your students the important lessons that were learned. When we can be critical of our own careless actions in addition to commenting on diving techniques of others, we can have more credibility with our students.

Try this in your next advanced class. When covering diving safety, work up a discussion

with your students on situations that have occurred to you and to them that were dangerous due to their carelessness. It can be a very interesting learning experience for everyone.

When we can objectively analyze our diving habits, a difficult task indeed, then we instructors can more closely approach the ideal of "Safety Through Education."

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NOTICE TO ALL DIVERS IN CALIFORNIA

Members of the California diving community are constantly requesting information regarding currently operational Recompression Chambers available for treatment of Decompression Sickness and Air Embolism. Listed below are the only three currently active double-lock hyperbaric chambers in California. These three facilities have trained personnel available on a 24-hour basis for the treatment of diving accidents. Please note that *single-lock* chambers, such as the small one-man chambers, are inadequate and dangerous for treatment of diving accidents and can only be used in special cases for transportation of a patient to a double-lock chamber. When calling the numbers below, please state that you have an *emergency diving accident*; otherwise, do not call these numbers.

1. *Southern California* (excluding San Diego area) University of Southern California Santa Catalina Recompression Chamber, Santa Catalina Island — Contact: U.S. Coast Guard Rescue Coordination Center (213) 590-2225 — by radio: channel 16 or 2181.
2. *San Diego area*: U.S. Navy Base, San Diego Contact: (714) 225-6818 or U.S. Coast Guard
3. *Northern California*: Castle Air Force Base, Merced — Contact: U.S. Air Force Decompression Unit, (512) 536-3278

For further information contact: Dr. Andrew A. Pilmanis, (213) 746-6792.

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DRUGS AND DIVING INFO SOUGHT

The Behavioral Sciences Department of the Naval Medical Research Institute is seeking information concerning the effects of using prescription and over-the-counter type medications while diving. Anyone having knowledge of *drug related* problems or accidents which have occurred while diving is asked to inform Dr. J. M. Walsh, Naval Medical Research Institute, Bethesda, Maryland 20014. The following information would be helpful:

Drug _____ Dose _____ Water temperature _____
Visibility _____ Symptoms (e.g. nausea, black-out, tremor, disorientation, etc.) _____

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NAUI NEWS BIBLIOGRAPHY FOR 1975

For your convenience, the articles of NAUI NEWS for 1975 have been divided into three categories for easy reference: *Instruction*, *General Interest* and *NAUI Information*. Only information articles are included. Travel, letters, comments, activity reports, book reviews and advertisements are not listed.

Here's hoping you will find the bibliography useful for the future. Best wishes for 1976.

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Meckelnburg	Doppler Ultra Sound For Detection of Bends	Jun	15-16	BOD Meeting Highlights	Jan	5
Quinn	Go And Tow?	Jun	6	New Board Member—Jon Hardy	Jan	5
Rolfe	Smoking (Plain Poison)	Aug	21	President's Message	Jan	11
Sams	Bogged Down With Clogged Up Ears?	Aug	20	Code of Ethics to be Revised by National Committee	Jan	11
Savage	Sport Diving VS Professional Diving—Do You Distinguish the Difference?	Jul	20-21	NAUI Canada—New Officers and Plans	Jan	12-13
				Individual Instructors Can Certify Assistants	Feb	13
Smith	Our Thermal Handicap As Divers	May	18-19	Renewal Time for Assistant Instructors and Leaders	Feb	13
	Weighting For Fresh Water	Jun	18	NAUI Equipment Policy	Mar/Apr	4-5
	Simplified Procedures For Ocean Divers At Altitude	Sept	5	Housecleaning—Self Regulation	May	2-3
				Words to the Wise	May	10-11
				By-Laws Ballot Change	Jun	10
				BOD Nominations	Jun	10
				Skin Diving Leaders VS Assistant Instructor—What's the Difference	Jun	11
				NAUI Reorganization	Jul	2
				NAUI Reorganization	Aug	2-5
				How Much Do I Have to Teach	Jul	6
				Assistant Instructors Don't Have to Become Instructors	Jul	7
				This Is Where We Stand On NDA	Jul	11
				Facts About NAUI—Headquarters and Finances	Aug	14-15
				Assistant Instructors—What They May and May Not Do	Sept	10
				NAUI Standards Changers	Nov/Dec	10-11

Calendar of Events

INSTRUCTOR TRAINING COURSES: (1976)

- Jan. 28-May 12 San Diego, CA
(Semester ITC, San Diego State University)
Mark Flahan, Director
4971 Mt. Gaywas Dr., San Diego, CA 92117
- Mar. 6-June 5 Rockport, MA (Weekends)
Fred Calhoun, Director
Box 291, Back Bay Annex, Boston, MA 02117
- April 10-17 Catalina Island, CA
Homer Fletcher, Director
2273 Cove Ave., Los Angeles, CA 90039
- May 13-29 Edinburg, TX
Don Lyles, Director
1407 Cedar Dr.
Edinburg, TX 78539
- June Atherton, CA
Martyn Perry, Director
Menlo School & College, Menlo Park, CA
94025
- June San Diego, CA
NAUI South Pacific Branch
4971 Mt. Gaywas Dr., San Diego, CA 92117
- June Youngstown, OH
Howard Ring, Director
3121 Davison Ave.
Erie, PA 16504
- July 23-31 Peterborough, Ontario, Canada
NAUI Canada
Box 510, Etobicoke, Ontario, Canada
- July Vancouver, B.C., Canada
NAUI Canada
Box 510, Etobicoke, Ontario, Canada
- August 7-15 Charlotte, NC
Ed Hipp, M.D., Director
1350 Kings Dr., Charlotte, NC 28207
- August Chicago, IL
George Buetow, Director
2100 S. 9th Ave.
Maywood, IL 60153
- August Halifax, N.S., Canada
NAUI Canada
Box 510, Etobicoke, Ontario, Canada

SEMINARS, SYMPOSIUMS AND WORKSHOPS:

- Dec. 4 Ice Diving Workshop
Cleveland, OH
Howard Ring
3121 Davison Ave.
Erie, PA 16504
- Dec. 8 CPR Workshop
La Habra, CA
Jim Hicks, Director
401 S. Palm St.
La Habra, CA 90631
- Jan. 18, '76 Ice Diving Workshop
Milwaukee, WI
Marcel Lachenmann
c/o Hi Lo Dive Shop
2061 N. 26th Street
Milwaukee, WI 53205

- Feb. 1 NAUI Dives Maine
Portland, ME
NAUI North Atlantic Branch
Box 291, Back Bay Annex, Boston, MA 02117
- Feb. 15 Ice Diving Workshop
Milwaukee, WI
Marcel Lachenmann
c/o Hi Lo Dive Shop
2061 N. 26th Street
Milwaukee, WI 53205
- Feb. 23-28 Univ. of Hawaii Diving Physicians Course
Truk, Micronesia
Jon Pegg, M.D.
Box 1384
Honolulu, HI 96807
- Feb. 27-29 Ice Divemaster Seminar
Trenton, Ontario, Canada
NAUI Canada
Box 510 Etobicoke, Ontario, Canada
- Feb. Ice Diving Workshop
St. Paul, MN
Jeff Furst
c/o Scuba Center
5015 Penn Ave. So.
Minneapolis, MN
- Mar. 6-7 Diving Emergencies Workshop
San Diego, CA
NAUI South Pacific Branch
4971 Mt. Gaywas Drive, San Diego, CA 92117
- Mar. 20-21 Man In The Sea Symposium
Seattle, WA
NAUI North Pacific Branch
6531 N.E. 198th St., Seattle, WA 98155
- March Equipment Seminar
Philadelphia, PA
NAUI Mid-Atlantic Branch
Box 4080
Greenville, DE 19808
- April 2 Diver Legislation Meeting
Boston, MA
Wayne Anderson, Director
Box 908 Hyannis, MA 02601
- April 3 Underwater Symposium and Film Review
Boston, MA
Fred Calhoun, Director
Box 291, Back Bay Annex, Boston, MA 02117
- April 25 NAUI Instructor Underwater Film Review
San Diego, CA
NAUI South Pacific Branch
4971 Mt. Gaywas Dr., San Diego, CA 92117
- May 22-31, '76 ITC
Aviano Air Base, Italy
Jim Haynes, Director
Lt. Col. James L. Haynes 2115
Tuslog Det. 10, Box 1073
APO New York, 09289

We would be happy to list Sport, Advanced, and Specialty courses by NAUI Instructors as part of our calendar. Just get your listing to the Editor 6 weeks before the first day of the month of the issue in which you would like the listing to appear.



Letters of interest received by NAUI Instructors, Branch Managers, Board of Directors, Headquarters and the NAUI News Editor are presented in these columns.

SUPPORT YOUR DIVING RETAILER—AN ECHO by Bob Johnson, NAUI 2805

Hats off to Dennis Graver for his article in support of the diving retailers (page 22, NAUI NEWS, August, 1975). The four reasons he lists for supporting the dive shop are to the point and accurate.

Students cannot be blamed for wanting to buy their gear at the lowest possible price, and if their instructor offers to supply them with "Discount Gear", the student will probably accept it graciously.

Looking at the situation a little more closely, have a gander through your back issues of SKIN DIVER MAGAZINE, and you'll come upon a one-page promotion for pro dive stores entitled "Pure Air Is Priceless". SKIN DIVER "hits home" very nicely here where it's pointed out that it costs the store owner thousands of dollars to install that high pressure compressor, elaborate filter system, moisture separator, storage tank, water fill tank cooler, and all the other expensive goodies required to pump high pressure pure air. Doesn't he deserve your other Scuba business as well?

After, or perhaps during the class, the students are cautioned by Joe Instructor/Dealer: "Buy what you have to from a shop; that is air, parts, service, specialty items, but I'll give you a better price on the standard items."

The dive store stocks hundreds, if not thousands, of dollars worth of small parts for your regulator, tanks, valves and just about any other item that needs replacement parts or service. Let's face it, a store can't survive selling 20 cent "O" Rings, parts, air, and gadgets. He's there for a profit and carries a complete line of all needed items. If there's no profit, the store will fold and unless the student understands this, he's going to find himself in a town with no dive store, knocking on his gracious instructor's

door with a malfunctioning regulator, a poor-fitting wet suit, an empty tank and a fuzzy cloud in his mind as he ponders his Instructor/dealer's greeting: "Hi, Tom! . . . No . . . Gee, I'm only an instructor. You'll have to go over to the next state for all that stuff." But the next state has Instructor/Dealers too, and they're too busy "taking care" of their own students.

NAUI CANADA TO THE RESCUE

Re: Motor Vehicle Collision
Otonabee River
Near Trent University
Sunday August 3rd, 1975 1:22 A.M.

On the above item and date a small van went into the river at the above location.

Upon arrival of our Officer a short time later he found 8 to 10 fully equipped divers entering the water since a rumor existed persons were trapped inside, later proven false.

Let me at this time express my sincere appreciation for the prompt action of your group in what could have been a serious situation.

W.J. Shrubbs
Chief of Police
Peterborough, Ont. Canada

NORFOLK ITC SUPER

Dear Mr. Graver,

I want to offer a word of thanks and congratulations on behalf of the RED team who have just completed the NAUI ITC in Norfolk Virginia.

We believe that Ron Johnson and Lee Kvalnes ran a truly outstanding program and really put forth a great deal of effort to see that it was a success. It most certainly was. These two guys really were superb.

Thanks again, Dennis.

Andrew Bogdan
NAUI ????

— END OF LETTERS —

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— Book Review —

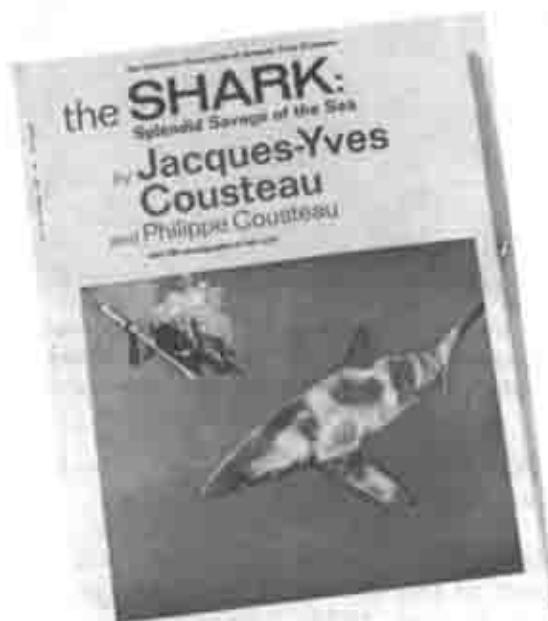
by Art Ullrich, Director of
Special Projects

THE SHARK: SPLENDID SAVAGES OF THE SEA by Jacques and Philippe Cousteau

JAWS it's not. This beautiful book tells it like the Calypso divers lived it. This is a factual description of Cousteau's findings while studying sharks over the years. There are some surprises and some disappointments about just what sharks do, will do and didn't do—but it leaves a lot of questions about what sharks might do. . .

At a time when movies, newspapers, paperbacks and TV exploit the unknown about this razor-blade toothed animal, we all need some facts to keep the ultimate story honest. Although "The Shark" is not absolutely conclusive, it will give every diver and diving instructor something more than sea stories and put some credibility in a reply to the age old, but most often asked question, "But what about sharks?"

227 pages — 7x10 — Color — 1970 — \$9.95



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