

Davenport

Volunteers Develop Cliff Rescue Equipment

BY ALVERDA ORLANDO

Davenport, a community of 315 inhabitants, is perched 90 feet above sheer shale cliffs on the California coast 70 miles south of San Francisco.

It extends 19 miles along the Pacific Ocean coastline and is three miles wide. The beaches are little niches at the base of cliffs 40 to 200 feet high. People who slide or fall down to these beaches sometimes can't climb back and are trapped by an incoming tide. Those who try to swim get slammed against the rocks by the strong undertow.

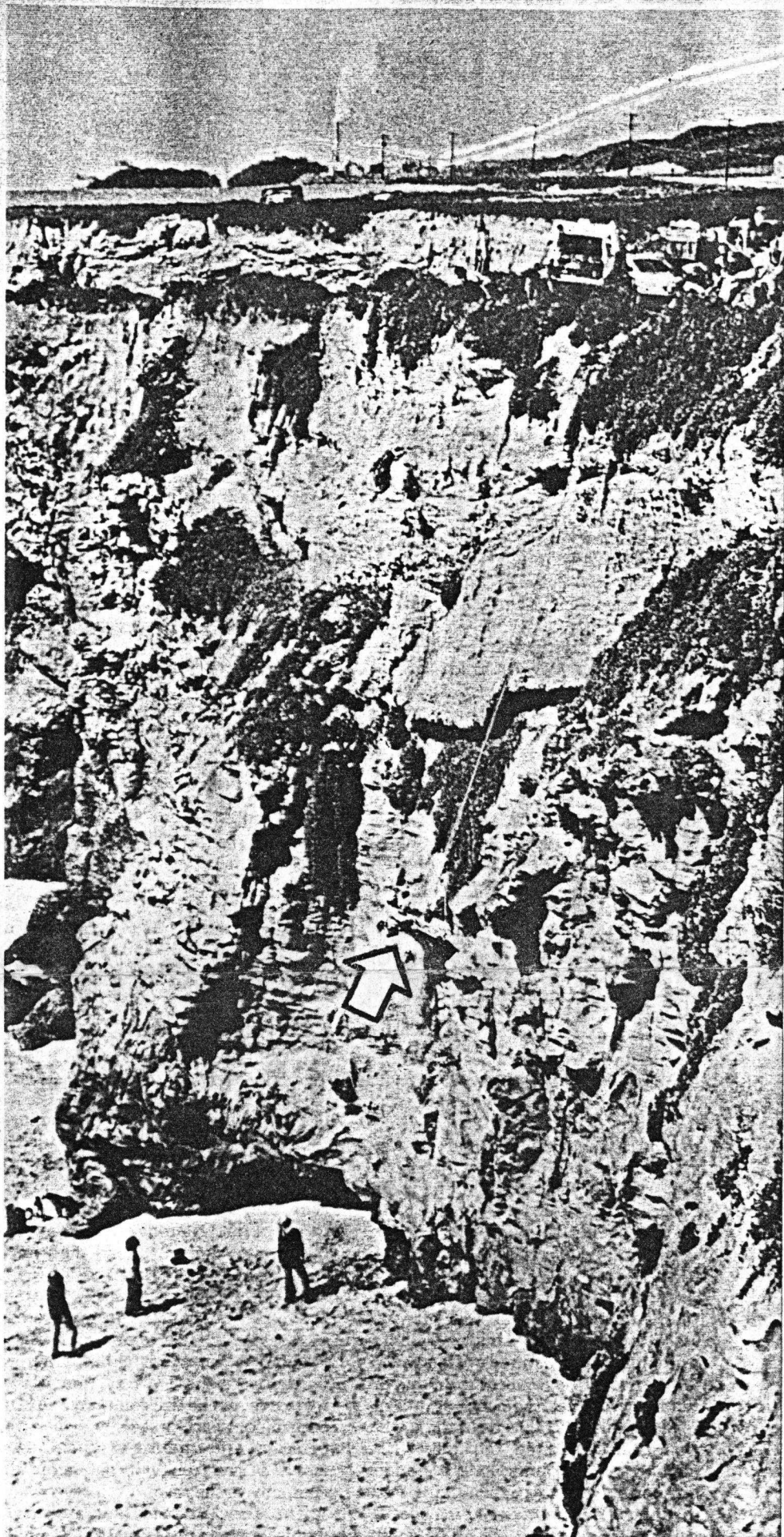
It is difficult, or impossible, to bring heavy rescue vehicles to the edge of the cliffs to get people off the beaches because the flat land atop the cliffs is either farmland under irrigation and therefore soft or land covered with dense brush growth. There also are many ravines and limestone quarries, as well as rivers, in the mountainous area inland in Davenport where visitors become lost or injured.

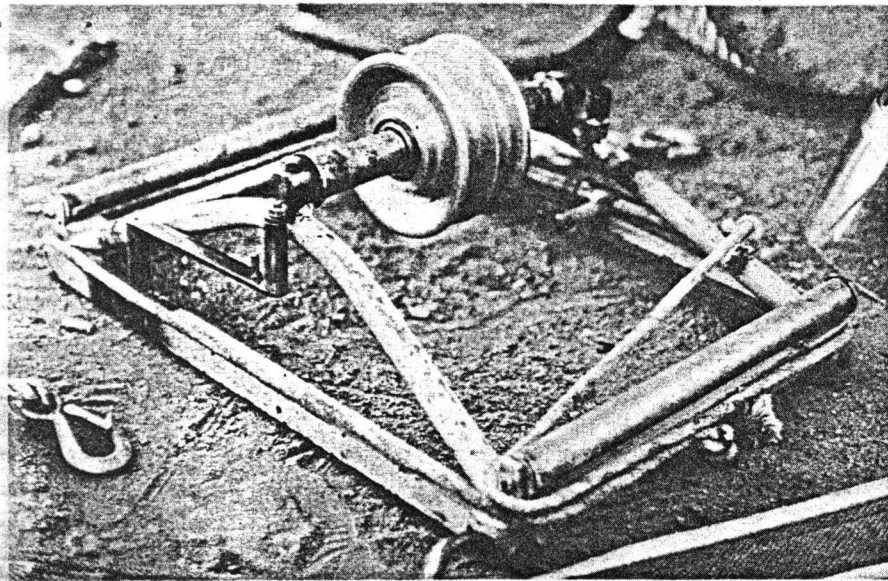
Rescue equipment devised

Therefore, the Davenport Volunteer Fire Department has developed equipment and techniques to rescue people from beaches and mountain areas.

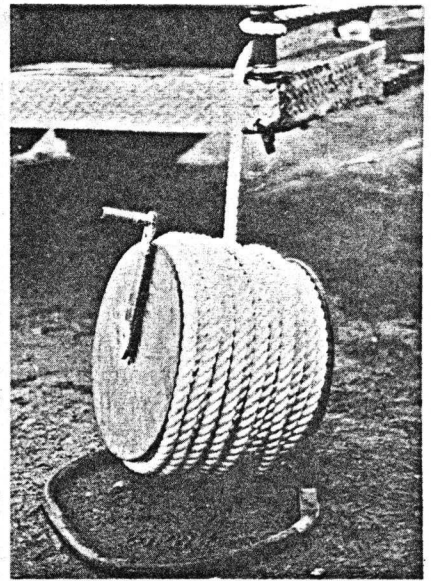
One of the most useful items that has been made, is what Chief Elio Orlando calls a rope dolly. The frame is made from angle iron with an edge toward the ground. Two folding spikes are hinged to the bottom of the assembly.

During a rescue, this frame is slammed into the ground, usually on the edge of a cliff. As a safety precaution, a deadman spike is pounded into the ground a short distance away.





Rope dolly devised by Davenport volunteers for rescue work has spikes and angle iron with edge to ground to increase stability.



Rope reel is shown with rope around capstan so that it can be paid out to dolly.

This spike is attached to the dolly by a 5-foot nylon rope to keep the assembly from slipping.

There is a 1 × 18-inch roller bearing at the back and front of the dolly, and in the middle about a foot higher, there is a ball-bearing roller. On this roller there is a steel pulley.

Ropes slide over pulley

When an injured person in a rescue basket and a fireman are being brought up a cliff, the two ropes slide over the pulley and the ball bearings instead of cutting into the sides of the cliff and being damaged. It is estimated that from 400 to 600 pounds of pressure is on the pulley when a victim and a fireman are being pulled up a cliff together.

A winch could be used, but because of rock outcroppings and other unevenness of the cliff sides the fireman making the rescue cannot always be seen. The firemen have found that machinery can't sense a problem, whereas the men controlling the ropes on the pulley can react immediately to signals from a rescuer.

Communication helmet

Signals are relayed by rope or through a bone mike which is inside a bubble helmet. Both types of communications are used, but the helmet mike is much preferred. If the rescuer sees a manzanita bush, outcrop-

ping of rock, or whatever, in the way as he is bringing the victim up the cliff, he can immediately tell the team director at the top of the cliff to stop the pull. All the hand waving, shouting and misunderstandings that go along with this type of communications are then effectively removed.

The components for this helmet have been on the market for several years and were originally designed for fire fighting activities. However, the helmet is adapting ideally to rescue work. This particular unit was assembled especially for our department by the Santa Cruz County Communications Department.

High winds are common along this coast. A heavy weight is often needed

Chief Elio Orlando



Typical rescue operation for Davenport, Calif., Volunteer Fire Department is shown at left with fireman and basket ascending 85-foot cliff.

Sentinel News photo

to drop ropes over the edge of a cliff and near a victim. Rope reels, similar to hose reels, have been developed not only to facilitate rewinding the rope, but also so the reel can be thrown over a cliff and allowed to roll down the side.

How reels are made

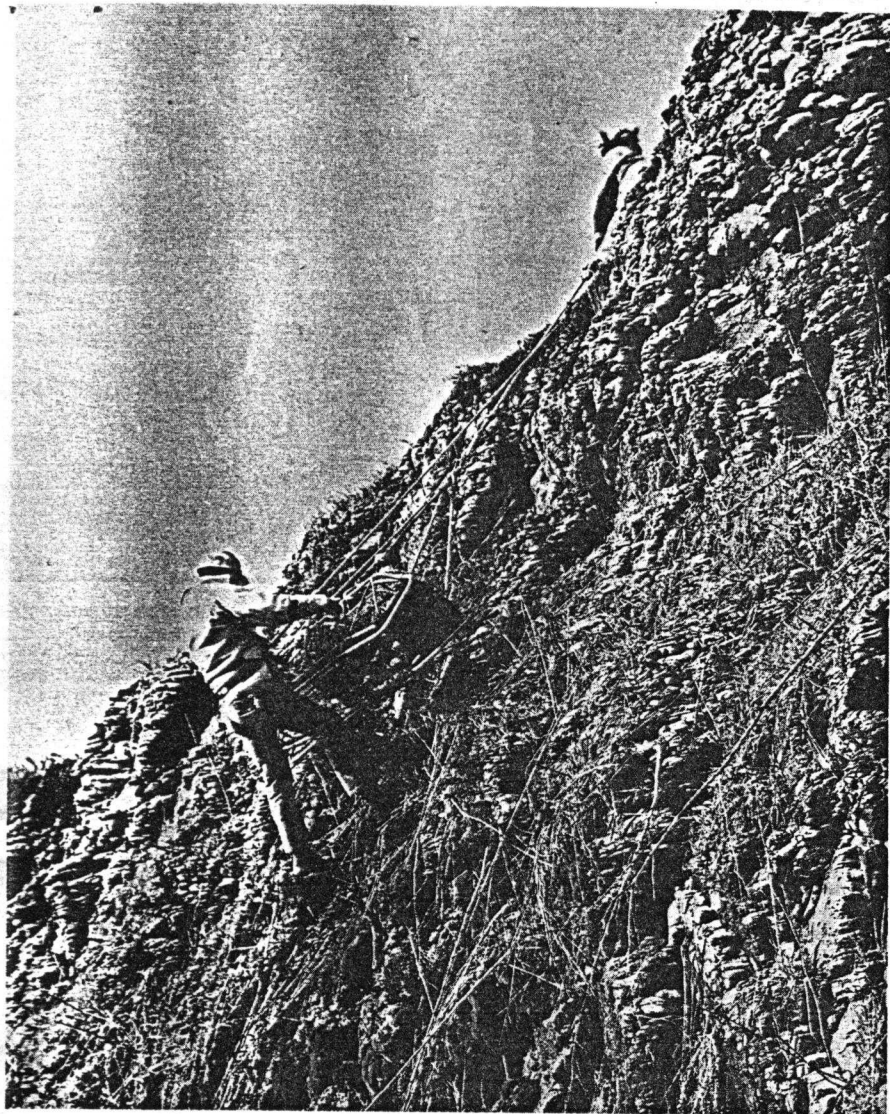
The rope reels are made of $\frac{3}{8}$ × 11-inch plywood with a pine center 3 inches in diameter. The reel holds 200 feet of $\frac{5}{8}$ -inch nylon rope.

A $\frac{1}{2}$ -inch hole is drilled completely through the center of the reel. Two $\frac{3}{8}$ -inch holes are drilled on each side of the center holes. The handles are made from $\frac{1}{2}$ -inch electrical conduit welded $1\frac{1}{4}$ × 9 × $\frac{1}{2}$ -inch thick. Near the top of the handle is a $\frac{1}{4}$ × $\frac{3}{4}$ -inch grab tooth. When carrying the reel, the handle fits in the $\frac{1}{2}$ -inch hole and the tooth fits into the $\frac{3}{8}$ -inch holes. This serves as a stop so the rope does not unwind. When ready to use, the handle is removed from the holes, turned around and reinserted. This allows the reel to turn freely.

Ropes are on reels because it has been found that they never tangle and storage is more efficient than coiled ropes. On completion of the rescue, the reels and ropes are returned to the rescue truck, where they are rewound on a fixed spindle at the rear platform of the truck. It takes only 1½ minutes to rewind the complete spool.

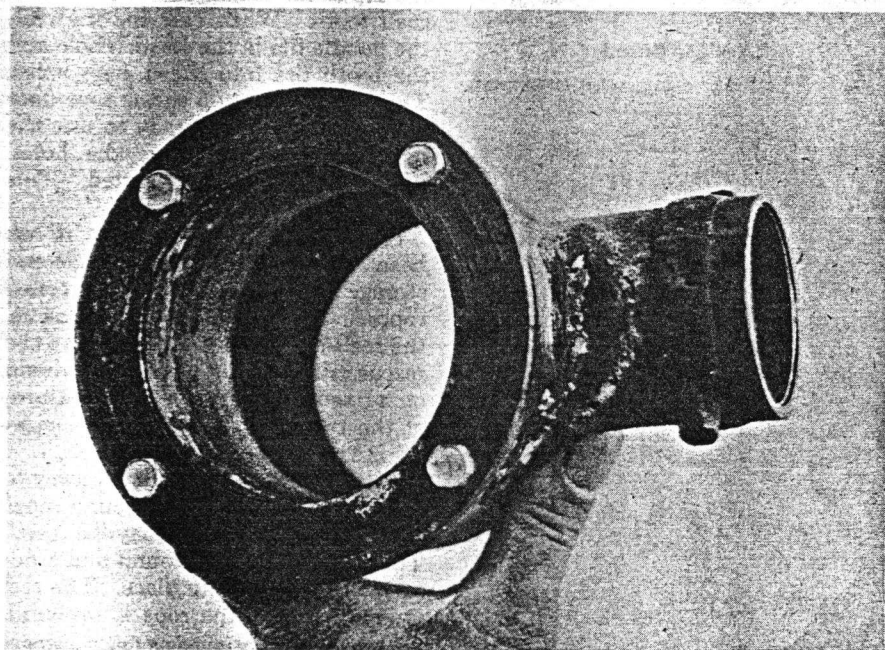
If the rescue truck is too far away to conveniently carry the unwound ropes to it, the rope dolly may be used. This is reset on flat ground and a detachable pin is put in place. The reel is attached and the rope is rewound.

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Wire basket and rescuer ascend a cliff during a training session. The team director is at the top of the cliff supervising operations.

Rope washer designed by Davenport volunteers is usually put on a hydrant, but it also can be coupled to a hose. Water pressure can be varied by adjusting the four screws as water flows through housing openings.



At both ends of the rope there are safety hooks for quick connections.

The rescue truck was converted from a 1966 $\frac{3}{4}$ -ton International, which was donated to the department by the local Lone Star Industries cement plant. The truck has a four-wheel drive, a camper top, and houses all the rescue equipment. It also doubles as an ambulance for three patients.

The interior is designed to take advantage of every bit of space. Cabinets line both sides of the truck and are divided into two parts. The bottom half has space for 1200 feet of rope on reels, self-contained breathing apparatus and four handmade 40-inch spikes, 1 inch in diameter. In the top half, smaller pieces of equipment, such as the bubble helmet, resuscitators, first aid kits, plastic splints, batteries, jumper cables, flares, mountain climbing spikes, goggles and walkie-talkies, are kept. A power plant in the back of the unit is concealed by cabinetry.

Two stretchers can be hooked to the tops of the cabinets and if needed, one can be placed on the floor. One wall of the camper carries a scoop stretcher. On top of the camper there are two wire basket stretchers and an aluminum ladder. The stretchers are fastened to the top of the truck with spring hooks that are especially designed so that when driving through dense brush they won't accidentally snap open.

Skids put on stretcher

One of the baskets has skids welded onto its frame so that it will slide easily on sand, wet ground or even the sides of a cliff. These skids are four inches from the bottom of the basket and help to cushion the victim. The second basket has been modified to fit a scoop stretcher. This means that only two men are needed to lift the injured party instead of the usual five.

Other equipment made by the department in the last year includes an animal harness, mostly used for rescuing dogs, a split-belt harness, and rope washers and dryers.

The rope washer is actually a copy of a hose washer adapted to ropes. It is made from a brass coupling with holes drilled in the center. When it is attached to a hose, ropes are washed by the sprinkling effect as they pass through the coupling.

All the modifications and developments of equipment by our firemen has been done with an eye to using the fewest men in the most efficient manner. And always, the comfort of the victim comes first.

During the vacation season the department averages six to nine rescues a month.