WINTER 1981

SEARCH & RESCUE

MAGAZINE

"MOUNTAIN RESCUE — LIFE SAVING HIGH ADVENTURE!

(See GARDEN OF THE GODS incident on Page 4)

SEARCH AND RESCUE MAGAZINE
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PUBLISHER'S FORUM

By DENNIS E. KELLEY

SEARCH & RESCUE MAGAZINE, you and I have embarked upon a significant new era of service for the SAR community. This broad new spectrum of benefits includes:

SEARCH & RESCUE MAGAZINE'S BONUS FEATURE — your special payoff each issue that is guaranteed to catch and hold your attention.

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Why the change? Since the Fall of 1973 SEARCH & RESCUE MAGAZINE hs vigorously served the SAR community. I am not personally satisfied that this service is good enough for these reasons:

1. Pages per issue and frequency of publication must be increased.
2. Color is particularly needed.
3. Production timing needs improvement.
4. Advertising is inadequate.
5. Feature and department material is generally limited to pure SAR subjects.
6. Readership is limited to the elite "in" group.
7. Public knowledge of SAR is surprising sparse.

The only wayt to remain a journal dedicated to our small, elite SAR readership and still improve this situation is to significantly raise the price of subscription.

Effective October 1, 1981 one year (1-yr.) SEARCH & RESCUE MAGAZINE subscriptions are only offered at the single price of sixty-four dollars ($64) per year. MANTRACKING and MOUNTAIN SEARCH FOR THE LOST VICTIM books are both twenty-four dollars ($24) each. Dealer bulk discounts are available on request. Advertising rates are unchanged.

This decision is not easy. I want your support now, not the sympathy others have gotten when they failed and closed their doors forever! SAR

NEWS & RUMORS

HELICOPTER ACCIDENTS INCREASING

NATIONAL TRANSPORTATION SAFETY BOARD — August 11, 1981 — The use of Rotorcraft — helicopters and gyroplanes — has increased significantly, but the rise has been *accompanied* by an upward trend in the number of accidents, the National Transportation Safety Board reported today.

The number of hours flown annually by rotorcraft in the United States increased from 1.55 million in 1976 to 2.56 million in 1979 — a rise of almost 65 percent. In contrast, the number of hours flown annually in general aviation fixed-wing aircraft increased by only 28 percent for the same period.

A Board special study entitled *"Review of Rotorcraft Accidents, 1977-1979,"* showed there were 890 rotorcraft accidents in the three-year period including 125 fatal accidents that claimed 205 lives.

Rotorcraft pilots were a major factor in the accidents. Specifically, the pilot was cited as a cause or related factor in 573 accidents, or 64 percent of the 889 rotorcraft accidents in which the Board cited a probable cause. In the fatal accident category, the pilot was cited as a cause or related factor in 74 of the 124 fatal accidents, or almost 60 percent of the total.

In analyzing pilot involvement, the Board said the pilot's manipulation of rotorcraft controls, or the techniques of operating the aircraft, was the key element involved in the accidents. For example, the pilot's failure to maintain adequate rotor revolutions per minute, or flight speed, was the most prevalent cause or factor. It was followed closely by the pilot's improper use of flight, powerplant and brake controls. Third, was the pilot's failure to avoid obstacles or other aircraft.

As a result of the study, the Board made a series of additional findings, including:

- weather was a factor in 17 percent of the fatal rotorcraft accidents.
- The primary cause of the difference in accident rates between general aviation fixed-wing aircraft and rotorcraft was the higher rate of mechanical failure in rotorcraft accidents.
- Pilot's involved in rotorcraft accidents were not generally "low-time" pilots.

Single copies of the Board's special study *"Review of Rotorcraft Accidents, 1977-1979,* may be obtained with charge by writing to the Publications Branch, Nation... Transportation Safety Board, Washington, D.C. 20594. Multiple copies may be purchased by mail from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

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CALENDAR

December 5
MARYLAND FIRE AND RESCUE INSTITUTE — CARE AND MAINTENANCE OF RESCUE TOOLS
University of Maryland, **College Park, Maryland**
Contact: John W. Hoglund, Maryland Fire & Rescue Institute, University of Maryland, College Park, MD 20742.
301/454-2416

December 6-10
SAFE SYMPOSIUM
Hotel Sahara, **Las Vegas, Nevada**
Contact: Jeani Ralston, SAFE Assoc.,
7252 Remmet Avenue, Suite 203, P.O. Box 631,
Canoga Park, CA 91303 213/994-6495

December 7-11
MANAGING THE SEARCH FUNCTION
Columbia Junior College, **Columbia, California**
Contact: Jim Mendonsa 209/532-3141

December 7-11
AIRCRAFT CRASH SPECIALIST SCHOOL
Treasure Island Inn, **Daytona Beach Shores, Florida**
Contact: Bob Whempner, Embry-Riddle Aeronautical University, Star Route Box 540,
Bunnell, FL 32101 904/672-3439

April 21-25, 1982
COLORADO SAR WORKSHOP
Four Seasons, Colorado Springs, Colorado
Contact: Stan Bush, 2415 East Maplewood Avenue,
Littleton, CO 80121 303/794-2304

SEARCH AND RESCUE MAGAZINE provides a way for rescu... from coast to coast to keep current with significant SAR even... Every issue we run a 'Calendar' column that simply lists SAR related conferences, schools, seminars, and events sponsored in your local area. Lead time is important so let us help you by keeping us abreast of current events in your area early. SAR

SEARCH & RESCUE

MAGAZINE
WINTER 1981

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FEATURES & DEPARTMENTS

EDITORIAL CONTRIBUTIONS: Desirable articles and photo essays include but are not limited to dramatic rescues, first hand search and rescue experiences and techniques, survival situations, technical and "how-to" features, and most everything of interest to the SAR community. Serious contributors should purchase a subscription for editorial content and guidelines.

Articles should be accompanied by photographs and/or graphics for acceptance. Minimum photo size is 5x7 B&W and/or color prints. Material should be submitted with stamped, self-addressed envelope. Allow six weeks for acknowledgement.

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THE GARDEN OF THE GODS

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In late November, 1978 a 12-year-old boy slipped and fell approximately 75 feet off a narrow ledge on Keyhole Rock in the Garden of the Gods, a city park near Colorado Springs, Colorado, composed of sandstone formations up to 300 feet high. Every year there are a number of accidents involving people scrambling on the rocks without rock climbing knowledge nor technical equipment. The boy landed in a flared crack 15 feet above a large ledge sustaining fractures of both legs, an arm, and possible internal injuries. The Colorado Springs Fire Department was first to respond, treating the boy for his superficial injuries and for shock in the cold temperatures of early evening. Shortly thereafter the El Paso County Search and Rescue team arrived and rapidly transferred him into a litter and evacuated him off the hazardous rock and to a waiting ambulance a half-mile away.

Ungrateful Rattler

Strikes Rescuer

Reprint from *RESCUE*
published monthly by the
Idaho Mountain Search and Rescue Unit, Inc.
P.O. Box 741, Boise, ID 83701
Editor: Larry Novak
208/376-4485

Bob Whited, a member of Idaho Mountain Search and Rescue, was bitten last month by a two-foot-long Great Basin rattlesnake that he had just captured in a garage belonging to a Boise couple.

Late Wednesday afternoon, July 29th, Doug and Cindy Smith found they had the unwelcome visitor in their garage. The Humane Society declined the invitation to capture it but did suggest they get in touch with Bob, who has had experience with the reptiles.

Bob found the snake under a freezer where he captured it with a snake noose. Unfortunately, since the snake was moving quite rapidly, the noose caught about four or five inches in back of the head, which allowed too much movement of the head. As Bob was dropping the snake into a zippered canvas bag it sunk its fangs into the end of one of Bob's fingers. He got it into the bag and then put a constricting band on his arm.

He was bitten about 6:15 p.m. and soon thereafter he was taken to the Emergency Rooms at St. Al's where he serves as one of IMSARU's or EMT volunteers on weekends.

Since they seldom get a snake bite victim in the Emergency Rooms, Bob became an instant celebrity. Doctors and nurses alike were interested in the snake-bite victim! And, needless to say, he got lots of TLC!

Bob was first tested for reaction to anti-venom and then the wound was excised to permit draining. He was then given 10 ml of anti-venom with glucose followed later with 30 ml more, all intravenously. He was given Emirin Compound with Codeine to help alleviate pain.

Swelling progressed through the fingers and hand on into the arm and with it there was extreme pain through to the pectoral area. Bob described the pain a day later as if someone were pulling on his fingertips and and his shoulder while at the same time pricking his arm with needles.

Nurses even flipped quarters to see who would get to inject him with Demerol.

Later Brett Wonenberg and Tony Kearns took Bob home. The following day there was extreme swelling in the fingers, hand and arm with quite a bit of discoloration about the finger and small blisters around the bite area. Since the wound had been excised, it was still draining body fluids and venom a week later. Keflex had been given to ward off infection.

Bob has the following advice for anyone unfortunate enough to be bitten by a rattlesnake:

When bitten on an extremity, do not try to hold the venom in the area; let it spread slowly. Holding it confined to the bite area will result in irreversible tissue damage. A constricting band, preferably three-fourths to an inch-and-a-half wide, should be placed above the bite, but not around a join — elbow, knee, wrist or ankle — and not around the head, neck or trunk. The band should be snug but loose enough for a couple fingers to be slipped underneath. The objective is to insure that the blood flow is not stopped and that the venom spreads slowly.

Do not make an incision over the fang marks. Get medical help and let the doctor make the incision. And do ***not*** suck on the wound. If you have a sore in your mouth or sore gums you likely will become poisoned.

You will experience considerable throbbing, some nausea and dizziness.

It is not recommended that cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy be used in first aid treatment of snakebite.

Above all, do not panic, you won't die.

SAR

THE NATURE OF PAIN

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CH-1213 Petit-Lancy/Geneva, Switzerland
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Assistance to the injured is now being taught as a specialized branch by many institutions in the various countries. A wide range of literature exists on this subject: first-aid booklets, manuals, etc. The purpose is to dispense knowledge about what should be done or not done when facing a casualty. In the majority of cases the victim suffers. It is therefore imperative that the first-aid worker should know the nature of pain. The following article deals precisely with this question and is taken from a study which appeared in the publication *"Casualty Simulations"* of the British Association "Casualties Union." The article itself is an excerpt from a conference held by the President of the said Association Mr. P.S. London.

WHAT IS PAIN?

This question is more easily asked than answered, which is perhaps surprising, because we have all felt it. It is a sensation and it is unpleasant — that much is easily agreed and it is generally regarded as being a warning inasmuch as actions which hurt are likely to be harmful. After that, one will most likely be reduced to trying to describe the pain that is felt.

HOW CAN PAIN BE DESCRIBED?

Many persons liken the pain they feel to causes that they have experienced such as burning, or to a property such as shooting or throbbing. Others resort to more or less imaginative descriptions such as a tight band around the head, "Like a red hot iron driven into the bowels" (this would be painless because the bowels are insensible of heat) and "Like a steam roller standing in the middle of my back," which is hardly consistent with survival. Pain is often described in terms of its severity as a twinge, niggling or as agony or excruciating and, again, the terms used reflect the personality of the person using them.

In fact, pain can be described in absolute terms although one could hardly expect the public to do so even if they knew how.

REFERRED PAIN

This is pain felt somewhere other than its source. Well known examples are sciatica, which is pain felt down the back of the thigh and leg (in the distribution of the sciatic nerve) but having its origin in the joints of the spine; pain behind the eyes, which has it origin in the joints and muscles at the base of the skull. Such pains can be likened to the puppet of a ventriloquist, which is not the source of the sounds which it seems to be uttering. The explanation is that whereas we are accurately aware of every inch of our skin we are only vaguely aware of the whereabouts of our muscles, joints and internal organs so that pain arising in them tends to be interpreted as coming from other parts of the body that are supplied by the same set of nerves that supply the originating structure. The pain of a heart attack may be felt in the arm because the nerves that supply the heart also supply the arm. One might put it rather crudely by saying that if the brain is offered a choice between the more familiar and the less familiar souces of pain within the territory supplied by a particular set of nerves it chooses the more familiar.

TYPES OF PAIN

If one touches the skin quite gently with a pin or a needle one feels the contact at an accurately localizable point but one also feels two pains in quick succession. The first sensation is a very short prick, the second occurs less than a second later, has a burning quality and takes a second or two to die away. These can reasonably be respectively described as immediate and delayed dermal or skin pain, corresponding with the common or garden terms prick and burning or smarting, or perhaps tingling.

If one were to push the pin or needle right through the skin the sensation would change and become less accurately localizable, more diffuse and less sharp or clear-cut in quality, in common parlance, more of an ache. These are the characteristics of deep pain.

All we need to do now is to describe the pain in terms of severity or degree, duration, whether continuous or intermittent, whether of constant or varying intensity and whether localized, spreading or shifting. It may now be helpful to describe well known painful experiences in absolute terms.

- **Aching:** deep pain, of low or moderate intensity, continuous and of fairly constant intensity, perhaps aggravated by movement and spreading briefly (shooting pain).
- **Boring:** This is like aching, but more severe.
- **Shooting or stabbing pain:** deep pain, of high intensity and brief duration; stabbing pain is localized, shooting pain may move or extend rapidly from one place to another. In fact, those that have been stabbed or shot may have felt a blow but usually feel no pain when they are injured.
- **Colic:** deep pain, that may be continuous or intermittent but is of high but variable intensity.
- **Throbbing:** deep pain, of moderate but fairly rapidly fluctuating intensity.
- **Burning:** Delayed dermal pain of moderate to high intensity.
- **Tingling, tickling:** dermal pain of moderate degree.
- **Twinges:** brief, deep pain of fairly high intensity.

However accurate this way of describing pain may be it does not have the more personal, and dramatic quality of the popular terms.

CAUSES OF PAIN

Most pains have obvious causes such as an abscess, a cut, a bruise, a fracture, a sting, or gall stones or eating something that has disagreed with one but some have no such cause, although they may be very severe.

Herpes (shingles) can be followed by severe and lasting pain this is believed to be the result of destruction by the disease of some cells and fibres carrying messages to the brain. Partial division of the median nerve at the wrist is sometimes followed by intense and persistent burning pain known as causalgia. Even more mysterious, but no less unpleasant, is the "Phantom" pain that is felt in a missing part such as an amputated limb.

It used to be thought that pain was a special sensation in its own right, as it were, like sensations of heat, pressure, position, touch, etc., and that it had its own nerve fibres. It is now believed that pain is not so much a special sensation as the result of an imbalance of messages reaching the brain. A current hypothesis likens the process whereby pain is, or is not, felt, to the opening and closing of a gate. Some messages "close the gate" so that pain does not get through and one may think of cases in which intensity of concentration or pleasure renders a person unaware, for the time being, of having been injured. In other cases, the "gate" is opened so that pain is felt in conditions that would not otherwise be painful; depression may "uncover" or intensify pain in this way. Another way of thinking of it is that the presence or absence of pain can depend on a balance of messages reaching the brain; thus partial damage to a nerve may so disturb the balance as to cause pain.

TREATMENT OF PAIN

Rest, support, liniments, tablets, injections and drainage of abscesses are all familiar ways of relieving pain; less familiar are tapping, acupuncture and electrical stimulation, also the interruption by cutting or chemicals of nervous pathways that carry pain messages to the brain. Local analgesia is perhaps the most familiar of these but nevertheless, one of the most generally useful ways of easing pain depends on altering a person's attitude.

A man with long-standing paralysis of one arm suffered severe and unrelenting pain in it. He went to Lourdes and on his return he expressed the belief that the pain was the same but that his attitude to it was different.

A man who complained of severe pain in his foot after an operation dropped off to sleep while a doctor was talking to him in a reassuring way and without any attempt at hypnosis.

Patients who can dose themselves require less pain killers than those that have to ask for it and may therefore do it sooner rather

than later so as to be "on the safe side." We can stand a certain amount of pain, which varies enormously from person to person and according to mood and circumstances in the individual person, but we are much more likely to call for relief if we think that the pain is likely to get worse.

LESSONS FOR STAGING AND ACTING

There is an understandable tendency for those playing the part of the ill or hurt to "act pain" in a sterotyped way but this takes no account of individual variations. It is helpful to think of pain as being not only what one feels but how one feels about it, which should at once make it clear that the behavour of a person in pain depends not only on the severity of the pain but on the temperament of the person concerned and upon the mood of the moment.

When acting the part of a person in pain one should ask oneself, "If this were genuine, how would I behave?" That is a start but one has to bear in mind the way in which anxiety, tension and movement may affect the pain and act accordingly. Some examples may be helpful.

The victim of a broken limb may quickly find that by keeping the limb still and also by relaxing it completely it causes no more than an easily tolerable aching. A stoical person may allow the part to be handled carefully without complaint and converse normally with those around. A less stoical person may at once become tense if the part is handled or moved and at once complain of pain, for which he may hold the handler responsible. A nervous or frightened person may not keep still or relax at all and may complain continually of pain, in words, or by cries, with or without tears.

What goes on does not depend on the casualty, those around can have a striking effect on his (or her) behaviour. Confidence in the "handler" usually inspires confidence in the casualty and a competent performance by the handler reinforces the casualty's confidence in him — and vice versa.

For the person that has to deal with a painful part the following procedure should be adopted:

1. Gain the attention of the casualty. Request all others to refrain from touching or talking to the casualty, remembering that it may not be easy so to persuade a distraught mother or to break through the barrier of fear. A commanding manner may at times be necessary.
2. Explain what has to be done, but do only what really has to be done.
3. Explain that pain is lessened by being relaxed and be sure to do so in the way that the person before you is most likely to understand.
4. Explain that the casualty will hurt himself if he jumps or resists but if anything that is done to him does cause discomfort he may at once say "Stop," and the action will stop.
5. Move slowly and place the hands carefully where they will not cause pain.
6. Move them carefully to the painful region.
7. Do whatever has to be done slowly and steadily, encouraging the casualty to relax and commending success in this.
8. Stop at once if asked to do so. This marks you as a person to be trusted. In many cases the casualty feels some discomfort and calls a halt "to be on the safe side." If reassured that he will feel no more pain than that he will usually allow the handler to proceed. In other cases, the casualty has become tense and has hurt himself by doing so. This should be pointed out, he should be told to relax and nothing more should be done until he has relaxed.

The nervous handler may be incapable of securing the co-operation of the casualty, he may lack the confidence to handle the injured part and the ability to do so without causing pain. He may therefore have to confine his activities to reassurance and making the casualty comfortable without disturbing him.

The casualty's performance will depend upon his or her temperament, ability to grasp the handler's instructions and purpose, ability to relax and his reaction to the handler's manner and bearing. A skillful performance requires a lively imagination as well as insight and perceptiveness and all this needs to be based upon clear ideas about what pain is and how it can be affected to better or worse. **SAR**

CPR UPDATE

On Scene — **The National Maritime SAR Review, Commandant, U.S. Coast Guard, Washington, DC 20590**

Remember how hard you had to work to master each step of cardiopulmonary resuscitation (CPR), and the endless miles of RususciAnnie tape it took to produce a perfect tracing? Well, on 1 August 1980 brand new standards of CPR were published in the Journal of American Medical Association which were the recommendations of the National Research Council of the American Academy of Sciences. These changes have been adopted by both the American Red Cross and the American Heart Association, and they are being incorporated into a new Commandant Instruction on CPR, which should be published early in 1981.

Now, before you assume that all your knowledge and skill in CPR is outdated, be assured that the way you learned CPR is still valid, and it will still save lives! The changes are just perfections in the techniques of CPR which come about because of medical research and general agreement among resuscitation experts. Those of you who have graduated from the EMT School or the HM "A" School since September, 1980 have already had the changes incorporated into your CPR training. For everyone else, the changes are simple, few in number, and easy to put into your CPR routine. Here are the new modifications:

1) An infant is now defined as a person less than one year of age, and a child is now defined as a person between one and eight years of age.

2) The chest compression rate for infants is now 100 per minute (instead of 100-120), and the chest compression rate for children is 80 per minute (instead of 80-100).

Continued

CPR UPDATE Continued

3) The *maximum* depth of chest compression in an infant is now one inch (instead of 3/4").

4) The *minimum* depth of chest compression in a child is now one inch (instead of 3/4").

5) To feel for a pulse in an infant, you no longer feel over the left nipple (apical pulse), but instead feel for a brachial pulse (over the inner side of the upper arm at its midpoint). The reason for this is that when a pulse is felt in the brachial artery, the heart is pumping adequately; when no pulse is felt in the brachial artery, the infant is assumed to be in cardiac arrest. The apical pulse was found to be too unreliable in infants, and the carotid pulse is too difficult to obtain on most infants due to their short, thick necks.

6) *Never* use an abdominal thurst (Heimlich maneuver) for treating obstructed airways in infants and children.

7) For a second rescuer joining a person already performing CPR alone:

a. The second rescuer should identify himself and let the first rescuer know that he is willing to help.

b. Without stopping CPR, the single rescuer lets the second rescuer know that he wants him to assist and is ready to switch over to two rescuer CPR.

c. The second rescuer will need to check the victim's pulse himself to assure that the first rescuer has correctly interpreted the victim's condition. He should kneel down on the side of the victim opposite the first rescuer, in position for rescue breathing, his fingers in position to feel the victim's carotid pulse. If compressions are adequate, a pulse should be felt; if no pulse is felt, the compressor's technique should be reevaluated.

d. When the second rescuer can feel a pulse with each compression, he calls out "Stop Compressions."

e. The first rescuer stops compressing for five seconds so that the second rescuer can check if the victim has a spontaneous pulse.

f. Tell the first rescuer "continue compressions."

8) Switching positions while doing two-rescuer CPR:

a. The switch is initiated when the rescuer who is performing compressions directs that a switch take place at the end of a 5:1 sequence.

b. The rescuer who is performing the ventilation, after giving a breath, moves into position to give compression.

c. The rescuer giving compressions, after delivering the fifth compression, moves to the victim's head and checks the pulse for five seconds, but no longer.

d. If no pulse is felt, the rescuer at the head gives a breath and tells the rescuer at the chest to "continue CPR." If there is a pulse but no breathing, he should say "there is a pulse" and give artificial respiration.

9) Third rescuer relieving a tired member of 2-rescuer CPR:

If two persons are doing 2-man CPR and a third person comes in to relieve one of them, this can be accomplished by relieving either the rescuer doing the compressions or the rescuer doing the ventilations (between ventilations). Preferably the rescuer doing the ventilations is relieved first. In either case the third rescuer should relieve from the same side as the person being relieved.

10) Time allowed to discontinue CPR:

Many of you were taught that 5 seconds is the maximum time limit allowable to stop CPR in order to check for effectiveness. But exceptions of up to 15 seconds were allowed for transportation problems, intubation, etc. The five second rule still applies in the new standards, but the 15 seconds has been increased to 30 seconds.

11) **In-Water CPR** is a technique that, believe it or not, was developed by us in the Coast Guard (by BMC Tom Petrin and by Dr. Steinman). We have been teaching it for over 3 years, but only recently has the technique appeared in the national standards of CPR. Specifically, the standards state "External chest compression should not be attempted in the water ***unless one has had special training*** because it is generally impossible to perfuse the brain effectively **unless the victim can be maintained in the horizontal postion; . . .**" (The bold type is added for emphasis). As far as we know, ours is the only EMT program which provides this "special training," and, as you remember, we emphasize keeping the victim's head and chest in a horizontal position during resuscitation and rescue. If any of you have had occasion to use in-water CPR in an actual rescue, it would be of definite interest to the entire medical community (as well as to the Coast Guard, of course). If you know of a case of in-water CPR, please inform the EMT School, the HM "A" School or Dr. Steinman at Commandant (G-KOM-1).

12) Airway Obstruction

The new CPR standards address the treatment of foreign body obstruction of the upper airway in great detail. Basically, there have been no major changes, except that, as an option, you can reverse the sequence of backblows and manual thrusts (chest or abdominal). As a refresher, the following are the recommended sequences to use:

a. **FOR THE CONSCIOUS CHOKING VICTIM**

(1) Identify complete airway obstruction (ask victim if he is able to speak).
(2) Apply four back blows in rapid succession.
(3) Apply four manual thrusts.
(4) Repeat four back blows and four manual thrusts until they are effective or until the victim becomes unconscious.

b. **FOR THE CHOKING VICTIM WHO BECOMES UNCONSCIOUS**

The rescuer should call for help, open the airway, and attempt to ventilate. If he is unsuccessful at ventilation, he should quickly perform the following:

(1) If a second person is available, he should activate the EMS system.
(2) Apply four back blows in rapid succession.
(3) Apply four manual thrusts.
(4) Apply the finger sweep. Dentures may need to be removed to improve the finger sweep.
(5) Reposition the head, open the airway, and attempt to ventilate. If the victim cannot be ventilated:
(6) Repeat steps (2), (3), and (4).

c. **FOR THE VICTIM WHO IS FOUNL UNCONSCIOUS AND THE CAUSE IS UNKNOWN**

If the rescuer has found an unconscious victim, he should establish unresponsiveness, call for help, open the airway, establish breathlessness, and attempt to ventilate. If he is unable to ventilate, he should quickly perform the following sequences:

(1) Reposition the head, try again to ventilate. If unsuccessful and a second person is available, he should activate the EMS system.
(2) Apply four back blows in rapid succession.
(3) Apply four manual thrusts.
(4) Apply the finger sweep. (Rescuer may need to remove dentures to improve finger sweep).
(5) Reposition the head and attempt to ventilate; if the victim cannot be ventilated
(6) Repeat the sequence: (2), (3), and (4) as described previously.

As a final word, remember that if you have already been trained in CPR, your knowledge and skills are still valuable; try to incorporate the new changes if you can, but don't become despondent if you find the description above confusing. The new modifications are easier to learn when you're shown them than when you read about them. If you don't know CPR, you definitely should learn — you don't have to be an EMT or HM to save lives with CPR.

SAR

Search and Rescue Magazine subscriptions make great gifts too.

See page 21 for subscription order blank.

BRONX BLAST

Story by
PETER McLAUGHLIN and DONALD SINGLETON,
New York Daily News
Photos by HARBY EISNER,
64 East Clinton Avenue, Tenafly, NJ 07670
201/569-5985

A 9-month baby was killed and 13 persons were injured when a coin-operated laundry and dry cleaner in the Bronx blew up yesterday morning, moments after a Consolidated Edison crew began searching for the source of a reported gas leak.

Late yesterday, a Con Ed spokesman said a preliminary investigation showed that the blast resulted from a broken eight-inch gas main, and that it was caused by "grossly negligent procedures" by a contractor working on Morris Avenue, just around the corner from the store.

The contractor, the Willets Point Contracting Co., whose office is 127-50 Northern Blvd., Flushing, Queens, had been cited by Con Ed 14 times in two months for failing to use "sound engineering practices" in its repaving project, a Con Ed spokesman said. The Willets Point Co. had no immediate comment.

"There was a large puff of smoke and then the whole building collapsed," said Police Sgt. Leonard Rein, who was in a patrol car only 200 feet from the one-store brick building at 80 E. 184th St. when it exploded and caught fire at 11:14 a.m.

"There was a whole lot of smoke, and debris flying all over — bricks, iron grates, glass and pieces of machinery," Rein said. "It landed on the sidewalk, burying some people, and a lot of it came down on cars in the street. It's a miracle more people weren't hurt." Rein and Sgt. Charles Bryceland, with whom he was riding, ran toward the blast scene at Morris Avenue in the Fordham Section. They found a woman and child lying on the sidewalk, partly buried in rubble. Bryceland picked up the woman in one arm and the baby in the other, carried them to the patrol car and sped to nearby Union Hospital.

On the corner

The woman was injured only slightly, Bryceland said, but the baby was prounced dead on arrival at the hospital. The woman was identified as Lillian Megnauth, who reportedly had been standing on the street corner at the time of the explosion; the dead child was identified as her daughter, Melissa.

Meanwhile, neighbors drawn by the sound of the blast and the resulting collapse began digging frantically through the rubble, and several victims were pulled clear of the debris before the arrival of firemen and Emergency Services Squad members moments later. Firemen combed the rubble of the flattened laundry building for several hours in their search for other victims. By early afternoon, the injured count had reached 13. One victim, identified only as a 45-year-old man, was listed in critical condition at North Central Bronx Hospital.

According to police, private contractors had been working on the street near the store, and neighborhood residents had been reporting an odor of gas in the area since last Friday. Yesterday morning, the odor became much stonger, police said, and at 10:40 a.m. residents telephoned the Consolidated Edison Co. A con Ed crew was searching for the source of the smell when the blast occurred.

"Strong smell of gas"

"I had just arrived, and there was a strong smell of gas in the air," said Con Ed mechanic Joe Mulheren. "I had just put in a call for additional men to look for the source, when it blew. Everything was flying around, and I got on my radio and called: 'Mayday! Mayday!'"

In its statement blaming the Willets Point firm, Con Ed said: "The contractor had removed the asphalt and base concrete from the roadway, but had not put down steel plates or diverted traffic as dictated by sound engineering practices. Our investigation shows the main broke because of the combination of weight and vibrations from the contractor's heavy equipment." **SAR**

THE INVISIBLE FORCE

**Approach - The Naval Aviation Safety Review,
NAVSAFECEN, Safety Pub. Dept.,
NAS Norfolk, VA 23511
804/444-1321**

IT was a beautiful day at the NAS – blue sky, 40 miles of visibility, and calm winds. A flight of four arrived for landing and was cleared by the tower to break in order. Two F-4s were Nos. 1 and 2; and two F-5s were Nos. 3 and 4.

The lead pilot established his aircraft on final and lined up on the right side of the duty runway. Following a glide slope correction, the lead continued in to the field and made an uneventful landing.

While completing the last 45 degrees to final, the No. 2 F-4 slightly overshot the runway centerline and encountered a very brief, slight amount of jetwash. The pilot picked up a centered ball at 1 mile, made a small heading correction to line up with the left side of the runway, and continued his approach in a stabilized, wings-level, onspeed condition at about 150 KIAS.

Fifteen seconds after encountering the initial jetwash, and without warning, the left wing dropped violently about 60 degrees down, and the nose of the *Phantom II* sliced down and left approximately 20 degrees. The pilot immediately selected full afterburner, applied right aileron and rudder, attempted to level the wings, and began feeding in back stick in an effort to reestablish a climb attitude. The F-4 continued to settle, so the nose was lowered in an attempt to reduce the angle-of-attack. The pilot was then able to roll the aircraft nearly wings level before raising the nose above the horizon. The F-4, now about 20 degrees noseup with the right wing down 10 degrees, continued to settle towards the ground.

At a point about one-half mile from the approach end of the runway, the underside of the starboard stabilator grazed an approach light fixture, and the stabilator tip then scraped the ground. A second and third set of approach lights were then hit, causing additional damage including a blown left main tire. The aircraft became airborne, and the pilot was able to climb to 2,000 feet. The pilot performed a controllability check and was checked for damage by the pilot of the No. 3 aircraft in the flight. This was followed by a precautionary, shortfield, arrested landing. The aircraft was shut down, and the aircrew egressed normally.

If you guessed that this escapade resulted from a bout with wake turbulence, you're right! Conditions were ideal for this sinister phenomenon to strike – calm wind, with a very slight tailwind at 200 to 300 feet AGL, transiently localized the wake turbulence generated by the lead aircraft on a portion of the flightpath being flown by No. 2.

Much emphasis has been placed on wake turbulence from big jets, yet this mishap involved two fighter aircraft of the same model. There have been enough similar encounters during the past few years to indicate that a review of wake turbulence is in order. Since a picture is worth a thousand words, many diagrams follow which should provide a clear understanding of wake turbulence, its effect on aircraft, and recommended avoidance procedures.

Wake turbulence is primarily a product of lift and takes the form of vortices rolling off the wingtips and trailing behind and below the aircraft. Lift is generated by the creation of a pressure differential over the wing surfaces. The lowest pressure occurs over the upper wing surface, and the highest pressure under the wing. This differential triggers the rollup of the airflow aft of the wing, resulting in swirling air masses trailing downstream of the wingtips. After the rollup is completed, the wake consists of two counterrotating cylindrical vortices (see Fig. 1).

The strength of the vortex is governed by the weight, speed, and shape of the wing of the generating aircraft. The vortex characteristics of any given aircraft can be changed by the extension of flaps or other wing-configuring devices,

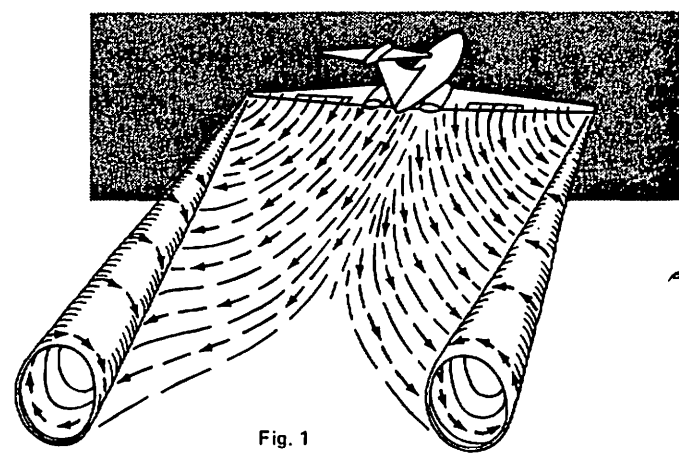

Fig. 1

INVISIBLE FORCE Continued

as well as by changes in speed. As the primary factor is weight, however, the vortex strength increases proportionate to the aircraft weight. The greatest vortex strength occurs when the generating aircraft is **HEAVY, CLEAN,** and **SLOW!**

While structural damage may result from a violent wake turbulence encounter, the biggest hazard when flying up the core of a vortex is induced roll (see Fig. 2). Aircraft with long wingspans have the best of it here. If the ailerons extend beyond the vortex, countercontrol would be more effective than for short wingspan aircraft which may have the entire

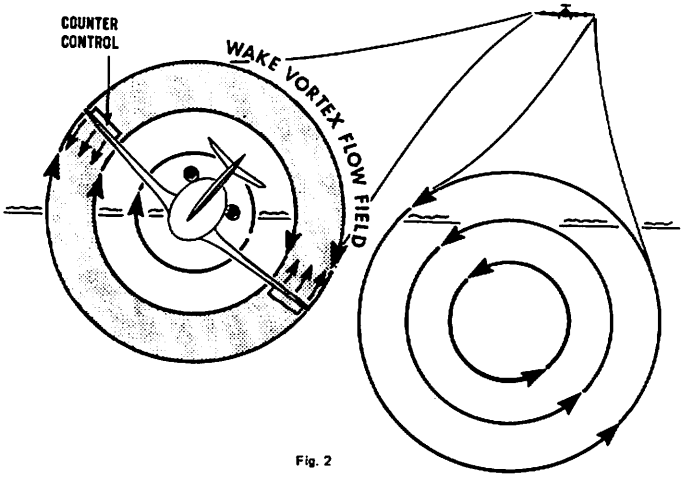

Fig. 2

wingspan within the vortex (see Fig. 3). In the latter case, countercontrol capability may not be great enough to stop the roll.

Trailing vortices have certain behavioral characteristics which can help a pilot visualize the wake location and thereby take avoidance precautions.

Vortices are generated from the moment an aircraft's nose leaves the ground, since trailing vortices are a byproduct of lift. Prior to takeoff or touchdown, pilots should note the rotation or touchdown point of the preceding aircraft.

Vortex circulation is outward, upward, and around the wingtips when viewed from either ahead or behind the aircraft. Tests with large aircraft have shown that the vortex flow field, in a plane cutting through the wake at any point downstream, covers an area about two wingspans in width and one wingspan in depth. The vortices retain this spacing (about a wingspan apart) even when drifting with the wind at altitudes greater than a wingspan from the ground. Therefore,

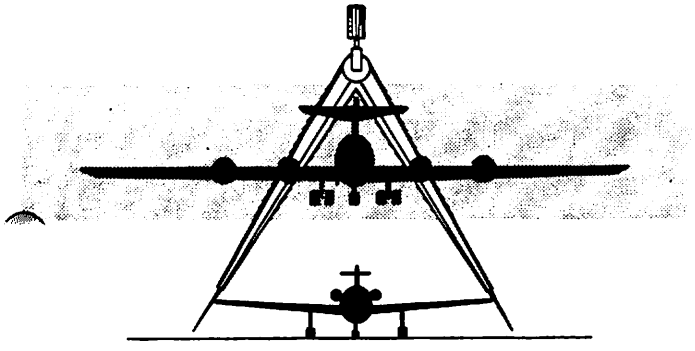

Fig. 3

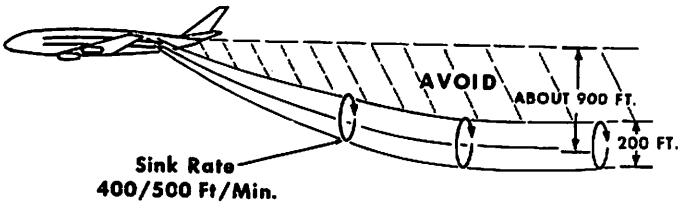

Fig. 4

if persistent vortex turbulence is encountered, a slight change of altitude and lateral position (preferably upwind) should provide a flightpath clear of turbulence.

Flight tests have shown that the vortices from large aircraft sink at a rate of about 400 to 500 fpm (the sink rate for smaller aircraft will be proportionately less). They tend to level off at a distance about 900 feet below the flightpath of the generating aircraft. Atmospheric turbulence hastens breakup. Pilots should fly at or above the large aircraft's flightpath, altering course as necessary to avoid the area behind and below the generating aircraft (see Fig. 4).

When the vortices of large aircraft sink close to the ground (within about 200 feet), they tend to move laterally over the ground at a speed of about 5 knots (see Fig. 5). A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex (see Fig. 6). Thus, a light wind of about 3 to 7 knots could result in the upwind vortex remaining in the touchdown zone for a period

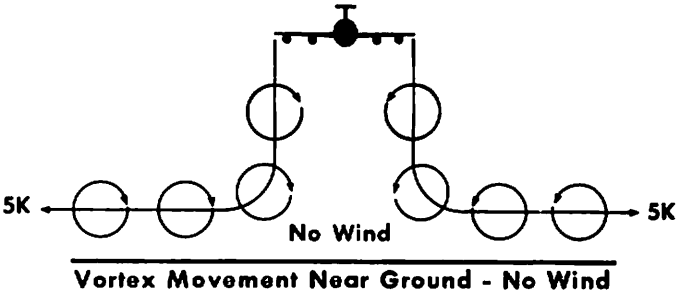

Fig. 5

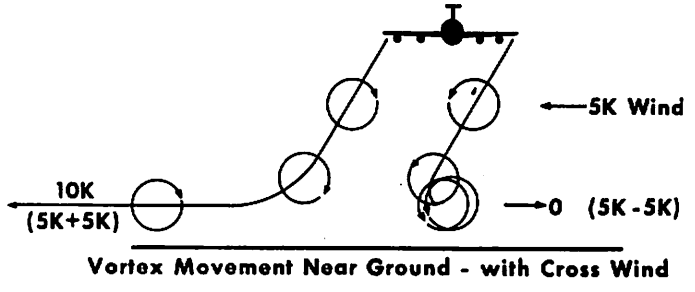

Fig. 6

of time (see Fig. 7) and hasten the drift of the downwind vortex toward another runway. Similarly, a tailwind *condition* can move the vortices of the preceding aircraft forward into the touchdown area. **The light quartering tailwind requires maximum caution.** Pilots must be alert to large aircraft upwind from their approach and takeoff flightpaths.

Continued

INVISIBLE FORCE Continued

A wake turbulence encounter is not necessarily hazardous. It can be one or more jolts with varying severity depending upon the direction of the encounter, distance from the generating aircraft, and point of vortex encounter. The probability of induced roll increases when the encountering aircraft's heading is generally aligned with the vortex trail or flightpath of the generating aircraft. **Avoid the area below and behind the generating aircraft, especially at low altitude where even a momentary wake encounter could be hazardous.**

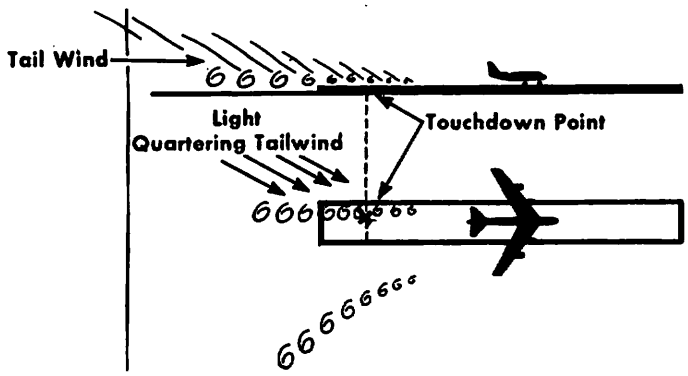

Fig. 7

Pilots should be particularly alert in calm wind conditions and situations where the vortices could:

- Remain in the touchdown area.
- Drift from aircraft operating on a nearby runway.
- Sink into the takeoff or landing path from a crossing runway.
- Sink into the traffic pattern from other airport operations.
- Sink into the flightpath of VFR traffic operating at the hemispheric altitude of 500 feet and below.

The following vortex avoidance procedures are recommended for the situations shown:

- Landing behind a large aircraft on the same runway. Stay at or above the large aircraft's final approach flightpath, note his touchdown point, and land beyond it (see Fig. 8).

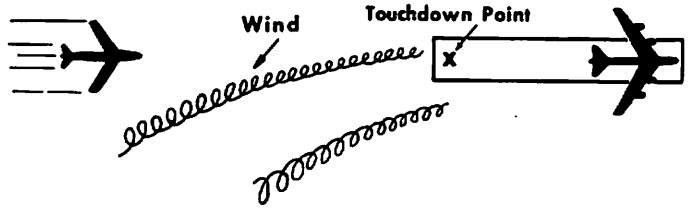

Fig. 8

- Landing behind a large aircraft when a parallel runway is closer than 2,500 feet. Consider possible drift to your runway. Stay at or above the large aircraft's final approach flightpath and note its touchdown point (see Fig. 9).

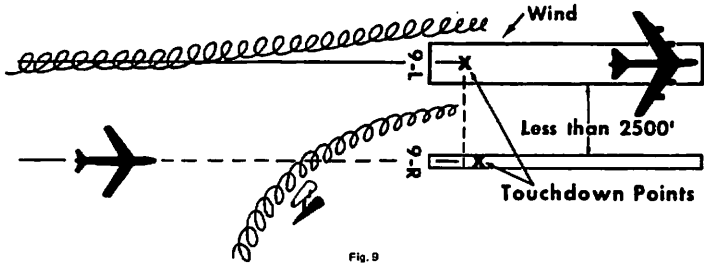

Fig. 9

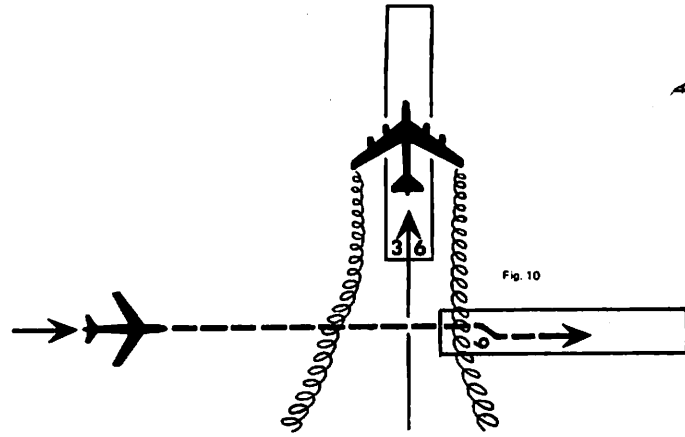

Fig. 10

- Landing after a large aircraft on a crossing runway. Cross above the large aircraft's flightpath (see Fig. 10).
- Landing behind a departing large aircraft on the same runway. Note aircraft's rotation point and land well prior to it (see Fig. 11).

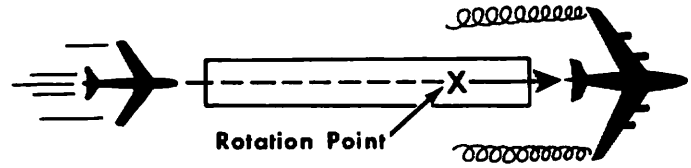

Fig. 11

- Landing after the departure of a large aircraft on a crossing runway. Note the aircraft's rotation point – if past the intersection, continue the approach. Land prior to the intersection (see Fig. 12). If the large aircraft rotates prior to the intersection, avoid flight below its flightpath. Abandon the approach unless a landing is assured well before reaching the intersection (see Fig. 13).

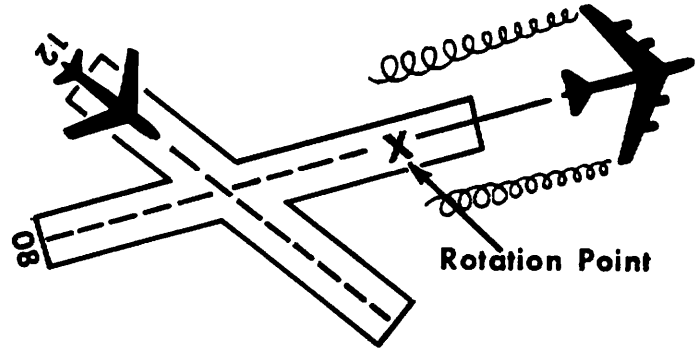

Fig. 12

- Departing behind a large aircraft. Note the aircraft's rotation point and rotate prior to this point. Continue to climb

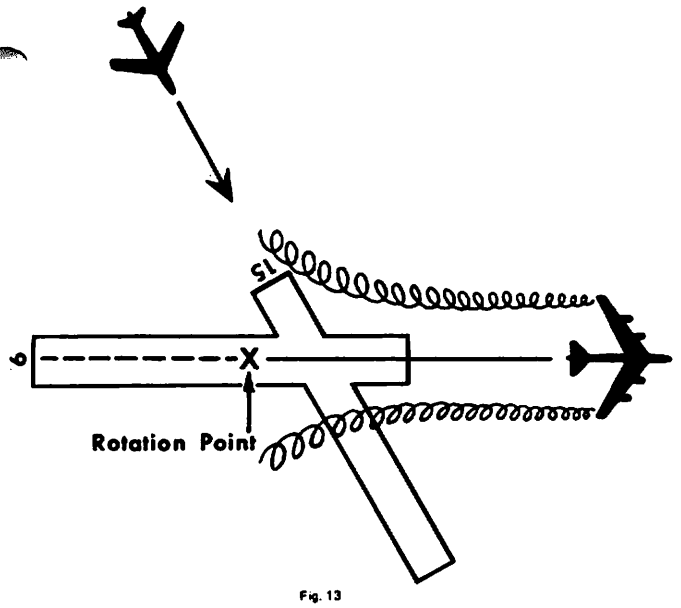

Fig. 13

above and stay upwind until turning clear of his wake (see Fig. 14). Avoid headings which will cross below and behind a large aircraft (see Fig. 15). Be alert for any critical takeoff situation which could lead to a vortex encounter (see Fig. 16).

Helicopters. A hovering helicopter generates a downwash from its main rotor(s) similar to the propwash of a conventional aircraft. In forward flight, however, this energy is transformed into a pair of trailing vortices similar to wingtip vortices of fixed-wing aircraft. Aircraft should avoid these vortices as well as the downwash (see Fig.17).

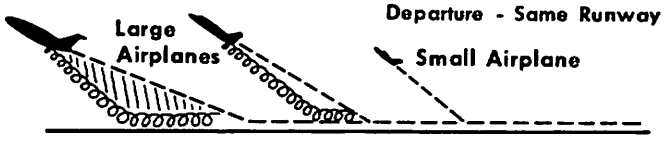

Fig. 14

Leo Garodz of the FAA Technical Center has been involved with comprehensive wake turbulence testing, and he passes on the following information about tactical military aircraft and wake turbulence:

- When in a heavy wingload configuration, the intensity of trailing vortices is measurably increased.

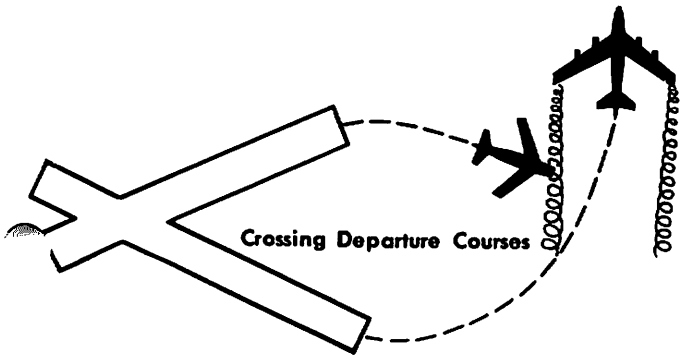

Fig. 15

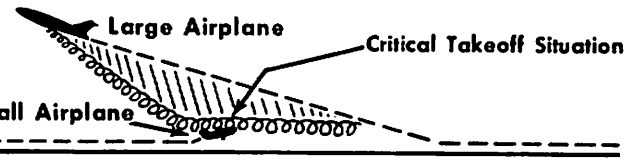

Fig. 16

- During gunnery runs or other maneuvers involving high speed and high G-forces, wake intensity is greatly increased.
- The proximity in which military aircraft operate relative to each other during many maneuvers makes them vulnerable to a wake encounter.

There you have it – a fairly comprehensive look at that invisible force known as wake turbulence. While it is not a major cause of Navy aircraft mishaps, it is a sinister phenomenon that can strike with great force and little or no warning. This is apparent in the mishap described at the beginning of this article (remember, the generating F-4 is not a jumbo jet). Aviation commands would do well to give maximum publicity to the contents herein and include wake turbulence in their periodic training programs.

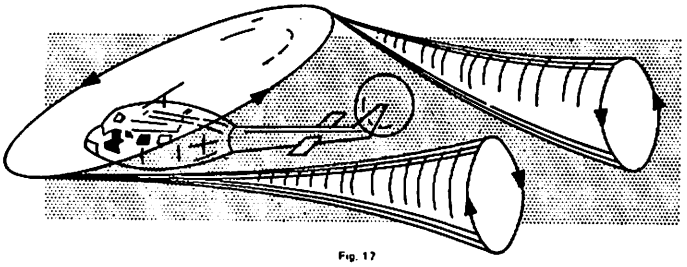

Fig. 17

APPROACH gratefully acknowledges the assistance rendered by Leo Garodz, FAA Technical Center, in the preparation of this article. **SAR**

SKI YOU CAN DO IT

ROAD SKIING

Road skiing is an integral part of top cross country ski racers' training. However tourers can benefit immensely from the road ski exercises and at the same time create a new and enjoyable recreation.

The main advantage of road skiing for the ski tourer is the sharpening of the sense of balance for cross country snow skiing. Pick yourself out a quiet patch of hard top road with a gradual uphill grade. Train yourself to balance fully extended on the forward gliding roller ski (see photo) for as long as possible before you transfer the weight to the opposite ski.

You will be delighted with the progress you have made from road ski training when you step out on the first season's snow. You will find you are skiing smoother and faster with less effort as a result of the balance training you have learned from your road ski exercise.

Technical assistance provided by Eastern Professional Ski Touring Instructors.

NEW SURFACE-TO-AIR VISUAL SIGNAL CODE FOR SURVIVORS

Secretary, United States Coast Guard, Interagency Committee On Search and Rescue (CSAR), G-OSR-4, Washington, DC 20593 202/426-1932

Figure (1) is an Amendment to Annex 12, Search and Rescue, to the Convention on International Civil Aviation which promulgates a new ground-air visual signal code for use by survivors. It became effective on 15 April 1981 and will become applicable on 26 November 1981.

The new code will replace the old one in the National Search and Rescue Manual when Amendment No. 7 is issued. In the interim, it is requested that wide distribution be given to the new signal code so that all personnel who might be involved in a Search and Rescue operation will become familiar with it as soon as possible.

The new code has also been adopted for maritime use by the Inter-governmental Maritime Consultative Organization and will ultimately appear in that organization's Search and Rescue Manual.

The following figure shows the old signals and the new.

Ground-air visual signal code for use by survivors

OLD

No.	Message	Code Symbol
1	Require doctor—serious injuries	|
2	Require medical supplies	| |
3	Unable to proceed	X
4	Require food and water	F
5	Require firearms and ammunition	⩔
6	Require map and compass	□
7	Require signal lamp with battery and radio	¦
8	Indicate direction to proceed	K
9	Am proceeding in this direction	↑
10	Will attempt take-off	|>
11	Aircraft seriously damaged	⌐¬
12	Probably safe to land here	△
13	Require fuel and oil	L
14	All well	L L
15	No	N
16	Yes	Y
17	Not understood	⌟L
18	Require engineer	W

NEW

No.	Message	Code Symbol
1	Require Assistance	V
2	Require Medical Assistance	X
3	No or Negative	N
4	Yes or Affirmative	Y
5	Proceeding In This Direction	↑

FIGURE 1

SEARCH & RESCUE MAGAZINE INDEX

FALL 1973
★ Washington State SAR Conference ★ A Visit with Jon Wartes ★ A Child is Lost, by Lena Reed ★ Chapter 1 of Mountain Search for the Lost Victim.

WINTER 1973
★ A Rescue Worth Mentioning ★ The use of String Lines for Subject Confinement, Search Area Segmentation, and Grid Sweep Control, by Jon Wartes and Bill Rengstorf ★ Mountain Rescue Association Spring Business Meeting ★ Fort Jackson Search and Rescue Squad, by PFC Larry Strawther ★ Part 2 of Mountain Search for the Lost Victim.

SPRING 1974
★ Driver Survives 500 Foot Plunge ★ National Association of SAR Coordinators Annual SAR Conference ★ Simulated Plane Crash ★ Heated Oxygen Hypothermia Treatment ★ Part 2, Chapter 2 of Mountain Search for the Lost Victim.

SUMMER 1974
★ Surf Rescue, by Bill Wagner ★ 1st National SAR Council, by Blair Nilsson ★ National SAR School Graduation Speech ★ The Rescue People, by George Sibley ★ Part 1, Chapter 3 of Mountain Search for the Lost Victim.

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★ A Tribute to Hal Foss, by Dyer Downing ★ Harold A. Foss Obituary, by Rick LaValla ★ Land Search Organization, by Lois McCoy ★ How State Conferences Began, by Lena Reed ★ International Mountain Rescue Conference, by Judy Bechler.

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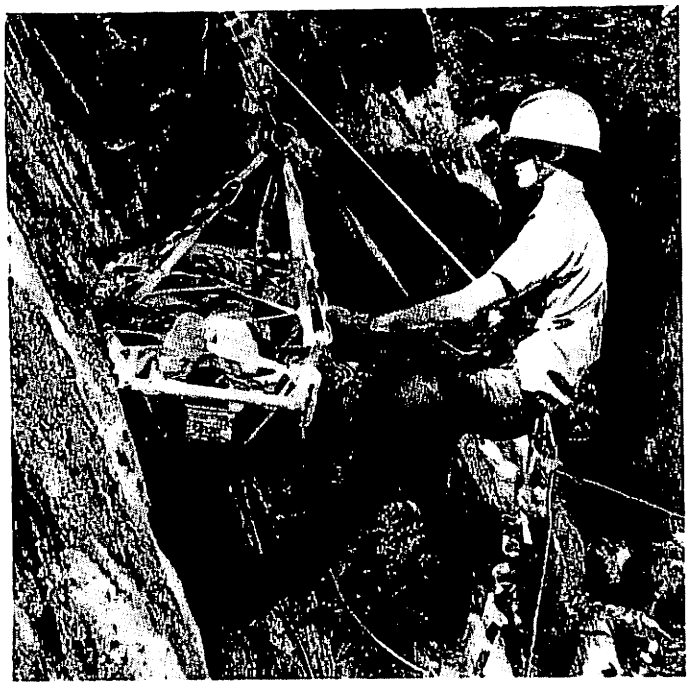
NEW PRODUCTS



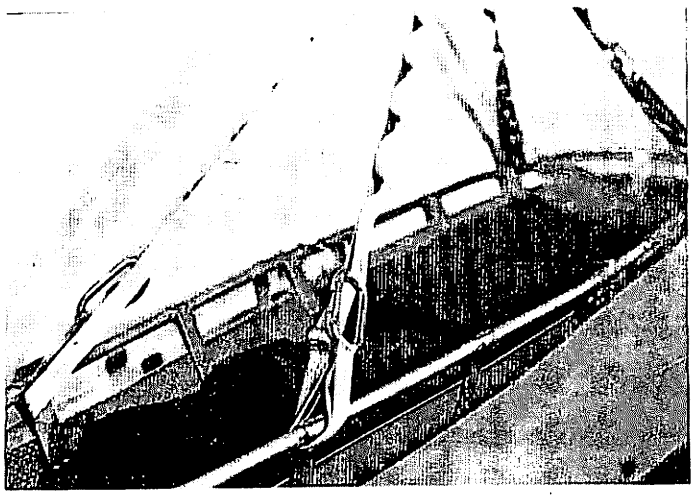
ARALUEN SKY GRAB

A new litter sling for helicopter, hillside or high-angle evacuations is offered by **ARALEUN INC.** The sling's basic feature is that it makes it possible to adjust the length of each strap or spider quickly and easily.

The four straps of the **SKY GRAB** are permanently attached to a central ring. Carabiners attached to the end of each strap hook into loops sewn along the length of the strap making it possible thereby to adjust the length of the strap and so place the litter in any position desired, or to change it in seconds. An optional attendant's line also may be snapped to the central ring.

The straps are of 4000 pound-test tubular nylon.

The introductory price is $48.50 for the sling and $17.50 for the attendant's line, including freight. Write to **ARALEUN INC., 7851 Airpark Drive, Building 210, Gaithersburg, Maryland 20760 (301) 869-8048.**



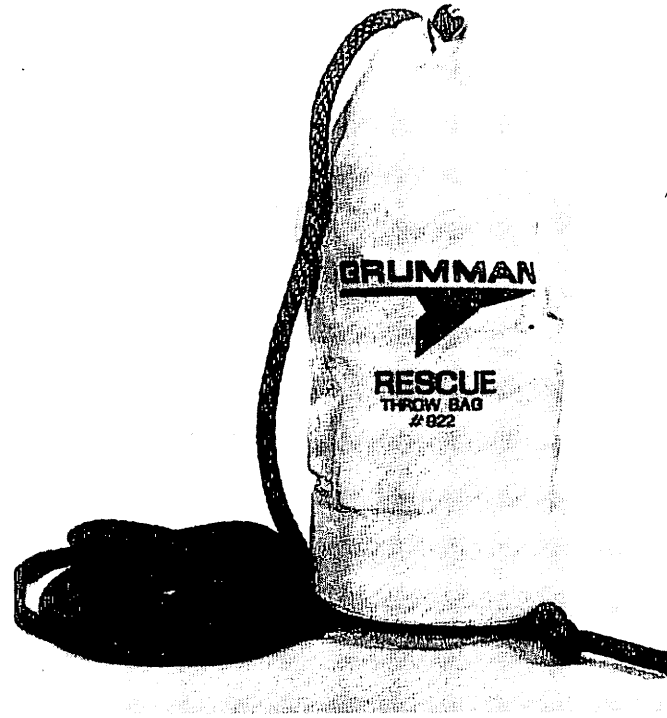
GRUMAN'S RESCUE THROW BAG

MARATHON, NY . . . 1 June 1981 . . . It's not unusual for a swimmer to get in trouble in municipal pools or at t' beach. Cramps, overexersion, or strong currents can take their toll on even the strongest swimmer. When a swimmer needs help, it's important to have the proper rescue equipment on hand — such as **GRUMMAN'S RESCUE THROW BAG.**

Constructed of 6 ounce coated nylon and stitched with heavy-duty nylon thread, the Throw Bag has a 2-inch foam plug in the bottom that adds just enough flotation to support the bag and its cargo: 65 feet of 3/8-inch multifiliment line. By stuffing the line in the bag, rather than coiling it, snarling is prevented. The Throw Bag is designed strictly as a rescue device, not as a floatation device.

Easily visible, the yellow bag should be thrown beyond the victim and pulled to him. At 13"x6", and 2½ pounds, the Throw Bag can save the victim's life — and yours since you run no risk of injury through attempting to swim out to a victim.

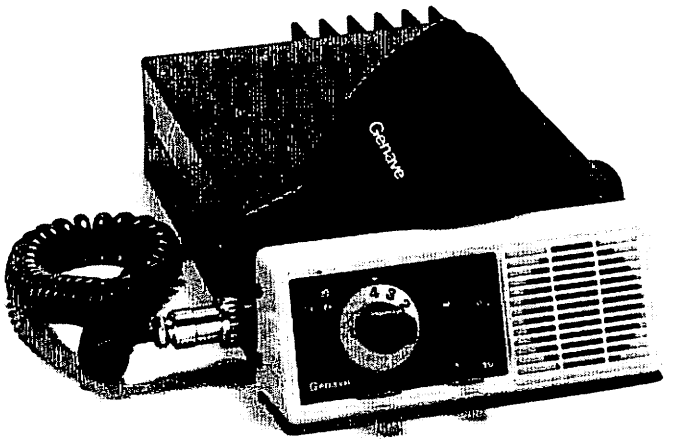
The Throw Bag is one of many useful items found in the Grumman Boats Accessory Catalog, free from Saul Ferdman, Grumman Allied Industries, 445 Broad Hollow Road, Melville, New York, 11747.



GRUMMAN'S RESCUE THROW BAG CAN SAVE LIVES — KEEP HANDY FOR INSTANT USE ON BOATS, CANOES, OR AT WATER'S EDGE.

MORE NEW PRODUCTS

GENAVE SYNTHESIZED TRANSCEIVER



A compact and powerful VHF-FM synthesized business band mobile transceiver is now available at $579.95 retail from Genave, Inc., Indianpolis, Indiana.

The new GMT 1000 high band transceiver operates on the 143.9-173.4 MHz frequency range and supplies 40 watts minimum of RF output power. Incorporating state-of-the-art CMOS synthesized design, the unit requires no crystals and can be set on any four simplex or four semi-duplex channels.

Reprogramming the GMT 1000 is an easy task for any qualified technician. Dealers can buy a GMT 1000 for their shops and use the same unit over and over again, in a wide variety of applications.

An ideal loaner, the GMT 1000 can be installed immediately to any customers' licensed frequency — a necessity when a customer cannot afford to lose his communications capacity. Because it does not require crystals, the unit can also be rented or leased to anyone on any frequency.

The modular design of the synthesizer allows for immediate replacement of defective or damaged parts. In the unlikely event of malfunction, a technician can remove the original synthesizer and quickly plug in another module for an immediate return to the field.

Featuring compact, modern styling, the unit fits conveniently in crowded underdash conditions without taking up a lot of leg room or interferring with the controls. Rugged, all-metal case measures a slim 11½ D x 6½ W x 2½ H.

A sloping front panel improves underdash visibility and reduces accidental damage. For added convenience, a busy light on the front panel indicates when a channel is in use.

Other design features include a backlighted channel dial and a convenient external speaker jack.

The unit is also available in portable and base station configurations. Low current CMOS synthesizer and receiver make the GMT 1000 ideal for battery operation.

Genave is a multi-line manufacturer of land mobile and airport communications equipment. All Genave products are manufactured in the U.S.A. For further information contact: **Genave, Inc., 4141 Kingman Drive, Indianpolis, IN 46226 (317) 546-1111.**

GE'S NEW MOBILE SERIES

Utilizing a totally new and highly efficient design approach, General Electric's new MASTR® Delta series of mobiles deliver quality performance at an attractive price.

Delta's features include the highest receiver specifications in its class, for intermodulation protection and high sensitivity when you need it; 110 watts of RF power from a no-tune broad band power amplifier; totally wireless construction; compatibility with positive or negative ground electrical systems without using external convertors; and weatherproof case and accessories which meet MIL 810-C environmental standards.

Some of the available options are field-programmable Channel Guard tones for quick and easy maintenance or system modification, DTMF encode and/or decode, public address, four-channel Priority Search Lock Monitor, and more. All designed to enhance system growth in an economical and orderly way as needs change.

Add to that Delta's compact size, its small and attractive standard control head and its low power consumption, and you have a radio truly designed for the times. A radio that takes full advantage of the latest technology to deliver high performance at a modest price.

For more information, write **General Electric Company, Section H, P.O. Box 4197, Lynchburg, Virginia 24502.**

Continued

MORE NEW PRODUCTS

NEW GE 800 MHz PERSONAL RADIO

General Electric announces its newest line of personal radios, the MASTR® MPX. The MPX is available now in the 160, 450, and 800 MHz bands, with power outputs from 1 to 5 watts.

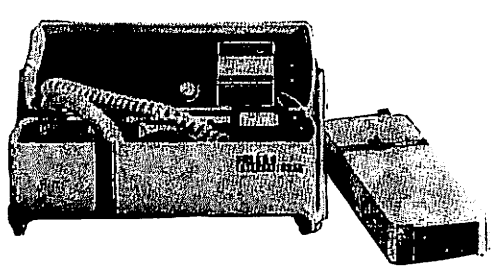
The MASTR® MPX is designed to provide superior performance and reliability at a down-to-earth price. Some of the outstanding features include Ensolite foam for shock protection; single conversion and precision crystal filters to assure the best receiver performance; and broadband stripline transmitters which provide full power over wide frequency ranges with no adjustments.

A full line of options is available, including programmable Channel Guard (tone and digital), channel search, up to 10 channels transmit and receive, DTMF encoders, vehicular chargers and power amplifiers. Accessories include antennas, chargers, speaker-microphones, and carrying cases.

For further information write **General Electric Company, U.S.A., Section H, Mobile Communications Division, P.O. Box 4197, Lynchburg, Virginia 24502.**

FAIRFIELD 2nd GENERATION DMS-600 INTERNATIONAL

Fairfield Medical Products introduces the 2nd Generation DMS-600 International pictured with its detachable charger. New features include freeze control with automatic release, 4 second delay between scope and recorder, 360 Joules delivered, 1 multivolte calibration, built-in defibrillator testor, and many more. For free information call or write: **Fairfield Medical Products Corp., 845 East Main Street, Stamford, Connecticut 06902 (203) 357-1855.**



NEWS & RUMORS Continued

COMPUTER TO WATCH FOR FLASH FLOODS

WASHINGTON — A computerized system designed to give up to three hours' warning of high water in flood-prone areas to help reduce deaths and damage is being installed in Central Appalachia, the National Weather Service has advised.

Fourteen counties in Kentucky, West Virginia, Virginia and Pennsylvania are the initial focus of the early warning program, with eventual expansion planned in more than 80-flood-prone counties.

Heavy rains even some distance away can pose serious flooding dangers in the Appalachians as water runoff collects and channels into the narrow valleys where people live. Since 1968, the average annual death toll from flash floods has risen to about 200 — more than double the rate of the 1960s and triple that of the 1940s. Flood-related property damage is now averaging about $2 billion a year, said Richard E. Hallgreen, director of the weather service.

Expected Reduction

"This new level of warnings, combined with effective local action plans, is expected to substantially reduce those losses of life and property," he said. The program's goal is to provide between 30 minutes' and three hours' warning of rising water, giving residents a chance to seek high ground.

"We believe that the system will permit us to get the warnings out more quickly and we believe that as we learn to use it we will be able to be a little bit more specific on where the major danger is," said James B. Jones, deputy director of the weather service's weather and flood warnings coordination staff.

Volunteer observers are already stationed in the flood-prone areas, but they are spread so thinly that major rainfall can occur and not be measured, he said. The new plan is to add a system of radio-reporting gauges for remote areas and automated river level sensors.

Automatic Signal

The instruments will automatically signal the weather service offices when rain falls or when river levels rise, and the information will be fed into computers to analyze the danger. Jones said meteorologists could then decide whether and for what areas to issue flood warnings. Much of the automatic equipment has been installed and the system under development since 1979, is scheduled for full operation at this time.

In the 80 counties planned for the expanded system, flood losses between 1967 and 1977 totaled more than $3.5 billion. John Monro, project coordinator, said the new system should cut those losses by about $35 million a year.

The system was developed with the cooperation of the Appalachian Regional Commission, the Tennessee Valley Authority and state and local governments. The cost of the final 80-county system is expected to total $4.5 million, to be paid by the three federal agencies involved. Maintenance and operating costs will be borne by the state and local governments.

From Los Angeles Times Wire Services

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ANT BITES KILL MAN

DENVER (UPI)— A man whose death was attributed to about two dozen black ant bites is the first such fatality in Colorado history, reports the director of the Rocky Mountain Poison Center. Dr. Barry Rumack said he had heard of deaths attributed to fire-ant bites in the Southern states, but could not recall deaths due to black ants.

He said the victim, Raymond Archuleta of Rocky Ford, Colorado, apparently died of severe anaphylaxis, a reaction venom that constricts the victim's windpipe and leads to dea Otero County Coroner Bob Fowler said Archeuleta was bitten while unloading a seed truck and soon complained of swelling near the bites. The victim collapsed before help arrived. He was pronounced dead a short time later at Pioneers Memorial Hospital in Rocky Ford.

CATALINA ISLAND LIFEGUARDS PLAY MANY ROLES

Don McPherson watched two boats crisscrossing in Catalina Harbor off the coast of California on the Fourth of July weekend. The scene got boring, so he went below to grab a beer.

It wasn't a crash that alarmed him, he said, but silence. The outboard engines he'd heard had stopped.

Overturned Powerboard

Back on the deck of his 26-foot sailboat, *Scout*, he saw through binoculars what appeared to be the hull of a powerboat overturned. "There's been an accident," he told his wife as he climbed down into the boat's dinghy. "Turn on the radio and stand by."

Almost as soon as McPherson got close enough to see that the two men in a 12-foot rubber boat, had apparently been run over and were "looking quite dead," two men in red swim trunks appeared. They were the lifeguard-paramedics stationed at Isthmus Cove. A yachtsman had radioed them about the accident and they had driven across the narrow isthmus and commandeered a boat to take them to the scene.

"These guys are extremely critical," said lifeguard Roger Smith. He and his partner John Stonier, started CPR, tried to stop the bleeding and dispatched McPherson to move some boats and clear a landing area for a helicopter on the beach.

"There were 15 different things wrong with each of these guys," McPherson remembered. "The lifeguards took hold of the situation immediately."

One man died despite the paramedic's efforts. They managed to keep the other alive long enough for a Coast Guard helicopter to arrive and transport him to the mainland where he was hospitalized and recovering.

Time of Accident

The accident occurred at 7:30 p.m. If the call had come two weeks later, the phone in the lifeguard's home would have gone unanswered. The injured man would have had to wait at least an hour for first aid from Avalon or the mainland.

On July 19, Roger Smith received orders from the Los Angeles County Department of Beaches that the Isthmus lifeguards were to cut their 24-hour service back to a 10 a.m. to 6 p.m. operation.

Because they are the only medical team serving 160 square miles of land and ocean, Smith and Stonier have always felt a responsibility for responding to all calls. So although their official hours have been 10 to 6, for the last 10 years they have been on call around the clock, receiving overtime compensation for after-hours calls.

But the workload began to take its toll on the men and their families. They asked the county to add a fourth lifeguard to the Isthmus team so 24-hour service could be supplied without the strain on the men's personal lives.

In their recent decision, the county Department of Beaches said they didn't have the manpower to add a fourth lifeguard to the Isthmus, but to reduce wear and tear on Stonier and Smith (the third lifeguard, John McKay, was transferred to Avalon in the shuffle) their hours would be limited to a strict 10 to 6. Only in life-or-death emergencies, the county said, would the men respond after hours.

"They say we can respond to after-hours emergencies," Smith said. "That would require our answering every call and screening them for life-threatening situations. And where do they expect us to be after hours?"

Making a Choice

Now Stonier and Smith have the choice of relinquishing that feeling of responsibility they've had for 10 years, and letting the phone just ring after 6. Or they can continue responding to calls, aggravating their family strains. Smith thinks they'll choose the former. "We aren't really going to answer phones after hours anymore," he said. Whether it's a broken arm or a 3 a.m. stomachache, almost every sailor who spends weekends at the Isthmus has been helped out by the lifeguards. Many are unhappy about the reduction in the lifeguards' hours.

One of these is McPherson, who has been coming to the Isthmus for 30 years, since he was 8. McPherson, an IBM executive from Marina Del Rey, says the July 3 incident proved to him how vital a 24-hour lifeguard service is. "There are not fewer boaters going to the Isthmus, there are twice as many as there were five years ago," he said. "More people have boats and don't know what they're doing with them. The cut-back is insanity. If it had been in effect on July 3, that guy would have been dead.

The Rescue Control Center in Long Beach and the Coast Guard know to ring the Catalina Isthmus lifeguards at home when they're not on their boat, the Baywatch Isthmus. Stonier, Smith and McKay all have wives and children on the island. "It's like living in a fire station," McKay said. "When the phone rings, everybody wakes up." The lifeguards' families aren't crazy about being forced into the men's work. A common complaint, according to Smith, is: We don't work for the county. Why should we answer the phones?"

Dive Chamber Technicians

The three wives have adapted to life in the remote community of 200. They all work as technicians in the USC dive chamber at the Isthmus, as well as holding jobs in Avalon. Their kids have become accustomed to the lengthy 4-wheel drive bus ride to school in Avalon and the need for importing friends from the mainland. The transition from mainland life wasn't easy for any of them. "It took my wife a long time before she ended up liking it here," Smith said.

Smith was working as a lifeguard in Redondo Beach when he got the call: "If you want to work the Isthumus, be down at the boat tomorrow morning and bring a sleeping bag. He lived on the Baywatch Isthmus for three months. Then when the county trucked in a house trailer, he drove his wife out to their new home, past desolate hills and herds of buffalo. "It was like we were moving West," he said. The move took place Aug. 2, 1972.

Continued

"This lifeguard service was mainly going to be for towing boats in distress," Smith said. "We soon found out we were the only people in 160 square miles who could provide medical care."

Stonier was the next to arrive, and together the men discovered their roles were to be more like country doctors than lifeguards. They responded to people falling off rocks, campers with asthma attacks. There are two Boy Scout camps in their territory, housing 500 campers each, so Stonier and Smith became adept at handling childhood allergies and recognizing appendicitis. Their duties expanded as more people discovered the relatively undeveloped "other" side of Catalina. To meet the demands, they became the first lifeguards to be certified as paramedics. Hikers had confrontations with buffalo and prickly pear cactus. Children were always blowing out to sea in dinghies, and friends called the lifeguards when inexperienced yachtsmen didn't return in time for dinner. Sometimes the calls were more serious.

"A nice day in Pasadena is our disaster," McKay said. "The Santa Ana winds come straight across the channel and whip up 8-foot waves. By the time they get here, they're just screaming."

Winter comes, the wind rises, night falls — that's when the worst accidents happen. McKay said. The same people who can handle any situation by daylight come unglued and make mistakes when it gets dark. Then the lifeguards put on their wet suits and face plates so they aren't drowned by the waves and spray, strap themselves to the open deck of the Baywatch Isthmus, and head off on rescues. There have been times when they've been out in such conditions for up to 36 hours without a break, Smith said. Between calls they lie next to the engines to warm up. Because Smith has the most boating experience, during these sieges he stays on board trying to keep the boat off the reefs while one of the other lifeguards drops into the black water, disentangling lines or rescuing drowning people. Those are the times that the demands of the jobs become almost too much. "Stonier and I start looking at each other," Smith said, "and we're saying, 'How long can we do this? We're gonna have to go back to the mainland."

One of their major fears, when the distress calls are coming in fast and thick, is that they won't have enough personnel to respond properly. With only two lifeguards on call at any time, more than two seriously injured people is too many. For instance, when four divers drowned at Farnsworth Banks this summer, a question flashed through Smith's mind on the way to the scene of the accident: "What are we going to do with four victims in full arrest?" As it turned out, three of the four were 30 minutes overdue in 120 feet of water. "I said leave them there" Smith said. "If I don't get this other guy to the chamber he won't make it either."

Backup to Mainland

When mainland paramedics go to work, Smith says, there's always someone there to hand them IVs and bandages. There are usually firefighters and police officers standing around able to help. And there are all sorts of backup services. "Here, we're usually the only two responding to a call," McKay said. "We're a total rescue unit. We're not just paramedics and we're not just lifeguards." They say the greatest challenge to their paramedic skills is the need for maintaining a patient for a long period of time. Help is at least an hour away. To be ready for any emergency, they carry a variety of specialized rescue gear as well as the usual paramedic tools.

Under the deck panels in the stern of the Baywatch Isthmus is scuba gear for three people, portable pumps for sinking vessels and seawater pumps for boat fires. (They get about a half-dozen of these a year.) In the front compartment are fire axes, fire suits and climbing gear for cliff rescues on the rugged back side of the island. Their trauma box contains large "battle dressings" for propeller cuts. They carry medications for cardiac patients.

There's an electronic telemetry unit for monitoring patients' heartbeats, and a biophone that puts them in touch with Westlake Community Hospital in Thousand Oaks (the hospital's transmitter is on a hill that makes them easier to contact than a hospital nearer Catalina) should they need to consult with a doctor.

In the winter, when the island is less populated, the lifeguards take emergency medicine courses. After any rescue run they discuss their procedures, deciding how they can do it better next time — they always assume there will be a next time.

By early Saturday morning on a recent weekend, the mooring in the Isthmus and nearby covers were full. Nearly hidden among the pleasure boats was the Baywatch Isthmus, a 32-foot craft custom-made to lifeguard specifications for easy maneuvering in high seas and around rocks and moorings. At 9, Stonier and Smith walked down the ramp to the Baywatch from the cluster of trailers where they live. They eased the boat out of the harbor on a routine morning run. "If somebody calls later and says they have a diving accident at Doctor's Cove, I want to know exactly where they are," Stonier said. As they cruised, the men made mental notes of the location and description of each diving boat so they could relocate them easily if need be. By now the lifeguards are able to identify any dive boat by its profile in the distance. "It's like spotting in a war zone," Smith said. "Who else is down there diving?" Smith asked his partner as they rounded a point. "Lucy and Charisma" Stonier said. "I guess we got four of them."

28 Miles of Coastline

The Isthmus lifeguards are responsible for 28 miles of coastline, from Twin Rocks on the west end to Ben Weston Beach. They know every rock and cove, camp and landmark along the coastline, as well as the topography of the inland territory. "People always think of Catalina as a pile of sand with a palm tree in the middle," Stonier said. "Well, we cover more coastline than all the inland lifeguards combined."

They spotted the Seaview, marked with a diver's flag, red with a white diagonal stripe. "If they're in the water and they're together, it's a class," Stonier said. "If they spread out when they hit the water, it's an open charter." It's important that they know the location of the dive boats and the degree of expertise of the dive because diving accidents are the most critical emergency the men deal with. They have to get victims to the dive chamber in a hurry.

USC installed a dive chamber near Isthmus Cove in 1974 as a research facility. The lifeguards were able to convince the university that there was a need for a public chamber because all

Continued

Search & Rescue Magazine BOMB

BOMB is your direct line to the editor's desk. Each month, the two top-rated authors receive bonuses based on your votes. To cast your vote, first look at the list of this month's articles in the table of contents on page 3, then rate each article as **Excellent, Good, Fair** or **Poor** with an X in the space below. Your feedback helps to produce the best possible magazine.

Pg	ARTICLE	Excellent	Good	Fair	Poor
4	BONUS FEATURE: The Garden of The Gods by Stewart M. Green				
5	UNGRATEFUL RATTLER STRIKES RESCUER				
6	THE NATURE OF PAIN				
9	BRONX BLAST by Peter McLaughlin and Donald Singleton				
10	THE INVISIBLE FORCE				
14	NEW VISUAL SIGNAL CODE FOR SURVIVORS				
16	NEW PRODUCTS				

the other dive chambers in Southern California are Navy-owned. was put to use on victims of air embolisms and decompression ckness. The chamber simulates conditions at underwater depths so that gases trapped in nerve and muscle tissue are dissolved back into the bloodstream. A victim may spend four to six hours undergoing treatment, monitored by a physician from the mainland and a team of chamber technicians, which includes the lifeguards and their wives. "Every cove here I've picked up someone out of 8 feet or 120 feet of water," Smith said. "We have so many diving fatalities we lose track. There are simple rules that are broken. Someone takes their last gulp of air and rushes to the surface. They just simply violate the tables. They're usually young people you're treating. They have a lot of life left to live. 70% of diving deaths happen to people within the first year they're certified. They say it's the same ratio as airline pilots."

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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CHINESE MOUNTAINS — MAJESTIC 'NEW FRONTIER' FOR WESTERN CLIMBERS

American Doctors, Engineers, Other Professionals Pay for Chance to Risk Lives

PEKING — When Kim Schmitz came tumbling down southwestern China's 24,790-foot Mt. Congga last autumn in an avalanche of snow and rocks, he was certain he was going to die.

"The first thing I thought when that snow hit us," he said, was, 'This is it, and there was so much else I wanted to do in my life.'"

"I couldn't untie myself or cut myself free from the three others who were also falling," he went on, "and I couldn't swim to the top of the snow. All I could do was tuck myself in and bounce down that mountain. I tried to relax my mind, like the Tibetan Book of the Dead says, and sort of groove out on death."

But Schmitz survived. The avalanche carried him and the three others, members of a 15-man American climbing expedition, more than 1,500 feet down Mt. Congga, in southwest China's Sichnan province — from an altitude of about 18,500 feet to below 17,000 over a 150-foot-high rock bliff and stopping just before a sheer drop of more than 200 feet.

Torn with Pain

"I was really hurting. I felt each rock as I came down, each little ledge I went over. I still remember it like a newsreel — each bounce, every boulder, where it hurt, when my teeth were broken, when my back was broken. It probably didn't last but three or four minutes, but it felt like an eternity of white hell."

And it was not over. Getting Schmitz and two other injured climbers down to the advance base camp at 14,500 feet and burying the fourth man, who was killed at the start of the avalanche, took two days. The dead climber, Jonathan Wright, a freelance photographer working for ABC Sports, one of the expedition's sponsors, was buried with a short Buddhist ceremony on a rock promontory 15,000 feet up the mountain. Three white Buddhist prayer flags with Tibetan script were left flying over the grave.

"Twenty-three years before, a Chinese party was hit by an avalanche at exactly the same spot," said Al Reed, 43, the expedition leader and professional climber. "We had to give up the climb — one member of the expedition was dead, two were badly injured and another was too shaken to continue — and I know that I am not going back to that mountain."

Schmitz, who was suffering from compressed vertebrae and rib and knee injuries, could move only slowly and with great pain. A descent of 500 feet took more than four hours, and other expedition members were worried they would not be able to get him off the mountain. Then a small rescue party of Tibetan porters and Chinese climbers reached the group, and the Tibetans carried Schmitz down. "When they got me down, I would have given them everything I own," Schmitz said. "They were super." Schmitz and the other injured climbers were then taken, by pony, jeep and minibus, back to Chengdu, the Sichuan provincial capital, and evacuated to Pegking and eventually the United States. "I spent a long winter putting myself back together, seeing if my brain and my toes were still connected," Schmitz said.

He is now back in China, having successfully led six other climbers up another Chinese mountain, Anyamaqen, for a long time thought to be the tallest mountain in the world, although it is no more than 21,000 feet.

"I never hesitated to come back," said Schmitz. "The first day I knew that I was all right I was thinking about the next expedition." For climbers like Schmitz, an experienced professional who has climbed almost everywhere else, Mt. Gongga, Anyamaqen — in remote Qinghai province — and other major Chinese mountains are "sort of a new frontier," according to Reed, leader of the ill-fated expedition last autumn and a trekking and climbing outfitting in Nepal. "Climbing in an unknown area like China is really experiencing high adventure, even for veteran and professional climbers," Reed said, "You, of course, see some of the most beautiful scenery imaginable, much of it never seen by a foreigner, and you get a tremendous satisfaction of achievement. You have to have complete confidence in yourself and in your ability. Danger is a real element, as we tragically learned again, and this makes the adrenalin rush."

Expeditions like that to Mt. Gongga take a great deal of ski[ll] and strength, energy and stamina. But you are going to a plac[e] where foreigners have not been. China has opened nine major peaks, including the Chinese side of Mt. Everest, the world's highest mountain. This year, 30 mountaineering organizations from 10 countries, including the United States, are sending expeditions, nearly twice as many as last year when the peaks were opened. More than 50 trekking parties are coming, according to Chinese officials.

"The climing is not much more difficult technically than, say, Mt. McKinley," Schmitz said. "The interest lies in the fact that these are peaks that have not been climbed by Westerners before, and some approaches have never been tried. And, of course, they are in China."

Reed compared the climbing here with that in Nepal and Pakistan. "This is expedition climbing, and in an unknown area like China this is an unparalleled adventure," he said. "Success is by no means certain — two of the three American expeditions in 1980 failed — and the danger is very real." The main difference with climbing in Pakistan and Nepal, however, is the lack of helicopter evacuation in an emergency.

The costs are high. Mountain Travel Inc. the Albany firm that organized the Anyamaqen expedition last month, charged the six climbers $6,100 each and the 10 accompanying trekkers, who went around the mountain, $5,300 plus air fare. The Mt. Gongga expedition last year cost a total of $140,000 plus air fare, according to Reed. "We get lawyers, doctors, engineers, other professional people who want a complete change and who find it in this sort of high adventure," said John Thune, a Mountain Travel tour manager who led the trekking group around Anyamaqen. "These aren't people who just want to get away from something — they want to do something."

"Our translators ask us, 'Why do Americans want to eat such bitterness?' he said. "It is hard for them to understand why a ma[n] of my age — and we have some in our group who are older — want the excitement of exploring what has been a forbidden land."

By Michael Parks, *Los Angeles Times* Staff Reporter

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BOY, 9, STRANDED

An injured 9-year old boy and two dead adults were found at the site of an auto accident on Angeles Crest in Los Angeles County on Monday Nov. 2 at 10:30 a.m. The car was over the cliff and had been sighted by members of the Sheriffs air rescue helicopter while on routine patrol over the crest highway. Air rescue 55 set down at a roadside clearing near the accident and discovered a boy, cold, injured and frightened and clinging to the embankment just above the two dead adults. The exact time of the accident has not yet been established, but California Highway Patrol officer Williams says that the boy was probably there the entire night.

Officer Veal of the CHP said that the accident is still under investigation. He said that preliminary investigation would indicate that the vehicle was coming down the crest highway and lost control, however there are no skid marks to indicate braking. One observer on the scene reported that the boy referred to himself as Chris, but no further identification was available on the boy. An ambulance was called to take the boy to Verdugo Hills Hospital and members of the Montrose Search and Rescue, the Forest Service and the California Highway Patrol were called to evacuate the bodies and conduct the traffic accident investigation.

Montrose Search and Rescue team members who responded t[o] the call out were: Fuller, Magee, Lapham, Ervin, MacCarley, Kirkaldy, Prinzgintas, and McKently, as well as Deputy Cheyno of CV sheriffs station and Sgt. Shaughnessey, coordinator from CV station.

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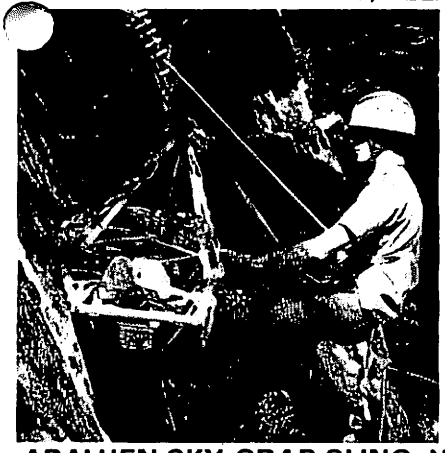

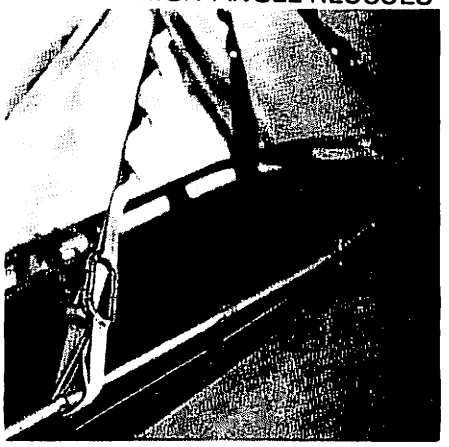

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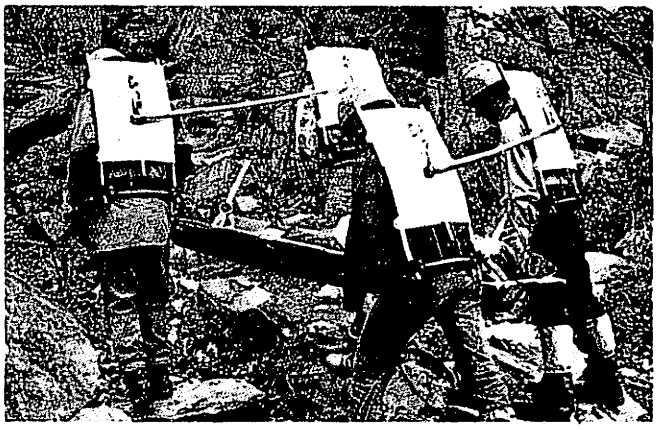

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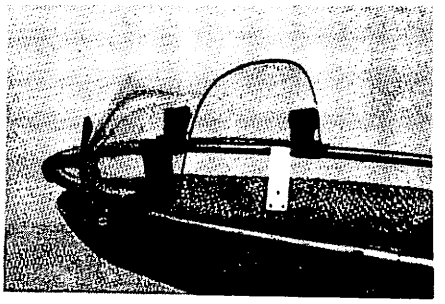

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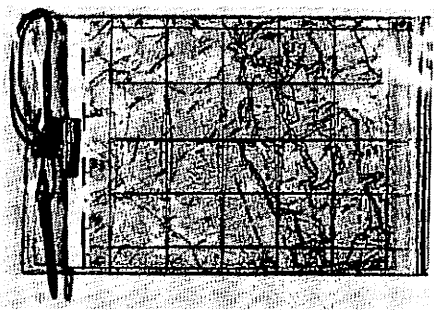

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